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federal register

TUESDAY, DECEMBER 13, 1977

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1934

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The following agencies have agreed to publish all documents on two assigned days of the week (Monday/Thursday or Tuesday/Friday). This is a voluntary program. (See OFR notice 41 FR 32914, August 6, 1976.)

Monday	Tuesday	Wednesday	Thursday	Friday
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Documents normally scheduled for publication on a day that will be a Federal holiday will be published the next work day following the holiday.

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Title 3—The President

REORGANIZATION PLAN NO. 2 OF 1977

Prepared by the President and transmitted to the Senate and the House of Representatives in Congress assembled, October 11, 1977,[1] *pursuant to the provisions of chapter 9 of title 5 of the United States Code.*[2]

International Communication Agency

SECTION 1. *Establishment of the International Communication Agency*

There is hereby established in the executive branch an agency to be known as the International Communication Agency (the "Agency").

SECTION 2. *Director*

The Agency shall be headed by a Director (the "Director"), who shall serve as the principal advisor to the President, the National Security Council, and the Secretary of State on the functions vested in the Director. The Director shall report to the President and the Secretary of State. Under the direction of the Secretary of State, the Director shall have primary responsibility within the Government for the exercise of the functions vested in the Director. The Director shall be appointed by the President, by and with the advice and consent of the Senate, and shall be entitled to receive compensation at the rate now or hereafter prescribed by law for Level II of the Executive Schedule.

SECTION 3. *Deputy Director*

A Deputy Director shall be appointed by the President, by and with the advice and consent of the Senate. The Deputy Director shall act for, and exercise the powers of, the Director during the Director's absence or disability or during a vacancy in said office and, in addition, shall perform such duties and exercise such powers as the Director may from time to time prescribe. The Deputy Director shall be entitled to receive compensation at the rate now or hereafter prescribed by law for Level III of the Executive Schedule.

SECTION 4. *Associate Directors*

The President, by and with the advice and consent of the Senate, may appoint four Associate Directors, who shall perform such duties and exercise such powers as the Director may from time to time prescribe. One Associate Director shall be known as the Associate Director for Educational and Cultural Affairs and one Associate Director shall be known as the Associate Director for Broadcasting. Each Associate Director shall be entitled to receive compensation at the rate now or hereafter prescribed by law for Level IV of the Executive Schedule.

SECTION 5. *Performance of Functions*

The Director may establish within the Agency bureaus, offices, divisions and other units. The Director may from time to time make provision for the performance of any function of the Director by any officer, employee or unit of the Agency.

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[1] Actually transmitted October 12, 1977.

[2] As amended November 1, 1977, and November 3, 1977.

SECTION 6. *Negotiations*

(a) Under the direction of the Secretary of State, the Director shall prepare for, manage and conduct negotiations with representatives of foreign states or international organizations on matters for which responsibility is vested in the Director or in the Agency.

(b) For the purpose of conducting such negotiations, or for the purpose of exercising any other authority vested in the Director or in the Agency, the Director may

(1) consult and communicate with or direct the consultation and communication with representatives of other nations or of international organizations; and

(2) communicate in the name of the Secretary of State with diplomatic representatives of the United States in this country and abroad.

SECTION 7. *Transfer of Functions*

(a) There are hereby transferred to the Director all functions vested in the President, the Secretary of State, the Department of State, the Director of the United States Information Agency, and the United States Information Agency pursuant to the following:

(1) the United States Information and Educational Exchange Act of 1948, as amended (22 U.S.C. 1431–1479), except to the extent that any function in sections 302, 401, or 602 is vested in the President;

(2) the Mutual Educational and Cultural Exchange Act of 1961, as amended (22 U.S.C. 2451–2458a), except for: (A) such functions as are vested by sections 102(b)(6), 102(b)(10), 104(a), 104(e)(1), 104(e)(2), 104(f), 104(g), 105(a), 105(b), 105(c), 106(a), 108; (B) to the extent that such functions were assigned to the Secretary of Health, Education and Welfare immediately prior to the effective date of this Reorganization Plan, sections 104(b), 105(d)(2), 105(f), 106(d), and 106(f); and (C) to the extent that any function therein is vested in the President or the Secretary of State, sections 106(b) and 106(c).

(3) Public Law 90–494 (22 U.S.C. 929–932, 1221–1234), to the extent that such functions are vested in the Director of the United States Information Agency;

(4) Sections 522(3), 692(1), and 803(a)(4) of the Foreign Service Act of 1946, as amended (22 U.S.C. 922(3), 1037a(1), and 1063(a)(4)), to the extent such functions are vested in the Director of the United States Information Agency or in the United States Information Agency.

(5) Section 4 of the United States Information Agency Appropriations Authorization Act of 1973, Public Law 93–168;

(6) (A) Sections 107(b), 204 and 205 of the Foreign Relations Authorization Act, Fiscal Year 1978, Public Law 95–105, 91 Stat. 844; and (B) to the extent such functions are vested in the Director of the United States Information Agency, section 203 of the Act;

(7) the Center for Cultural and Technical Interchange Between East and West Act of 1960 (22 U.S.C. 2054–2057);

(8) Sections 101(a)(15)(J) and 212(e) of the Immigration and Nationality Act (8 U.S.C. 1101(a)(15)(J), 1182(e));

(9) Section 2(a)(1) of Reorganization Plan No. 8 of 1953 (22 U.S.C. 1461 note);

(10) Section 3(a) of the Arts and Artifacts Indemnity Act (20 U.S.C. 972(a));

(11) Section 7 of the Act of June 15, 1951, c. 138, 65 Stat. 71 (50 U.S.C. App. 2316);

(12) Section 9(b) of the National Foundation on the Arts and Humanities Act of 1965 (20 U.S.C. 958(b)), to the extent that such functions are vested in the Secretary of State;

(13) Section 112(a) of the Higher Education Act of 1965 (20 U.S.C. 1009(a)), to the extent such functions are vested in the Department of State;

(14) Section 3(b)(1) of the Woodrow Wilson Memorial Act of 1968 (20 U.S.C. 80f(b)(1));

(15) Section 201 of Public Law 89-665, as amended by section 201(5) of Public Law 94-422 (16 U.S.C. 470i(a)(9));

(16) The third proviso in the twenty-third unnumbered paragraph of title V of Public Law 95-86 (headed "UNITED STATES INFORMATION AGENCY, SALARIES AND EXPENSES"), 91 Stat. 440-41;

(17) The twentieth unnumbered paragraph of title I of Public Law 95-86 (headed "CENTER FOR CULTURAL AND TECHNICAL INTERCHANGE BETWEEN EAST AND WEST"), 91 Stat. 424;

(18) Sections 4(d)(1)(F), 4(f)(1)(F), 4(g)(1)(F), and 4(h)(1)(F) of the Foreign Service Buildings Act, 1926, as amended (22 U.S.C. 295(d)(1)(F), 295(f)(1)(F), 295(g)(1)(F), and 295(h)(1)(F)); and

(19) Sections 1, 2, and 3 of the Act of July 9, 1949, c. 301, 63 Stat. 408 (22 U.S.C. 2681-2683).

(b) There are hereby transferred to the Director all functions vested in the Assistant Secretary of State for Public Affairs pursuant to Section 2(a) of the John F. Kennedy Center Act (20 U.S.C. 76h(a)).

(c) The Director shall insure that the scholarly integrity and nonpolitical character of educational and cultural exchange activities vested in the Director are maintained.

SECTION 8. *Establishment of the United States Advisory Commission on International Communication, Cultural and Educational Affairs*

(a) There is hereby established an advisory commission, to be known as the United States Advisory Commission on International Communication, Cultural and Educational Affairs (the "Commission"). The Commission shall consist of seven members who shall be appointed by the President, by and with the advice and consent of the Senate. The members of the Commission shall represent the public interest and shall be selected from a cross section of educational, communications, cultural, scientific, technical, public service, labor and business and professional backgrounds. Not more than four members shall be from any one political party. The term of each member shall be three years except that of the original seven appointments, two shall be for a term of one year and two shall be for a term of two years. Any member appointed to fill a vacancy occurring prior to the expiration of the term for which a predecessor was appointed shall be appointed for the remainder of such term. Upon the expiration of a member's term of office, such member may continue to serve until a successor is appointed and has qualified. The President shall designate a member to chair the Commission.

(b) The functions now vested in the United States Advisory Commission on Information and in the United States Advisory Commission on International Educational and Cultural Affairs under sections 601 through 603 and 801(6) of the United

States Information and Educational Exchange Act of 1948, as amended (22 U.S.C. 1466–1468, 1471(6)), and under sections 106(b) and 107 of the Mutual Educational and Cultural Exchange Act of 1961, as amended (22 U.S.C. 2456(b), 2457), respectively, are hereby consolidated and vested in the Commission, as follows:

The Commission shall formulate and recommend to the Director, the Secretary of State, and the President policies and programs to carry out the functions vested in the Director or the Agency, and shall appraise the effectiveness of policies and programs of the Agency. The Commission shall submit to the Congress, the President, the Secretary of State and the Director annual reports on programs and activities carried on by the Agency, including appraisals, where feasible, as to the effectiveness of the several programs. The Commission shall also include in such reports such recommendations as shall have been made by the Commission to the Director for effectuating the purposes of the Agency, and the action taken to carry out such recommendations. The Commission may also submit such other reports to the Congress as it deems appropriate, and shall make reports to the public in the United States and abroad to develop a better understanding of and support for the programs conducted by the Agency. The Commission's reports to the Congress shall include assessments of the degree to which the scholarly integrity and nonpolitical character of the educational and cultural exchange activities vested in the Director have been maintained, and assessments of the attitudes of foreign scholars and governments regarding such activities.

(c) The Commission shall have no authority with respect to the Board of Foreign Scholarships or the United States National Commission for UNESCO.

SECTION 9. *Abolitions and Supersessions*

(a) The following are hereby abolished:

(1) The United States Information Agency, including the offices of Director, Deputy Director, Deputy Director (Policy and Plans) (5 U.S.C. 5316(67)), Associate Director (Policy and Plans) (5 U.S.C. 5316(103)), and additional offices created by section 1(d) of Reorganization Plan No. 8 of 1953 (22 U.S.C. 1461 note), of the United States Information Agency, provided that, pending the initial appointment of the Director, Deputy Director and Associate Directors of the Agency their functions shall be performed temporarily, but not for a period in excess of sixty (60) days, by such officers of the Department of State or of the United States Information Agency as the President shall designate;

(2) One of the offices of Assistant Secretary of State provided for in section 1 of the Act of May 26, 1949, c. 143, 63 Stat. 111, as amended (22 U.S.C. 2652), and in section 5315(22) of title 5 of the United States Code;

(3) The United States Advisory Commission on International Educational and Cultural Affairs (22 U.S.C. 2456(b));

(4) The United States Advisory Commission on Information (22 U.S.C. 1466–1468);

(5) All functions vested in or related to the United States Advisory Commission on International Educational and Cultural Affairs and the United States Advisory Commission on Information that are not transferred to the Director by section 7 or consolidated in the Commission by section 8 of this Reorganization Plan;

(6) The Advisory Committee on the Arts, all functions thereof, and all functions relating thereto (22 U.S.C. 2456(c)); and

(7) The functions vested in the Secretary of State by section 3(e) of the Act of August 1, 1956, c. 841, 70 Stat. 890 (22 U.S.C. 2670(e)).

(b) Sections 1, 2(a)(2), 2(b), 2(c)(3), 3, 4, and 5 of Reorganization Plan No. 8 of 1953 (22 U.S.C. 1461 note) are hereby superseded.

SECTION 10. *Other Transfers*

So much of the personnel, property, records, and unexpended balances of appropriations, allocations and other funds employed, used, held, available, or to be made available in connection with the functions transferred or consolidated by this Reorganization Plan, as the Director of the Office of Management and Budget shall determine, shall be transferred to the appropriate department, agency, or commission at such time or times as the Director of the Office of Management and Budget shall provide, except that no such unexpended balances transferred shall be used for purposes other than those for which the appropriation was originally made. The Director of the Office of Management and Budget shall provide for terminating the affairs of all agencies, commissions, and offices abolished herein and for such further measures and dispositions as such Director deems necessary to effectuate the purposes of this Reorganization Plan.

SECTION 11. *Effective Date*

This Reorganization Plan shall become effective at such time or times, on or before July 1, 1978, as the President shall specify, but not sooner than the earliest time allowable under section 906 of title 5 of the United States Code.

[FR Doc.77-35615 Filed 12-12-77;8:45 am]

LEGISLATIVE HISTORY:

WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS:

Vol. 13, No. 42: Oct. 11, Presidential message transmitting Reorganization Plan No. 2 of 1977 to Congress. (Also printed as House Document No. 95-243.)
Vol. 13, No. 45: Nov. 1, Presidential message transmitting amendments to the Plan. (Also printed as House Document No. 95-251.)
Vol. 13, No. 45: Nov. 3, Presidential message transmitting further amendments to the Plan. (Also printed as House Document No. 95-254.)

HOUSE REPORT No. 95-818 accompanying H. Res. 827 (Comm. on Government Operations).

SENATE REPORT No. 95-606 accompanying S. Res. 293 (Comm. on Governmental Affairs).

CONGRESSIONAL RECORD, Vol. 123 (1977):

Oct. 12, H. Res. 827, resolution of disapproval, introduced in the House and referred to Committee on Government Operations.
Oct. 13, S. Res. 293, resolution of disapproval, introduced in the Senate and referred to Committee on Governmental Affairs.
Nov. 29, House rejected H. Res. 827, thus effecting the Plan's approval.

[3195–01]

PROCLAMATION 4542

Bill of Rights Day
Human Rights Day and Week, 1977

By the President of the United States of America

A Proclamation

This month marks the anniversaries of two great events in the long struggle for the rights of human beings: the ratification of the American Bill of Rights on December 15, 1791, and the adoption of the Universal Declaration of Human Rights by the United Nations General Assembly on December 10, 1948.

The Bill of Rights culminated the Founders' efforts to create for their new country a national life grounded in liberty and respect for individual rights. The Declaration of Independence proclaimed the inalienable rights of life, liberty, and the pursuit of happiness. The Constitution formed a "more perfect Union" in which those rights could be fulfilled. And the first ten amendments to the new Constitution placed the keystone on this new edifice of human rights. The immediate application of those rights extended only to one country, and only to some of the people in it. But because those rights were proclaimed as the natural birthright of all human beings, the documents that embodied them were rightly seen to have a profound and universal significance.

It is a lesson of history that no enumeration of rights, however eloquent, can alone ensure their protection in practice. We Americans struggled, sometimes bloodily, to make the rights promised in our founding documents a reality for all our people. That experience of successful struggle for human rights in our own country was both painful and ennobling, and it propelled us into a leading role in the adoption of the Universal Declaration of Human Rights by the United Nations. As a people, we believe what the Declaration says: that the promotion of respect for human rights is the shared responsibility of the world community. We call on the governments of other nations to join us in discharging this responsibility.

Everywhere on earth, men and women have made great personal sacrifices, even to the laying down of their lives, in the long struggle for justice and human dignity. By their sacrifices, they have already hallowed the human rights anniversaries I proclaim today.

NOW, THEREFORE, I, JIMMY CARTER, President of the United States of America, do hereby proclaim December 10, 1977, as Human Rights Day and December 15, 1977, as Bill of Rights Day, and call on all Americans to observe Human Rights Week beginning December 10, 1977. Let us reflect on the significance of the Bill of Rights, which has given purpose to our national life, and of the Universal Declaration of Human Rights, which holds the promise of greater liberty in the lives of all the inhabitants of our planet. Let us recommit ourselves, as individuals and as a Nation, to the realization of these rights, the guarantee of which we hold to be the essential purpose of the civil order.

IN WITNESS WHEREOF, I have hereunto set my hand this ninth day of December, in the year of our Lord nineteen hundred seventy-seven, and of the Independence of the United States of America the two hundred and second.

Jimmy Carter

[FR Doc.77–35644 Filed 12–9–77;3:09 pm]

rules and regulations

This section of the FEDERAL REGISTER contains regulatory documents having general applicability and legal effect most of which are keyed to and codified in the Code of Federal Regulations, which is published under 50 titles pursuant to 44 U.S.C. 1510.

The Code of Federal Regulations is sold by the Superintendent of Documents. Prices of new books are listed in the first FEDERAL REGISTER issue of each month.

[6325–01]

Title 5—Administrative Personnel

CHAPTER I—CIVIL SERVICE COMMISSION

PART 213—EXCEPTED SERVICE

Department of Agriculture

AGENCY: Civil Service Commission.

ACTION: Final rule.

SUMMARY: One additional position of Confidential Assistant to the General Counsel is excepted under Schedule C because it is confidential in nature.

EFFECTIVE DATE: December 13, 1977.

FOR FURTHER INFORMATION CONTACT:

William Bohling, Chief, 202–632–4533.

Accordingly, 5 CFR 213.3313(d)(4) is amended as set out below:

§ 213.3313 Department of Agriculture.

* * * * *

(d) *Office of the General Counsel.* * * *

(4) Two Confidential Assistants to the General Counsel.

(5 U.S.C. 3301, 3302; EO 10577, 3 CFR 1954–1958 Comp., p. 218.)

UNITED STATES CIVIL SERVICE COMMISSION,
JAMES C. SPRY,
Executive Assistant to the Commissioners.

[FR Doc.77–35390 Filed 12–12–77;8:45 am]

[6325–01]

PART 213—EXCEPTED SERVICE

Department of Health, Education, and Welfare

AGENCY: Civil Service Commission.

ACTION: Final rule.

SUMMARY: This amendment excepts from the competitive service under Schedule A 30 positions at GS–15 and below for employment not to exceed September 30, 1980, on the staff of the White House Conference on Families. These positions are excepted under Schedule A because it is not practicable to hold an examination for them.

EFFECTIVE DATE: December 13, 1977.

FOR FURTHER INFORMATION CONTACT:

William Bohling, 202–632–4533.

Accordingly, 5 CFR 213.3116(k) is added as set out below:

§ 213.3116 Department of Health, Education, and Welfare.

* * * * *

(k) *Office of Human Development Services.* (1) Thirty positions at GS–15 and below for employment not to exceed September 30, 1980, on the staff of the White House Conference on Families.

(5 U.S.C. 3301, 3302; EO 10577, 3 CFR 1954–1958 Comp., p. 218.)

UNITED STATES CIVIL SERVICE COMMISSION,
JAMES C. SPRY,
Executive Assistant to the Commissioners.

[FR Doc.77–35571 Filed 12–12–77;8:45 am]

[6325–01]

PART 213—EXCEPTED SERVICE

Department of Defense

AGENCY: Civil Service Commission.

ACTION: Final rule.

SUMMARY: This amendment excepts from the competitive service under Schedule C one position of Adviser to the Secretary and Deputy Secretary of Defense for NATO Affairs, Office of the Secretary, Department of Defense because the position is confidential in nature.

EFFECTIVE DATE: December 13, 1977.

FOR FURTHER INFORMATION:

On Position Authority Contact:

Thomas H. Meyer, Civil Service Commission, 202–632–4695.

On Position Content Contact:

Karl F. Becker, Director of Personnel and Security, Department of Defense, 202–697–4211.

Accordingly, 5 CFR 213.3306(a)(96) is added as set out below:

§ 213.3306 Department of Defense.

(a) *Office of the Secretary.* * * *

(96) Adviser to the Secretary and Deputy Secretary of Defense for NATO Affairs.

* * * * *

(5 U.S.C. 3301, 3302; E.O. 10577, 3 CFR 1954–1958 Comp., p. 218.)

UNITED STATES CIVIL SERVICE COMMISSION,
JAMES C. SPRY,
Executive Assistant to the Commissioners.

[FR Doc.77–35611 Filed 12–12–77;8:45 am]

[6325–01]

PART 213—EXCEPTED SERVICE

U.S. Information Agency

AGENCY: Civil Service Commission.

ACTION: Final rule.

SUMMARY: This addition excepts from the competitive service under Schedule one position of Special Assistance to the C one position of Special Assistant to the Assistant Director (Broadcasting) because the position is confidential in nature.

EFFECTIVE DATE: December 13, 1977.

FOR FURTHER INFORMATION CONTACT:

William Bohling, Chief, 202–632–4533.

Accordingly, 5 CFR 213.3328(m) is amended as follows:

§ 213.3328 U.S. Information Agency.

* * * * *

(m) One Special Assistant and one Secretarial Assistant to the Assistant Director (Broadcasting).

(5 U.S.C. 3301, 3302; EO 10577, 3 CFR 1954–1958 Comp., p. 218.)

UNITED STATES CIVIL SERVICE COMMISSISON,
JAMES C. SPRY,
Executive Assistant to the Commissioners.

[FR Doc.77–35684 Filed 12–12–77;8:45 am]

[3410–05]

Title 7—Agriculture

CHAPTER VII—AGRICULTURAL STABILIZATION AND CONSERVATION SERVICE (AGRICULTURAL ADJUSTMENT), DEPARTMENT OF AGRICULTURE

Miscellaneous Deletions

AGENCY: Agricultural Stabilization and Conservation Service, USDA.

ACTION: Final rule.

SUMMARY: The purpose of this document is to delete from the Code of Federal Regulations several regulations which are obsolete. Certain operating provisions concerning wheat and rice programs are no longer required. The terms of the Cropland Adjustment Program for 1966 Through 1969 have expired. The Processor Wheat Marketing Certificate Regulations are no longer in effect. Any obligation or liability incurred, or any rights received or accrued under these regulations are not affected by their deletion.

EFFECTIVE DATE: December 13, 1977.

FOR FURTHER INFORMATION CONTACT:

Adrian Crawford, Box 2415, Washington, D.C.. 20013, 202–447–2341.

SUPPLEMENTARY INFORMATION: Because this document merely deletes obsolete regulations, the relevant provisions of the Administrative Procedure Act (5 U.S.C. 553) providing for notice of proposed rulemaking, opportunity for

public participation and 30-day effective date requirements are inapplicable.

The following regulations contained in Title 7 CFR are deleted:

PART 728—WHEAT

§§ 728.310 through 728.526 [Deleted]

1. In Part 728—Wheat, Subpart—Regulations Pertaining to Farm Acreage Allotments, Yields and Wheat Certificate Program for 1968 and Subsequent Crop Years and Wheat Diversion Program for Crop Years 1969–70 (728.310 through 728.526) is deleted.

§§ 728.1141 through 728.1186 [Deleted]

Subpart—Wheat Marketing Quota Regulations for 1961 and Subsequent Crop Years (Sections 728.1141 through 728.1186), is deleted.

PART 730—RICE

§§ 730.33 through 730.87 and 730.1507 and 730.1508 [Deleted]

2. In Part 730—Rice, §§ 730.33 through 730.87 and 730.1507 and 730.1508 are deleted.

PART 751—LAND USE ADJUSTMENT PROGRAM [DELETED]

3. Part 751—Land Use Adjustment Program, is deleted.

PART 777—PROCESSOR WHEAT MARKETING CERTIFICATE REGULATIONS [DELETED]

4. Part 777—Processor Wheat Marketing Certificate Regulations, is deleted.

Signed at Washington, D.C., on December 5, 1977.

STEWART N. SMITH,
Acting Administrator, Agricultural Stabilization and Conservation Service.

[FR Doc.77-35375 Filed 12-12-77;8:45 am]

[3410-02]

CHAPTER IX—AGRICULTURAL MARKETING SERVICE (MARKETING AGREEMENTS AND ORDERS; FRUITS, VEGETABLES, NUTS), DEPARTMENT OF AGRICULTURE

[Orange, Grapefruit, Tangerines, and Tangelo Regulation 1, Amdt. 5]

PART 905—ORANGES, GRAPEFRUIT, TANGERINES, AND TANGELOS GROWN IN FLORIDA

Amendment of Tangerine and Tangelo Size Requirements

AGENCY: Agricultural Marketing Service, USDA.

ACTION: Amendment to final rule.

SUMMARY: This amendment, applicable to domestic fresh shipments of Florida tangerines, permits each handler to ship during the week December 5–11, 1977, a quantity of tangerines, not smaller than 2 4/16 inches in diameter (size 210), equal to 45 percent of the volume of tangerines the handler shipped in the most recent previous week of the current fiscal period and to ship unlimited quantities of size 210 tangerines during the period December 12, 1977, through September 24, 1978. Currently, any handler may handle only 30 percent of size 210 fruit during the week December 5–11 and no quantity of size 210 tangerines after such week. This amendment also lowers the minimum diameter requirement applicable to domestic fresh shipments of Florida tangelos from 2 9/16 inches to 2 8/16 inches effective December 12, 1977, through September 24, 1978. Specification of minimum size requirements for Florida tangerines and tangelos is necessary because of current and prospective supply and demand for the fruit, and to maintain orderly marketing conditions in the interest of producers and consumers.

DATES: This amendment is effective during the periods December 5 through 11, 1977, and December 12, 1977, through September 24, 1978.

FOR FURTHER INFORMATION CONTACT:

Charles R. Brader, 202-447-3545.

SUPPLEMENTARY INFORMATION: *Findings.* (1) Pursuant to the marketing agreement and Order No. 905, both as amended (7 CFR Part 905), regulating the handling of oranges, grapefruit, tangerines and tangelos grown in Florida, effective under the Agricultural Marketing Agreement Act of 1937, as amended (7 U.S.C. 601–674), and upon the basis of the recommendations of the committees established under the marketing agreement and order, and upon other information, it is found that the regulation of shipments of tangerines and tangelos, as hereinafter provided, will tend to effectuate the declared policy of the act.

(2) The amendment reflects the Department's appraisal of the current and prospective supply and market demand conditions for Florida tangerines and tangelos. It is designed to assure an ample supply of aceptable size fruit to consumers consistent with the quality and size composition of the crops. For the season through December 4, 1977, fresh shipments of Florida tangerines and tangelos totaled 1,876 carlots and 1,338 carlots, respectively.

(3) It is further found that it is impracticable and contrary to the public interest to give preliminary notice, engage in public rulemaking, and postpone the effective date until January 12, 1978 (5 U.S.C. 553), because of insufficient time between the date when information became available upon which this amendment is based and the effective date necessary to effectuate the declared policy of the act; and this amendment relieves restrictions on the handling of tangerines and tangelos.

Accordingly, it is found that the provisions of § 905.301 (42 FR 57947, 59367, 59955, 60918, 61590) should be and hereby are amended by revising in Table I of paragraph (a) the minimum size applicable to tangerines and tangelos and by revising paragraph (d), so that after the revisions the portion of Table I which is effective December 12, 1977, and paragraph (d) read as follows:

§ 905.301 Orange, Grapefruit, Tangerine, and Tangelo Regulation 1.

(a) * * *

* * * * *

TABLE I

Variety (1)	Regulation period (2)	Minimum grade (3)	Minimum diameter (inch) (4)
Tangerines: Dancy and similar, including Robinson	Dec. 12, 1977 to Sept. 24, 1978.	U.S. No. 1	2 4/16
Tangelos	do	do	2 8/16

(d) Notwithstanding the provisions of this section, during the period December 5 through December 11, 1977, no handler shall handle tangerines smaller than 2 9/16 inches in diameter, except that a quantity of tangerines smaller than such minimum size may be handled if (1) the volume of such smaller tangerines does not exceed 45 percent of the total volume of tangerines shipped by such handler during the last previous week, within the current fiscal period in which the handler shipped tangerines; and (2) such smaller tangerines are of a size not smaller than 2 4/16 inches in diameter, except that a diameter tolerance for such smaller tangerines is permitted as specified in paragraph (c) of this section.

* * * * *

(Secs. 1–19, 48 Stat. 31, as amended; 7 U.S.C. 601–674.)

Dated: December 7, 1977.

FLOYD F. HEDLUND,
Director, Fruit and Vegetable Division, Agricultural Marketing Service.

[FR Doc.77-35491 Filed 12-12-77;8:45 am]

[7590-01]

Title 10—Energy

CHAPTER I—NUCLEAR REGULATORY COMMISSION

PART 9—PUBLIC RECORDS

Release of Transcripts of Closed Commission Meetings

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission is amending its regulations to remove the requirement that counsel attend all closed Commission meetings to advise the Commission on possible withholding of transcripts of those meetings. It is no longer necessary for counsel to attend all closed Commission meeting due to Commission experience in operation under the Sunshine Act. Determination as to which, if any portions of transcripts are to be withheld from the public may now be made by the Commission or by the Commission's Secretary.

EFFECTIVE DATE: December 13, 1977.

FOR FURTHER INFORMATION CONTACT:

Stephen Ostrach, 202-254-8017.

SUPPLEMENTARY INFORMATION: Experience in operation under the Government in the Sunshine Act, 5 U.S.C. 552b, has shown that it is no longer necessary for counsel to attend all closed Commission meetings. Determination of which, if any, portions of transcripts or other items of information may be withheld pursuant to 10 CFR 9.104, may now be made by the Commission's Secretary, based upon prior Commission policy guidance, the advice of the Office of the General Counsel, and consultation with the Commission. The Commission has therefore decided to amend 10 CFR 9.108(c). This action is not intended to have any substantive effect on Commission policies under the Sunshine Act.

Accordingly, and because this amendment relates to matters of agency organization and practice, general notice of proposed rulemaking is unnecessary.

Pursuant to section 161 of the Atomic Energy Act of 1954, as amended, 5 U.S.C. 552(g) and 5 U.S.C. 553, 10 CFR 9.108(c) is amended to read as follows:

§ 9.108 Certification, transcripts, recordings, and minutes.

* * * * *

(c) In the case of any meeting closed pursuant to § 9.104, as the last item of business, the Commission shall determine which, if any, portions of the electronic recording, transcript or minutes and which, if any, items of information withheld pursuant to § 9.105(c) contain information which should be withheld pursuant to § 9.104; provided however, that should the Commission, upon the advice of the Office of the General Counsel and after consulting with the Commission, shall make such determinations.

* * * * *

Dated at Washington, D.C., this 6th day of December 1977.

For the Commision.

SAMUEL J. CHILK,
Secretary of the Commission.

[FR Doc.77-35286 Filed 12-12-77;8:45 am]

[4510-27]

Title 20—Employees' Benefits

CHAPTER IV—EMPLOYEES' COMPENSATION APPEALS BOARD, DEPARTMENT OF LABOR

PART 501—RULES OF PROCEDURE

Miscellaneous Amendments

AGENCY: Department of Labor.

ACTION: Final rules.

SUMMARY: The name of the Bureau of Employees' Compensation has been changed to the Office of Workers' Compensation Programs. This document is issued to conform the Rules of Procedure in Part 501 to the current terminology. At present the Director of the Office of Workers' Compensation Programs is required to submit the record of the case on appeal and accompanying pleadings to the Employees' Compensation Appeals Board within 30 days of service. In practice, this is insufficient time and there are many requests for extensions of time. Accordingly, the 30 days is changed to 60 days.

EFFECTIVE DATE: December 13, 1977.

FOR FURTHER INFORMATION CONTACT:

E. Gerald Lamboley, Acting Chairman, Employees' Compensation Appeals Board, 200 Constitution Avenue, NW., Washington, D.C. 20210, Telephone: 202-653-5031.

SUPPLEMENTARY INFORMATION: The "Rules of Procedure" of the Employees' Compensation Appeals Board do not now reflect the current structure of the agency responsible for administering the Federal Employees' Compensation Act (5 U.S.C. 8101 et seq.) (FECA). This agency is now called the Office of Workers' Compensation Programs, Employment Standards Administration, U.S. Department of Labor (OWCP). The present Board rules refer to the former name of the agency which was the Bureau of Employees' Compensation. The amendment is necessary to correctly reflect the name of the administering agency throughout the Rules.

Experience has demonstrated that a period of 60 rather than 30 days is requested for the Director of the Office to transmit the administrative record of an appeal and the appropriate accompanying pleading for consideration of the case to the Appeals Board. The 30-day requirement was promulgated in 1946 at the inception of the Employees' Compensation Appeals Board. At that time the administering agency had only limited field activity. During the intervening years the administering agency has expanded its operations nationwide and the volume of FECA appeals has significantly increased. A recent review of the Board's operations by a management engineering survey team of the Division of Management Assistance and Manpower Utilization of the Assistant Secretary for Administration and Management concluded that the changes here recommended are required. This 30-day requirement is no longer sufficient to afford administrative due process for such cases.

Because this amendment is a statement of policy and consists of rules of agency organization, procedure, and practice, the rulemaking procedure prescribed by 5 U.S.C. 553 is not required.

This document was prepared in the Office of the Solicitor under the direction of Laurie M. Streeter, Associate Solicitor for Employee Benefits, in consultation with E. Gerald Lamboley, Acting Chairman, Employees' Compensation Appeals Board.

Accordingly, 20 CFR Part 501 is amended in the following respect:

1. The nomenclature of the Rules of the Employees' Compensation Appeals Board is revised by substitution of the terms "Office of Workers' Compensation Programs" and "Office" respectively wherever the terms "Bureau of Employees' Compensation" and "Bureau" now appear.

2. Section 501.4 is revised to read as follows:

§ 501.4 Transmittal of Record.

(a) The Board shall serve upon the Director a copy of each application for review and any brief or supporting statement accompanying it. Within 60 days from the date of such service, the Director, through his legal representative, the Solicitor of Labor, shall transmit to the Board the record of the proceeding to which the application refers and a statement in support of his decision, or other pleading, as appropriate, signed on his behalf by his legal representative.

(b) On application of the Director, the Board may in its discretion extend the 60 day time for submittal to the Board of the record of proceedings and accompanying statement or pleading.

Signed at Washington, D.C., this 5th day of December, 1977.

ROBERT J. BROWN,
Under Secretary of Labor.

[FR Doc.77-35331 Filed 12-12-77;8:45 am]

[4110-03]

Title 21—Food and Drugs

CHAPTER I—FOOD AND DRUG ADMINISTRATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

SUBCHAPTER A—GENERAL

[Docket No. 77C-0381]

D&C BLUE NO. 6

Listing For Use in Surgical Sutures

AGENCY: Food and Drug Administration.

ACTION: Final rule.

SUMMARY: This document "permanently" lists D&C Blue No. 6 for safe use in coloring polyethylene terephthalate nonabsorbable sutures, plain or chromic collagen absorbable sutures and polypropylene nonabsorbable sutures for use in general or ophthalmic surgery. Davis and Geck Division, American Cyanamid Co.; Ethicon, Inc.; ASR Division, Cenco Medical Industries, Inc.; and the Toilet Goods Association, Inc., the Pharmaceutical Manufacturers Association, and the Certified Color Industry Committee, c/o Hazleton Laboratories, Inc., filed petitions for such use.

DATES: Effective date, January 13, 1978; objections by January 12, 1978.

ADDRESS: Written objections to the Hearing Clerk (HFC–20), Food and Drug Administration, Rm. 4–65, 5600 Fishers Lane, Rockville, Md. 20857.

FOR FURTHER INFORMATION CONTACT:

Gerad L. McCowin, Bureau of Foods (HFF–334), Food and Drug Administration, Department of Health, Education, and Welfare, 200 C St. SW., Washington, D.C. 20204, 202–472–5740.

SUPPLEMENTARY INFORMATION: A notice published in the FEDERAL REGISTER of April 11, 1973 (38 FR 9176) stated that a petition (CAP 6C0046) for the "permanent" listing of D&C Blue No. 6 as a color additive for coloring polyethylene terephthalate sutures for use in general surgery had been filed by Davis and Geck Division, American Cyanamid Co., Danbury, CT 06813 (now Pearl River, NY. 10965). A second notice published in the FEDERAL REGISTER of April 11, 1973 (38 FR 9176) stated that a petition (CAP 7C0048) for the "permanent" listing of D&C Blue No. 6 as a color additive for coloring plain or chromic collagen absorbable sutures for use in general and ophthalmic surgery had been filed by Ethicon, Inc., Somerville, N.J. 08876. A third notice published in the FEDERAL REGISTER of April 11, 1973 (38 FR 9176) stated that a petition (CAP 8C0054) for the "permanent" listing of D&C Blue No. 6 as a color additive for coloring polypropylene sutures for use in general surgery had been filed by Cenco Medical Industries, Inc., 4401 W. 26th St., Chicago, Ill. 60623 (now 4150 Laclede Ave., St. Louis, Mo.). A notice published in the FEDERAL REGISTER of November 20, 1968 (33 FR 17205) stated that a petition (CAP 57) for the "permanent" listing of D&C Blue No. 6 as a color additive for coloring externally applied drugs and cosmetics, sutures for use in general surgery, and ingested drugs and cosmetics has been filed by the Toilet Goods Association (now the Cosmetic, Toiletry, and Fragrance Association, Inc., 1133 15th St. N.W., Washington, D.C. 20005), the Pharmaceutical Manufacturers Association (1155 15th St. NW., Washington, D.C. 20005), and the Certified Color Industry Committee (now the Certified Color Manufacturers Association, 900 17th St. NW., Washington, D.C. 20006), c/o Hazelton Laboratories, Inc., Falls Church, Va. 22046. The petitions were filed pursuant to section 706 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 376).

The Commissioner of Food and Drugs, having evaluated the data in the petition and other relevant material, concludes that D&C Blue No. 6 is safe and suitable for use, under the conditions prescribed in this order, in coloring polyethylene terephthalate sutures for use in general surgery; plain or chromic collagen absorbable sutures for use in general and ophthalmic surgery; polypropylene sutures for use in general surgery; and that certification is necessary for the protection of the public health.

New § 74.1106, promulgated by this regulation, establishes specifications for the certification of batches of D&C Blue No. 6 that are more restrictive than those currently prescribed under § 82.1106 (21 CFR 82–1106). Additionally, the identity of the color has been revised to be consistent with current chemical nomenclature.

The identity nomenclature and the specifications currently prescribed in § 82.1106 become obsolete upon the effective date of new § 74.1106, and therefore § 82.1106 is being revoked.

When this regulation becomes effective, the provisional entry for "D&C Blue No. 6" in § 81.1(b) (21 CFR 81.1(b)) will no longer be considered to include drug use in dyeing surgical sutures. The regulation removes D&C Blue No. 6 from the provisional list.

Therefore, under the Federal Food, Drug, and Cosmetic Act (sec. 706(b), (c), and (d), 74 Stat. 399–403 (21 U.S.C. 376 (b), (c), and (d))) and the transitional provisions of the Color Additive Amendments of 1960 (Title II, Pub. L. 86–618; sec. 203, 74 Stat. 404–407 (21 U.S.C. 376 note)), and under authority delegated to the Commissioner (21 CFR 5.1), parts 74, 81, and 82 are amended as follows:

PART 74—LISTING OF COLOR ADDITIVES SUBJECT TO CERTIFICATION

1. Part 74 is amended:

a. By adding new § 74.1106 to Subpart B, to read as follows:

§ 74.1106 D&C Blue No. 6.

(a) *Identity.* (1) The color additive D&C Blue No. 6 is principally [Δ2.2′-biindoline]-3,3′-dione.

(b) *Specifications.* D&C Blue No. 6 shall conform to the following specifications and shall be free from impurities other than those named to the extent that such impurities may be avoided by good manufacturing practice:

Volatile matter (at 135°C), not more than 3 percent.

Matter insoluble in *N,N*-dimethylformamide, not more than 1 percent.

Isatin, not more than 0.3 percent.

Anthranilic acid, not more than 0.3 percent.

Indirubbin, not more than 1 percent.

Lead (as Pb), not more than 10 parts per million.

Arsenic (as As), not more than 3 parts per million.

Mercury (as Hg) not more than 1 part per million.

Pure color, not less than 95 percent.

(c) *Use and restriction.* (1) D&C Blue No. 6 may be safely used at a level, (i) not to exceed 0.2 percent by weight of the suture material for coloring polyethylene terephthalate surgical sutures for general surgical use; (ii) not to exceed 0.25 percent by weight of the suture material for coloring plain or chromic collagen absorbable sutures for general surgical use; (iii) not to exceed 0.5 percent by weight of the suture material for coloring plain or chromic collagen absorbable sutures for ophthalmic surgical use; and (iv) not to exceed 0.5 percent by weight of the suture material for coloring polypropylene surgical sutures for general surgical use.

(2) When the sutures are used for the purposes specified in their labeling, there is no migration of the color additive to the surrounding tissue.

(3) If the suture is a new drug, an approved new drug application, pursuant to section 505 of the act, is in effect for it.

(d) *Labeling.* The label of the color additive shall conform to the requirements of § 70.25 of this chapter.

(e) *Certification.* All batches of D&C Blue No. 6 shall be certified in accordance with regulations in Part 80 of this chapter.

PART 81—GENERAL SPECIFICATIONS AND GENERAL RESTRICTIONS FOR PROVISIONAL COLOR ADDITIVES FOR USE IN FOODS, DRUGS, AND COSMETICS

§ 81.1 [Amended]

2. Part 81 is amended in paragraph (b) of § 81.1 *Provisional lists of color additives*, by deleting the entry for D&C Blue No. 6 in the table.

PART 82—LISTING OF CERTIFIED PROVISIONALLY LISTED COLORS AND SPECIFICATIONS

§ 82.1106 [Revoked]

3. Part 82 is amended by revoking § 82.1106 *D&C Blue No. 6.*

Any person who will be adversely affected by the foregoing regulation may at any time on or before January 12, 1978, file with the Hearing Clerk (HFC–20), Food and Drug Administration, Rm. 4–65, 5600 Fishers Lane, Rockville, Md. 20857, written objections thereto. Objections shall show wherein the person filing will be adversely affected by the regulation, specify with particularity the provisions of the regulation deemed objectionable, and state the grounds for the objections. Objections shall be filed in accordance with the requirements of § 71.30 (21 CFR 71.30). If a hearing is requested, the objection shall state the issues for the hearing, be supported by grounds factually and legally sufficient to justify the relief sought, and include a detailed description and analysis of the factual information intended to be presented in support of the objections in the event that a hearing is held. Four copies of all documents shall be filed and identified with the Hearing Clerk docket

number found in brackets in the hearing of this regulation. Received objections may be seen in the office of the Hearing Clerk, between 9 a.m. and 4 p.m., Monday through Friday.

Effective date: This regulation shall become effective January 13, 1978, except as to any provisions that may be stayed by the filing of proper objections. Notice of the filing of objections or lack thereof will be announced by publication in the FEDERAL REGISTER.

(Sec. 706 (b), (c), and (d), 74 Stat. 399–403 (21 U.S.C. 376 (b), (c), and (d))) and (Title II, Pub. L. 86–618; sec. 203, 74 Stat. 404–407, U.S.C. 376 note).)

Dated: December 5, 1977.

WILLIAM F. RANDOLPH,
Acting Associate Commissioner for Compliance.

[FR Doc.77-35326 Filed 12-7-77;2:28 pm]

[4110-03]

[Docket No. 77C-0383]

PART 81—GENERAL SPECIFICATIONS AND GENERAL RESTRICTIONS FOR PROVISIONAL COLOR ADDITIVES FOR USE IN FOODS, DRUGS, AND COSMETICS

Provisional Listing of D&C Blue No. 6; Termination of Closing Date

AGENCY: Food and Drug Administration.

ACTION: Final rule.

SUMMARY: This document terminates the closing date for the provisional listing, and hence the approval, of the color additive D&C Blue No. 6 for coloring drugs and cosmetics. This action is taken because of the failure to comply with the conditions for continued provisional listing of the color for use in drugs and cosmetics. Provisional listing of D&C Blue No. 6 will be continued until January 31, 1978, for its use in coloring general and ophthalmic surgical sutures only. Color additive certifications for D&C Blue No. 6 will continue to be issued for its use in sutures.

EFFECTIVE DATE: December 13, 1977.

FOR FURTHER INFORMATION CONTACT:

Gerad L. McCowin, Bureau of Foods (HFF-334), Food and Drug Administration, Department of Health, Education, and Welfare, 200 C St. SW., Washington, D.C. 20204, 202-472-5740.

SUPPLEMENTARY INFORMATION: Section 81.1 (21 CFR 81.1) of the color additive regulations designates those color additives that are provisionally listed under section 203(b) of the transitional provisions of the Color Additive Amendments of 1960 (Title II, Pub. L. 86-618; 74 Stat. 404-407 (21 U.S.C. 376 note)) on an interim basis pending completion of scientific investigations needed for determinations about "permanent listing" in accordance with section 706 of the Federal Food, Drug, and Cosmetic Act (sec. 706, 74 Stat. 399-403 (21 U.S.C. 376)).

The color additive D&C Blue No. 6 has been in use for many years. D&C Blue No. 6 was approved for drug and cosmetic use as a permitted "coal-tar" color after enactment of the Federal Food, Drug, and Cosmetic Act in 1938 by regulation published in the FEDERAL REGISTER of May 9, 1939 (4 FR 1922).

Under the Color Additive Amendments of 1960, a color additive may be approved only if data establish that it is safe under its permitted conditions of use. The transitional provisions of those amendments provide, however, for provisional listing of color additives in use in 1960 for a period of time necessary to complete the scientific investigations needed to establish their safety. Under this procedure, D&C Blue No. 6 was previously listed for use in drugs and cosmetics on July 12, 1960, and appeared officially on the provisional list published in the FEDERAL REGISTER of October 12, 1960 (25 FR 9759). D&C Blue No. 6 is currently provisionally listed for use in drugs, cosmetics, and sutures with a closing date of January 31, 1981. The establishment of January 31, 1981 as the closing date for this color originated with a proposal published in the FEDERAL REGISTER of September 23, 1976 (41 FR 41860). The final regulations in response to that proposal were issued in the FEDERAL REGISTER of February 4, 1977 (42 FR 6992). The continued provisional listing of the color was conditioned on submission of final reports of chemistry data and analytical methods by August 3, 1977 and chronic toxicity feeding studies by August 4, 1980.

D&C Blue No. 6 is the subject of a petition (CAP 57) submitted by the Toilet Goods Association, Inc. (now the Cosmetic, Toiletry and Fragrance Association, 1133 15th St. NW., Washington, D.C. 20005); the Pharmaceutical Manufacturers Association (1155 15th St. NW., Washington, D.C. 20005); and the Certified Color Industry Committee (now the Certified Color Manufacturers Association, 900 17th St. NW., Washington, D.C. 20006), c/o Hazelton Laboratories, Inc., Falls Church, Va. 22046. This petition was filed for the use of D&C Blue No. 6 for coloring ingested drugs, surgical sutures, lipsticks, and externally applied drugs and cosmetics by a notice in the FEDERAL REGISTER of November 20, 1968 (33 FR 17205). This filing notice was amended by a notice published in the FEDERAL REGISTER of March 5, 1976 (41 FR 9584) to include use of the color in area of the eye. The D&C Blue No. 6 is also the subject of petitions for coloring surgical sutures. These petitions were submitted by the Davis and Geck Division, American Cyanamid Co., Pearl River, N.Y. 10965 (CAP 6C0046); by Ethicon, Inc., Somerville, N.J. 08876 (CAP 7C0048); and by ASR Division, Cenco Medical Industries, Inc., 4150 Laclede Ave., St. Louis, Mo. 63108 (CAP 8C0054), filed by notices in the FEDERAL REGISTER of April 11, 1973 (38 FR 9176). All petitions were filed under the provisions of section 706 of the Federal Food, Drug, and Cosmetic Act, as amended by the Color Additive Amendments of 1960.

D&C Blue No. 6 is a color additive that has been subject to the requirements of batch certification as provided by section 706(c) of the act. The Commissioner has concluded that batch certification of the color would continue to be necessary if the color were to be listed. The conditions for the continued provisional listing of the color were defined in the FEDERAL REGISTER of Feburary 4, 1977 under § 81.27(c) (21 CFR 81.27(c)). Adequate analytical methods were required for the development of specifications for batch certification and the definition of purity of the color used for toxicological testing. These data and analytical methods were to be submitted to FDA by August 3, 1977.

The petitioner agreed under the requirements of § 81.27(c)(2) (21 CFR 81.27(c)(2)) to provide the information necessary for the certification and the "permanent" listing for D&C Blue No. 6. In response to the regulation, the petitioner submitted data for analytical procedures for the identification of subsidiary colors. The agency has reviewed these submissions and finds that the data are inadequate to resolve the chemistry deficiencies for the color.

The analytical methods used to determine intermediates in D&C Blue No. 6 show the presence of unidentified substances when it is extracted with methanol, *N,N*-dimethylformamide, or tergitol TMN in water, followed by examination using thin layer chromatography. Continued provisional listing of the color has been conditioned upon the submission of satisfactory methods for the determination of these unidentified substances, as well as sufficient analytical data on commercial and pharmacological samples of D&C Blue No. 6. Approximately 3 percent of the color consists of unidentified substances that are insoluble in methanol, in *N,N*-dimethylformamide, or in tergitol TMN in water; but it is uncertain whether the same or different unknowns are found by the different extraction systems.

Identification of the unknown substances continues to be necessary for listing of the color in drugs and cosmetics. The petitioners have requested that FDA consider listing of the color for use in sutures on the basis of the available data and the minimal exposure represented by sutures. The Commissioner of Food and Drugs has concluded that the data are sufficient to support listing of D&C Blue No. 6 in sutures. Published elsewhere in this issue of the FEDERAL REGISTER is a regulation listing D&C Blue No. 6 for use in sutures. The use of D&C Blue No. 6 for coloring drugs and cosmetics was provisionally listed until October 31, 1977, pending resolution of chemistry questions concerning unidentified substances. The chemistry questions are not expected to be answered in the near future. Without a satisfactory analytical procedure to compare different batches of D&C Blue No. 6, it will be impossible to certify the color.

In addition to the chemistry questions, the petitioners were also requested to conduct new chronic feeding studies with the color. The petitioners have recently advised FDA that they do not plan to conduct chronic feeding studies with the color.

ACTION

The purpose of the transitional provisions of the Color Additive Amendments of 1960, (section 203) as noted above, "is to make possible, on an interim basis for a reasonable period, through provisional listings, the use of commercially established color additives to the extent consistent with the public health, pending the completion of the scientific investigations needed as a basis for making determinations as to listing of such additives." This provisional listing of previously marketed colors was to expire on a date, also referred to as the closing date, 2½ years after the effective date of the Amendments.

Section 203 of the Amendments further provides, however, that the closing date for the provisional listing may be postponed to a later date as considered "necessary to carry out the purpose of this section, if in the Secretary's judgment such action is consistent with the objective of carrying to completion in good faith, as soon as reasonably practicable, the scientific investigations necessary for making a determination as to listing such additive, or such specified use or uses thereof, under section 706 of the basic Act."

Under the transitional provision of the Amendments (section 203(a)(2)), the Commissioner may "terminate a postponement of the closing date at any time if he finds that such postponement should not have been granted, or that by reason of change in circumstances the basis for such postponement no longer exists, or that there has been a failure to comply with a requirement for submission of progress reports or with other conditions attached to such postponement." Based on the available information, the Commissioner concludes that the petitioners for D&C Blue No. 6 have not successfully answered all questions concerning the unknown substances in D&C Blue No. 6, nor are they expected to do so in the near future. The Commissioner further concludes that the provisional listing of D&C Blue No. 6 for coloring drugs and cosmetics should be terminated because of the failure to comply with the conditions for continued provisional listing of submission of chemistry data and analytical methods and the conduct of new chronic feeding studies. The closing date for D&C Blue No. 6 is being continued until January 31, 1978 for its use in surgical sutures to provide time for the issuance of listing regulations for that use.

Batches of D&C Blue No. 6 will continue to be certified for coloring sutures only. All other certificates heretofore issued for batches of D&C Blue No. 6 are revoked except for use of the color in the color to any drugs or cosmetics will surgical sutures, and the addition of cause such product to be adulterated within the meaning of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) and subject to regulatory action. This prohibition applies to the use of the straight color, its lakes, and mixtures of D&C Blue No. 6 and its lakes. The Commissioner concludes that the protection of the public health does not require the recall from the market of drugs and cosmetics containing the color additive, or the destruction of drugs or cosmetics in preparations to which the color additive has already been added.

Manufacturers of new drugs and new animal drugs (including certifiable antibiotics for animal use) that contain D&C Blue No. 6 may either delete the color additive or substitute a different color in accordance with the provisions of § 314.8 (d)(3) and (e) or § 514.8 (d)(3) and (e) (21 CFR 314.8 (d)(3) and (e) or 21 CFR 514.8 (d)(3) and (e)), as appropriate. The applicant shall submit data providing the new composition and showing that the change in composition does not interfere with any assay or other control procedures used in manufacturing the drug, or that the assay and control procedures have been revised to make them adequate. The applicant shall also submit data available to establish the stability of the revised formulation or, if the data are too limited to support a conclusion that the drug will retain its declared potency for a reasonable marketing period, a commitment to test the stability of marketed batches at reasonable intervals, to submit the data as they become available, and to recall from the market any batch found to fall outside the approved specifications for the drug.

The Commissioner is aware that supplies of alternative color additives may be difficult to obtain immediately. Consequently, drug and cosmetic labeling that states that the product contains "artificial color" or that specifically identifies D&C Blue No. 6 may continue to be used with the uncolored product or products containing alternative colors during the time necessary to obtain supplies of revised labeling or until December 13, 1978, whichever occurs first.

The Commissioner has carefully considered the environmental effects of this action, and because the action will not significantly affect the quality of the human environment, has concluded that an environmental impact statement is not required. A copy of the FDA environmental assessment, together with copies of the other documents mentioned above, are on file with the Hearing Clerk (HFC–20), Food and Drug Administration, Rm. 4–65, 5600 Fishers Lane, Rockville, Md. 20857.

Therefore, under the transitional provisions of the Color Additive Amendments of 1960 (Title II, Pub. L. 86–618; sec. 203, 74 Stat. 404–407 (21 U.S.C. 376 note)) and under authority delegated to the Commissioner (21 CFR 5.1), Part 81 is amended as follows:

1. In § 81.1 by revising the table entry for D&C Blue No. 6 in paragraph (b) to read as follows:

§ 81.1 Provisional lists of color additives.

* * * * *

(b) * * *

Color additive	Closing date	Restrictions
* * *	* * *	* * *
D. & C. Blue No. 6..	Jan. 31, 1978	Surgical suture use only.
* * *	* * *	* * *

2. In § 81.10 by adding new paragraph (n), to read as follows:

§ 81.10 Termination of provisional listings of color additives.

* * * * *

(n) *D&C Blue No. 6.* The Commissioner of Food and Drugs, having concluded that unresolved questions remain concerning the chemistry of unidentified minor components, hereby terminates the provisional listing of D&C Blue No. 6 for use in drugs and cosmetics.

§ 81.27 [Amended]

3. In § 81.27 *Conditions of provisional listing of additives,* by deleting the entry for D&C Blue No. 6 in pargaraphs (c) and (d).

4. In § 81.30 by adding new paragraph (o), to read as follows:

§ 81.30 Cancellation of certificates.

* * * * *

(o)(1) Certificates issued for D&C Blue No. 6 and all mixtures containing this color additive are cancelled insofar as its use in drugs and cosmetics is concerned and have no effect after December 13, 1977, and use of the color additive in the manufacture of drugs or cosmetics after this date will result in adulteration. The color will continue to be certified for use in the coloring of surgical sutures.

(2) The Commissioner finds, on the basis of the scientific evidence before him, that no action has to be taken to remove from the market drugs andcosmetics containing the color additive.

Notice and public procedure are not necessary prerequisites to the promulgation of this regulation because section 203(d)(2) of Pub. L. 86–618 so provides.

Because this action is final (not proposed), an economic impact evaluation is not required by Executive Order 11821 (3A CFR, 1975 Compilation, p. 203).

Effective date: This regulation shall be effective December 13, 1977.

(Sec. 203, 74 Stat. 404–407 (21 U.S.C. 376 note))

Dated: December 5, 1977.

WILLIAM F. RANDOLPH,
Acting Associate Commissioner for Compliance.

[FR Doc.77–35325 Filed 12–7–77;2:28 pm]

[4110-03]

[Docket No. 77C-0382]

PART 81—GENERAL SPECIFICATIONS AND GENERAL RESTRICTIONS FOR PROVISIONAL COLOR ADDITIVES FOR USE IN FOODS, DRUGS, AND COSMETICS

PART 82—LISTING OF CERTIFIED PROVISIONALLY LISTED COLORS AND SPECIFICATIONS

Termination of Provisional Listing and Certification of D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13

AGENCY: Food and Drug Administration.

ACTION: Final rule.

SUMMARY: This document terminates the closing date for the provisional listing, and hence the approval, of the color additives D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13 for coloring drugs and cosmetics. All color additive certificates for each of these colors are being cancelled. The closing date is being terminated because the color additive petition for these colors has been withdrawn, and there no longer exists a basis for their continued provisional listing. This action is effective immediately because data raise concerns about the safety of these colors. D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13 may not be added to drugs and cosmetics after December 13, 1977.

EFFECTIVE DATE: December 13, 1977.

FOR FURTHER INFORMATION CONTACT:

Gerad L. McCowin, Bureau of Foods (HFF-334), Food and Drug Administration, Department of Health, Education, and Welfare, 200 C St. SW., Washington, D.C. 20204, 202-472-5740.

SUPPLEMENTARY INFORMATION: Under section 706 of the act (21 U.S.C. 376), the Color Additive Amendments of 1960, a color additive may be approved only if data establish that it is safe under its intended conditions of use (sec. 706, 74 Stat. 399-403 (21 U.S.C. 376)). The transitional provisions of the Color Additive Amendments, however, "make possible, on an interim basis for a reasonable period, through provisional listing, the use of commercially established color additives to the extent consistent with the public health, pending the completion of the scientific investigations needed as a basis for making determinations as to listing of such additives." (Title II, Pub. L. 86-618; sec. 203, 74 Stat. 404-407 (21 U.S.C. 376 note).) This provisional listing of previously marketed colors was to expire on the date, also referred to as the closing date, 2½ years after the effective date of the amendments.

Section 203 of the Amendments further provides, however, that the closing date for the provisional listing can be postponed to a later date as considered "necessary to carry out the purpose of this section, if in the Secretary's judgment such action is consistent with the objective of carrying to completion in good faith, as soon as reasonably practicable, the scientific investigations necessary for making a determination as to listing such additive, or such specified use or uses thereof, under section 706 of the basic Act." Section 81.1 (21 CFR 81.1) of the color additive regulations designates those color additives that are provisionally listed.

A notice published in the FEDERAL REGISTER of August 6, 1973 (38 FR 21199) stated that a petition (CAP 5C0029) for the "permanent" listing of D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13 had been filed by the Cosmetic, Toiletry and Fragrance Association, Inc. (CTFA), 1133 15th St. NW., Washington, D.C. 20005, %Hazleton Laboratories, Inc., P.O. Box 30, Falls Church, Va. 22046. The petition was filed pursuant to section 706 of the act.

On October 21, 1977, CTFA wrote to FDA requesting that the color additive petition for D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13 be withdrawn without prejudice to future filing. On October 5, 1977, CTFA had advised FDA that it did not intend to conduct new chronic feeding studies with these colors as required by § 81.27 (d) (21 CFR 81.27(d)). Published elsewhere in this issue of the FEDERAL REGISTER is a notice announcing the withdrawal of the petition for D&C Red Nos. 10 through 13, while the regulations set forth below terminate the provisional listing of these four colors for use as color additives in drugs and cosmetics effective December 13, 1977, because there are no pending color additive petitions or progress reports for them as required by § 81.1. In addition, as will be discussed, the Commissioner is concerned that the continued use of these four colors in drugs and cosmetics may pose a hazard to the public health.

The colors D&C Red Nos. 10, 11, 12, and 13 have been used as color additives for many years. D&C Red Nos. 10, 11, 12, and 13 were approved for certification for drug and cosmetic use as permitted "coal-tar" colors after enactment of the Federal Food, Drug, and Cosmetic Act of 1938 by order published in the FEDERAL REGISTER of May 9, 1939 (4 FR 1922). Under the Color Additive Amendments, D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13 were provisionally listed for use in drugs and cosmetics on July 12, 1960, and appeared officially on the provisional list published in the FEDERAL REGISTER of October 12, 1960 (25 FR 9759). Since then, D&C Red Nos. 10, 11, 12, and 13 have been provisionally listed for use in drugs and cosmetics, with a present closing date of January 31, 1981. The establishment of January 31, 1981 as the closing date for these four colors pending submission of a final report on new chronic feeding studies originated with a proposal published in the FEDERAL REGISTER of September 23, 1976 (41 FR 41860). The final regulations in response to that proposal were issued in the FEDERAL REGISTER of February 4, 1977 (42 FR 6992).

On November 23, 1976, FDA received a comment to the proposal of September 23, 1976, which cited a reference from "Occupational and Environmental Cancers of the Urinary System," stating that according to the author, Dr. Hueper, there is reason to believe that azo dyes contain various carcinogenic amines, including β-naphthylamine. The comment objected to the listing of azo dyes. β-naphthylamine has long been known to be a carcinogen, causing bladder cancer in humans as well as test animals. Two colors, Ext. D&C Yellow No. 9 and Ext. D&C Yellow No. 10, which were synthesized from β-naphthylamine, were prohibited by FDA from use in externally applied drugs and cosmetics because of a finding that they might contain β-naphthylamine. Accordingly, the Commissioner has viewed with concern the possibility that any color additive for food, drug, or cosmetic use might contain β-naphthylamine.

β-Naphthylamine is an intermediate that is used in producing diazotized compounds for industrial use. These compounds are not, however, used in the production of color additives intended for use in food, drugs, or cosmetics. Therefore, β-naphthylamine would not be expected to be present in color additives, except as a contaminant.

Upon review of the data on each of the azo dyes, the Commissioner concluded that there were five colors that could possibly contain low levels of β-naphthylamine as impurities—four provisionally listed colors, D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13, and a "permanently" listed color, D&C Red No. 34. These colors are synthesized from 2-amino-1-naphthalenesulfonic acid which, according to some information, might contain β-naphthylamine.

To resolve the questions raised by the comment, the Commissioner requested that the petitioner promptly provide to FDA data about the possible contamination of 2-amino-1-naphthalenesulfonic acid and each of the five colors with β-naphthylamine. In addition, FDA began some laboratory investigations of its own, including analysis of samples of each of the five colors and 2-amino-1-naphthalenesulfonic acid for the presence of β-naphthylamine. Copies of correspondence between the petitioners and FDA and memoranda of meetings and telephone conversations concerning this matter are on public display at the office of the Hearing Clerk (HFC-20), Food and Drug Administration, Room 4-65, 5600 Fishers Lane, Rockville, Md. 20857.

The liscussion and regulations stated in this document concern the Commissioner's conclusions on the provisionally listed color additives D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13. The status of the "permanently" listed color additive D&C Red No. 34 is being considered separately and will be the subject of a future FEDERAL REGISTER document.

D&C Red No. 10 is an azo compound that is formed by the diazotization of 2-amino-1-naphthalenesulfonic acid (Tobias acid) and subsequent coupling with β-naphthol. D&C Red No. 10 is the monosodium salt of 2-(2-hydroxy-1-naphthylazo)-1-naphthalenesulfonic acid. D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13 are the calcium, barium, and strontium salts, respectively, of 2-(2-hydroxy-1-naphthylazo)-1-naphthalenesulfonic acid.

The data for Tobias acid show that it contains small amounts of β-naphthylamine. The β-naphthylamine is considered to be present primarily as a result of incomplete reactions in the manufacture of Tobias acid. Tobias acid is manufactured in two steps. First, β-naphthol is sulfonated by reacting with sulfuric acid to form 2-hydroxy-1-naphthalenesulfonic acid. Second, the 2-hydroxy-1-naphthalenesulfonic acid is aminated by reacting with ammonia or ammonium bisulfite to form 2-amino-1-naphthalenesulfonic acid (Tobias acid).

The sulfonation step in the production of the Tobias acid never results in 100-percent conversion of β-naphthol to 2-hydroxy-1-naphthalenesulfonic acid. As a result, there is always some free β-naphthol present in the 2-hydroxy-1-naphthalenesulfonic acid during the subsequent amination step of the process. Because β-naphthol can be aminated to form β-naphthylamine, any β-naphthol that might be present would be expected to react during the amination step of the process for Tobias acid to produce β-naphthylamine.

Three samples of Tobias acid, one each from three color manufacturers, were analyzed by the Division of Color Technology, Food and Drug Administration. β-Naphthylamine was found in each of the three samples. In addition, analytical data on many batches of Tobias acid have been submitted by the producers, the Sherwin-Williams Co. and the American Cyanamid Co., and the data show the presence of β-naphthylamine.

The data submitted by the manufacturers show that levels of β-naphthylamine commonly detected in production lots of Tobias acid are between 100 and 500 parts per million (ppm). The current data sheets for the Tobias acid products by those two companies contain a specification of less than 0.1 percent (1,000 parts per million (ppm)) for β-naphthylamine. These levels were confirmed by FDA analyses showing levels of β-naphthylamine of 300, 400, and 1,100 ppm.

In addition, Sherwin-Williams reported that there is an apparent hydrolysis of Tobias acid to form β-napthylamine. They had extracted a solution of the sodium salt of Tobias acid with water until there was no extractable β-naphthylamine. This water solution of the Tobias acid was then permitted to stand overnight. Reanalysis of this solution on the following day disclosed 33 ppm β-naphthylamine. The firm's scientists concluded that Tobias acid dissolved in water as the sodium salt slowly hydrolyzes to form β-naphthylamine and estimated that the amount of hydrolysis was approximately 0.001 to 0.002 percent. A similar study was conducted using ethanol as the solvent. The firm's scientists concluded from this study that contact with ethanol causes Tobias acid to hydrolyze to β-naphthylamine at a greater rate.

Free Tobias acid in these four colors would be expected to hydrolyze much in the same way as for the pure Tobias acid, as discussed above, yielding free β-naphthylamine. The specifications used in the certification of these four colors contain a limitation of "not more than 0.2 percent" for 2-amino-1-naphthalenesulfonic acid (Tobias acid). Using analytical methodology sensitive to 0.05 percent, samples of these colors submitted for certification are generally found to contain less than 0.05 percent Tobias acid (nondetectable); however, as much as 0.13 percent Tobias acid has been found in some lots. If, as suggested by scientists from Sherwin-Williams, 0.001 to 0.002 percent of this Tobias acid were to hydrolyze to yield free β-naphthylamine, as much as 0.026 ppm free β-naphthylamine might be expected to be found in these colors as a result of the hydrolysis.

Analysis for free β-naphthylamine in each of the four colors by FDA's laboratories was hampered by difficulties with the analytical methods and has not shown free β-naphthylamine. The primary difficulty is one of separating β-naphthylamine from the color.

During a meeting with representatives of the Cosmetic, Toiletry, and Fragrance Association, agency personnel were advised that American Cyanamid had reported finding 1.8 to 3.6 ppm β-naphthylamine in their technical-grade lithol red. This color is not used for drugs and cosmetics, but is used in industry, e.g., as a component of paints and printing inks. Although the exact identity of the lithol reds tested by American Cyanamid is unknown, lithol reds are generally sufficiently similar to the four colors, D&C Red Nos. 10, 11, 12, and 13, to permit a conclusion that the latter colors would also contain free β-naphthylamine. The agency received a letter of June 16, 1977, from the petitioner, transmitting the results of analysis of two laboratory batches of D&C Red No. 10. One batch was found to contain 7.0 and 5.8 ppm β-naphthylamine in duplicate analyses of the batch; no β-naphthylamine was found in the second batch.

Theoretically, free β-naphthylamine in Tobias acid would be expected to diazotize to some extent and couple with β-naphthol to form a subsidiary color. The FDA Division of Color Technology conducted experiments to determine whether any subsidiary colors formed from β-naphthylamine might be present in these four colors. Samples of the subsidiary color formed from β-naphthylamine and β-napthol were prepared by FDA chemists and used as standards for the analysis of previously certified batches of each of the four colors—D&C Red Nos. 10 through 13. These analyses revealed the presence of the subsidiary color at levels ranging from 25 to 276 ppm. The identity of the β-naphthylamine subsidiary color was confirmed by comparison with the infrared spectra, the visible spectra, and the thin-layer chromatographic R_f (retardation factor) value of authentic samples previously prepared by the Division of Color Technology, Food and Drug Administration. The presence of subsidiary colors produced from β-napthylamine raises concern about the safety of these four colors because their metabolism after ingestion or other degradation would yield free β-naphthylamine. The data for metabolism of azo dyes establish that the azo bond is broken during metabolism yielding the constituent amine.

The toxicity of β-naphthylamine is well known—it has been considered a carcinogen for many years. In its evaluation of the data on β-naphthylamine, the International Agency for Research on Cancer stated that 2-naphthylamine, another name for β-naphthylamine, is carcinogenic in the mouse, hamster, dog, and monkey. In addition, there are considerable epidemiological data that establish that β-naphthylamine is a bladder carcinogen in humans (IRAC Monographs, Vol. 4, 1974).

The Commisioner finds that the use of D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13 as color additives could result in exposure of the consumer to β-naphthylamine. There is free β-naphthylamine at appreciable levels (up to 1,100 ppm) in the intermediate used to produce the color. There is a possibility that the intermediate Tobias acid, which can be present in the finished colors at levels as great as 2,000 ppm, may hydrolyze to form free β-naphthylamine. β-Naphthylamine was found in a laboratory sample of D&C Red No. 10. The chemistry data establish that D&C Red Nos. 10 through 13 contain a subsidiary color produced from β-naphthylamine that would be expected to yield β-naphthylamine when metabolized or degraded. The evidence of the presence of this subsidiary color supports a conclusion that each of the four colors does contain some free β-naphthylamine, particularly in view of the finding of β-naphthylamine in D&C Red No. 10.

Under the transitional provisions of the Color Additive Amendments (section 203(a)(2)), the Commissioner may "terminate the postponement of the closing date at any time if he finds that such postponement should not have been granted, or that by reason of change in circumstances the basis for such postponement no longer exists, or that there has been a failure to comply with a requirement for submission of progress reports or with other conditions attached to such postponement." In view of the petitioner's withdrawal of the petition for these four colors and its statement that it does not intend to conduct chronic feeding studies with D&C Red No. 10 through 13 as required by § 81.27 (d) as a condition of continued provi-

sional listing, the Commissioner concludes that there no longer exists a basis for the provisional listing of these four colors.

The transitional provisions of the Amendments (section 203(d)(1)(E)) "provide for the termination of a provisional listing or deemed provisional listing of a color additive or particular use thereof forthwith whenever" such action is necessary to protect the public health. On the basis of the available data, the Commissioner concludes that the colors D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13 would be expected to contain β-naphthylamine, a known carcinogen, or to yield β-naphthylamine when ingested. Accordingly, under section 203 (d)(1)(E)) of the Amendments, the Commissioner concludes that the provisional listing of D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13 for use in drugs and cosmetics should be terminated immediately because such action is necessary to protect the public health.

All certificates heretofore issued for batches of D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13 are revoked, and the addition of these colors to any drugs or cosmetics after December 13, 1977, will cause such product to be adulterated within the meaning of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) and subject to regulatory action. This prohibition applies to the use of the straight colors, their lakes, and mixtures of one or more of these colors: D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13, or their lakes. The Commissioner concludes that the protection of the public health does not require the recall from the market of drugs and cosmetics containing the color additives, or the destruction of drugs or cosmetics in preparation to which the color additives have already been added.

Manufacturers of new drugs and new animal drugs (including certifiable antibiotics for animal use) that contain D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, or D&C Red No. 13 may either delete the color additives or substitute a different color in accordance with the provisions of § 314.8 (d)(3) and (e) or § 514.8 (d)(3) and (e) (21 CFR 314.8 (d)(3) and (e) or 21 CFR 514.8 (d)(3) and (e)) as appropriate. The applicant shall submit data providing the new composition and showing that the change in composition does not interfere with any assay or other control procedures used in manufacturing the drug, or that the assay and control procedures have been revised to make them adequate. The applicant shall also submit data available to establish the stability of the revised formulation or, if the data are too limited to support a conclusion that the drug will retain its declared potency for a reasonable marketing period, a commitment to test the stability of marketed batches at reasonable intervals, to submit the data as they become available, and to recall from the market any batch found to fall outside the approved specifications for the drug.

The Commissioner is aware that the supplies of alternative color additives may be difficult to obtain immediately. Consequently, drug and cosmetic labeling that states that the product contains "artificial color" or that specifically identifies D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, or D&C Red No. 13 may continue to be used with the uncolored product or products containing alternative colors during the time necessary to obtain supplies of revised labeling or until December 13, 1978, whichever occurs first.

The Commissioner has carefully considered the environmental effects of this action, and because the action will not significantly affect the quality of the human environment, has concluded that an environmental impact statement is not required. A copy of the FDA environmental assessment, together with copies of the other documents mentioned above, are on file with the Hearing Clerk (HFC–20), Food and Drug Administration, Room 4–65, 5600 Fishers Lane, Rockville, Md. 20857.

Therefore, under the transitional provisions of the Color Additive Amendments of 1960 (Title II, Pub. L. 86–618, sec. 203, 74 Stat. 404–407 (21 U.S.C. 376 note)) and under authority delegated to the Commissioner (21 CFR 5.1), Parts 81 and 82 are amended as follows:

1. Part 81 is amended:

§ 81.1 [Amended]

a. In § 81.1 *Provisional lists of color additives,* in paragraph (b), by deleting the table entries for D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13.

b. In § 81.10 by adding new paragraph (h), to read as follows:

§ 81.10 Termination of provisional listing of color additives.

* * * * *

(h) *D&C Red Nos. 10, 11, 12, and 13.* The petition for these color additives was withdrawn so that there no longer exists a basis for their continued provisional listing. In addition, the Commissioner has learned of the possible contamination of D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13 with β-naphthylamine. The Commissioner concludes that these colors cannot be produced with any reasonable assurance that they will not contain β-naphthylamine as an impurity or not yield β-naphthylamine from the metabolism of subsidiary colors present in them. β-Naphthylamine is a known carcinogen; therefore, there is no scientific evidence that will support a safe tolerance for these colors in drugs or cosmetics. The Commissioner of Food and Drugs, upon withdrawal of the petition for their use and in order to protect the public health, hereby terminates the provisional listing of D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13 for use in drugs and cosmetics, effective December 13, 1977.

§ 81.25 [Amended]

c. In § 81.25 *Temporary tolerances,* paragraph (a) is amended by deleting the table entries for D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13; and paragraph (b)(1) is amended by deleting the tabular entry for D&C Red No. 12.

§ 81.27 [Amended]

d. In § 81.27 *Conditions of provisional listing,* paragraph (d) is amended by deleting the entries for D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13 from the introductory text.

e. In § 81.30, by adding new paragraph (k) to read as follows:

§ 81.30 Cancellation of certificates.

* * * * *

(k) (1) Certificates issued for D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13, their lakes and all mixtures containing these color additives or their lakes are cancelled and have no effect after December 13, 1977, and use of these color additives in the manufacture of drugs or cosmetics after this date will result in adulteration.

(2) The Commissioner finds, on the basis of the scientific evidence before him, that no action has to be taken to remove from the market, drug and cosmetic products containing the color additives.

2. Part 82 is amended:

§ 82.1310 [Revoked]

a. By revoking § 82.1310 *D&C Red No. 10.*

§ 82.1311 [Revoked]

b. By revoking § 82.1311 *D&C Red No. 11.*

§ 82.1312 [Revoked]

c. By revoking § 82.1312 *D&C Red No. 12.*

§ 82.1313 [Revoked]

d. By revoking § 82.1313 *D&C Red No. 13.*

Notice and public procedure are not necessary prerequisities to the promulgation of these regulations because section 203(d)(2) of Pub. L. 86–618 so provides.

NOTE.—Because this action is final (not proposed), an economic impact evaluation is not required under Executive Orders 11821 and 11949 and OMB Circular A–107.

Effective date. These regulations shall be effective on December 13, 1977.

(Sec. 203, 74 Stat. 404–407 (21 U.S.C. 376 note).)

Dated: December 5, 1977.

WILLIAM F. RANDOLPH,
Acting Associate Commissioner for Compliance.

[FR Doc.77-35324 Filed 12-7-77;2:28 pm]

[4110–03]

[Docket No. 77C–0384]

PART 81—GENERAL SPECIFICATIONS AND GENERAL RESTRICTIONS FOR PROVISIONAL COLOR ADDITIVES FOR USE IN FOODS, DRUGS, AND COSMETICS

PART 82—LISTING OF CERTIFIED PROVISIONALLY LISTED COLORS AND SPECIFICATIONS

Provisional Listing of Ext. D&C Yellow No. 1; Termination of Closing Date

AGENCY: Food and Drug Administration.

ACTION: Final rule.

SUMMARY: This document terminates the closing date for the provisional listing, and hence the approval, of the color additive Ext. D&C Yellow No. 1 for use in externally applied drugs and cosmetics. All color additive certificates for this color are being cancelled. The closing date is being terminated because the color additive contains 4-aminobiphenyl, a known carcinogen. Ext. D&C Yellow No. 1 may not be used in externally applied drugs and cosmetics after December 13, 1977.

DATE: Effective December 13, 1977.

FOR FURTHER INFORMATION CONTACT:

Gerad L. McCowin, Bureau of Foods (HFF–334), Food and Drug Administration, Department of Health, Education, and Welfare, 200 C Street SW., Washington, D.C. 20204, 202–472–5740.

SUPPLEMENTARY INFORMATION: The Color Additive Amendments of 1960 provide that a color additive may be approved only if data establish that it is safe under its permitted conditions of use. Section 203(b) of the transitional provisions of the Color Additive Amendments of 1960 (Title II, Pub. L. 86–618, 74 Stat. 404–407 (21 U.S.C. 376 note)) provides, however, for provisional listing of color additives in use in 1960 on an interim basis pending completion of scientific investigations needed for determinations about "permanent listing" in accordance with section 706 of the Federal Food, Drug, and Cosmetic Act (sec. 706, 74 Stat. 399–403 (21 U.S.C. 376)). Section 81.1 (21 CFR 81.1) of the color additive regulations designates those colors that are provisionally listed.

The color additive Ext. D&C Yellow No. 1 has been in use for many years, having been listed for use in externally applied drugs and cosmetics as a permitted "coal-tar" color after enactment of the FEDERAL REGISTER of May 9, 1939 (4 FR 1922). Ext. D&C Yellow No. 1 was provisionally listed for use in externally applied drugs and cosmetics, on July 12, 1960, and appeared officially on the provisional list published in the FEDERAL REGISTER of October 12, 1960 (25 FR 9759). Ext. D&C Yellow No. 1 is currently provisionally listed under § 81.1 (c) (21 CFR 81.1(c)) for use in externally applied drugs and cosmetics with a closing date of October 31, 1977. The establishment of October 31, 1977, as the closing date for this color originated with a proposal published in the FEDERAL REGISTER of September 23, 1976 (41 FR 41860). The final regulations in response to that proposal were issued in the FEDERAL REGISTER of February 4, 1977 (42 FR 6992).

On November 23, 1976, the FDA received a letter that cited a reference from "Occupational and Environmental Cancers of the Urinary System," stating that according to the author, Dr. Hueper, there is reason to believe that azo dyes contain various carcinogenic amines, including 4-aminobiphenyl. This letter had been filed as a comment in response to the September 23, 1976, proposal concerning the extension of the closing date for the provisionally listed color additives. The comment objected to the listing of azo dyes.

Upon review of the data, the Commissioner of Food and Drugs concluded that Ext. D&C Yellow No. 1 could possibly contain low levels of 4-aminobiphenyl and benzidine as impurities. The synthesis of the color utilizes the chemical intermediate, diphenylamine, which might contain free 4-aminobiphenyl as a result of the manufacturing process of the intermediate. In addition to the likelihood of free 4-aminobiphenyl being present in the color additive, there is also the possibility of chemical formation of another carcinogen, benzidine. The chemically active 4-aminobiphenyl would be expected to react with diazotized metanilic acid yielding a product that could subsequently decompose to release benzidine.

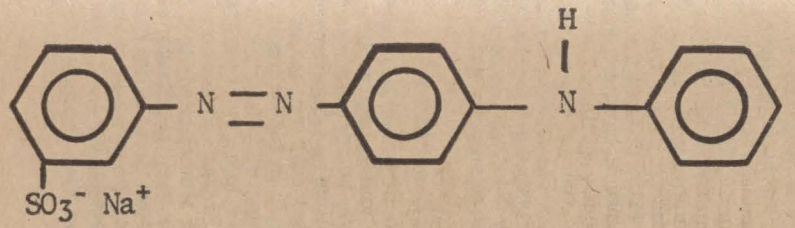
To resolve the questions raised by the comment, the Commissioner requested that the petitioner promptly provide to FDA data about the possible contamination of the intermediate diphenylamine with 4-aminobiphenyl and the possible formation of benzidine. In addition, FDA requested information from the manufacturer of diphenylamine relative to the presence of 4-aminobiphenyl in the product.

The Commissioner continued the provisional listing for Ext. D&C Yellow No. 1 because the short period of time required to resolve this question did not present a hazard to the public health. The Commissioner had noted that if data became available, either from investigation by FDA or from the petitioner, verifying that 4-aminobiphenyl or benzidine is present in the color additive, action would be taken to protect the public health.

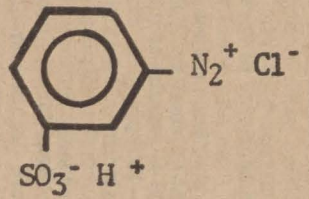
CHEMISTRY

The color Ext. D&C Yellow No. 1 is an azo compound that is formed by the diazotization of metanilic acid and the subsequent coupling with diphenylamine. The chemical structures for the color, its intermediates, and the possible contaminants are as follows:

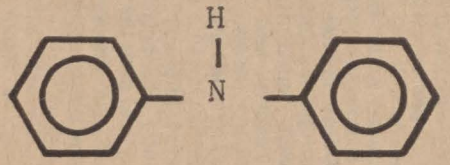
Ext. D&C Yellow No. 1



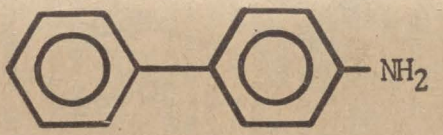
Diazotized Metanilic Acid



Diphenylamine

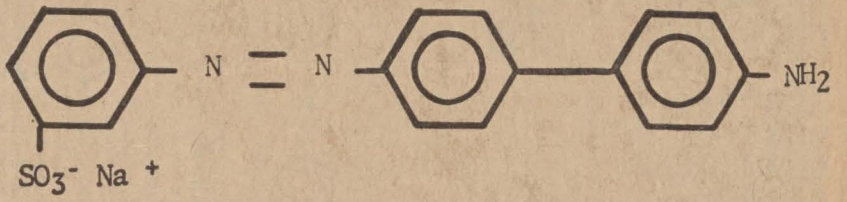


4-Aminobiphenyl (4-ABP)



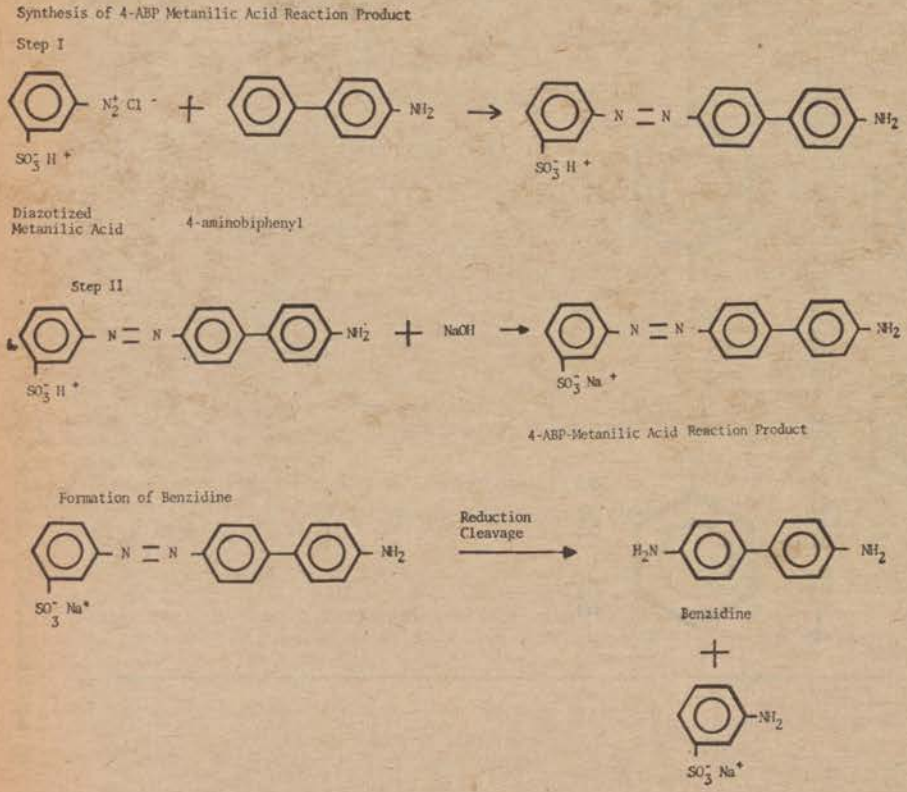
Benzidine
(4,4'-Diaminobiphenyl)

4-ABP-Metanilic Acid Reaction Product



The data provided for diphenylamine by the manufacturer show that it contains small amounts of 4-aminobiphenyl. The 4-aminobiphenyl is considered to be present primarily as a result of the manufacturing process for diphenylamine. The chemical formation of the carcinogenic byproduct is not currently understood, and literature references on its formation are therefore not available.

The chemical interaction of 4-aminobiphenyl (4-ABP) with diazotized metanilic acid leads to the formation of a possible reaction product that can decompose to release an additional carcinogen, benzidine. The chemical reactions that are involved may be depicted as follows:



Analytical data on typical production batches of diphenylamine have been submitted by a producer, the American Cyanimid Co., which show the presence of 4-aminobiphenyl in each of the sampled batches. The data indicated that levels of 4-aminobiphenyl commonly detected in production lots of diphenylamine are between 23 and 48 parts per million (ppm). In addition, current data sheets for diphenylamine produced by this company contain a specification of less than 0.01 percent (100 ppm) for 4-aminobiphenyl.

The producer could not explain the chemistry that would result in the formation of 4-aminobiphenyl in the manufacture of diphenylamine. During a meeting with representatives of the Cosmetic, Toiletry, and Fragrance Association, agency personnel were advised that there is currently no available source of diphenylamine that would not contain 4-aminobiphenyl as a contaminant. Recently, the petitioner has submitted analytical data that confirmed the presence of 4-aminobiphenyl in the finished color additive by sensitive analytical methods.

The presence of 4-ABP could lead to certain chemical reactions involving 4-aminobiphenyl producing a reaction product that can degrade to form an additional carcinogen, benzidine, in the finished color and/or product. During the manufacturing process a chemical reaction of 4-aminobiphenyl with diazotized metanilic acid can be predicted that would produce a 4-aminobiphenyl-diazotized metanilic reaction product. Subsequent conditions may be encountered that cause breakage of the azo bond in the reaction product and the release of the carcinogen benzidine. The probability for free benzidine in the color or its formation from additional chemical action on the reaction product is supported by information showing that free 4-aminobiphenyl is present at appreciable levels (up to 100 ppm) in the intermediate diphenylamine used to produce the color and the confirmed presence of 4-aminobiphenyl in the finished color. The chemical reactions for the formation of benzidine were depicted in the previous section. Analysis for free benzidine and/or the reaction product by existing analytical methods has not shown that the chemicals are present in the color. However, from the strong presumptive evirence cited above it appears that with more sensitive validated analytical methods, benzidine and/or its precursor compound would be found in the color.

In addition to carcinogens, the Commissioner is concerned about the unresolved chemistry deficiencies for Ext. D&C Yellow No. 1. Ext. D&C Yellow No. 1 is a color additive that has been subject to the requirements of batch certification as provided by section 706(c) of the act. The Commissioner has concluded that batch certification of the color would continue to be necessary if the color were listed. Under the regulation published in the FEDERAL REGISTER of February 4, 1977, the petitioner agreed to the requirement of developing adequate analytical procedures for the identification of subsidiary colors that are formed during the synthesis of the color additive. The identification of these compounds is necessary for definition of the purity of the color used for toxicological testing and, therefore, is necessary for the development of specifications for subsequent batch certification. The regulation required that adequate chemistry data and validated analytical methods be submitted to FDA by August 3, 1977. The continued provisional listing of the color was conditioned upon the satisfactory completion of these regulation requirements.

The commissioner has reviewed the petitioner's submissions and concludes that the chemistry data and analytical methods submitted by the petitioner are inadequate to support the certification and the "permanent" listing for Ext. D&C Yellow No. 1 as required by the February 4, 1977, regulations. Adequate analytical methods have not been developed that would allow the satisfactory identification of subsidiary colors found in association with the color additive. The purpose of certification is to detect differences in batches of colors from those tested toxicologically or from the normal analytical findings of batches submitted for certification. Without adequate chemistry data to permit identification of the subsidary colors, there can be no means for determining whether differences are present in the composition of batches of the color submitted for certification.

CARCINOGENICITY

The carcinogenic potential of both 4-aminobiphenyl and benzidine has been well documented. Historically, 4-aminobiphenyl (also named 4-biphenylamine; xenylamine) was first recognized as a human carcinogen in 1954 when 19 cases of bladder tumors were found in workers of the rubber industry ("ACS Monograph 173, Chemical Carcinogens," pp. 465–466). Other studies cited 53 cases in an industrial-exposed population of 315 men. Experimental proof of its carcinogenicity was confirmed with dog experiments in 1952 and 1954.

Benzidine has been recognized as not

only carcinogenic to men in the chemical industry, but it is also carcinogenic in certain animal species ("ACS Monograph 173, Chemical Carcinogens," pp. 392–393). Benzidine, also named 4,4'-diaminobiphenyl, is carcinogenic in dogs, rats, mice, and hamsters.

As stated above, the concern over the safety of Ext. D&C Yellow No. 1 is related to its contamination with 4-aminobiphenyl and/or a possible subsidiary reaction product of 4-aminobiphenyl and diazotized metanilic acid that would yield benzidine under certain conditions. The carcinogen 4-aminobiphenyl has been detected in batches of diphenylamine, and the Commissioner is unaware of any means of purification that would be adequate for its removal from this essential intermediate chemical used in the production of the color. The Commissioner states that the evidence is sufficient to lead to the conclusion that Ext. D&C Yellow No. 1 does contain 4-aminobiphenyl and/or a product that could lead to the formation of benzidine.

PETITIONS

Ext. Yellow No. 1 is the subject of a petition (CAP 7C0056) submitted by the Procter & Gamble Co., Toilet Goods Division, 6000 Center Hill Road, Cincinnati, Ohio 45224. This petition was filed by a notice in the FEDERAL REGISTER of August 6, 1973 (38 FR 21200) under the provisions of section 706 of the act, as amended by the Color Additive Amendments of 1960. The petition for Ext. D&C Yellow No. 1 seeks listing for use in externally applied drugs and cosmetics.

ACTION

The purpose of the transitional provisions of the Color Additive Amendments of 1960 (section 203) as noted above, "is to make possible, on an interim basis for a reasonable period, through provisional listings, the use of commercially established color additives to the extent consistent with the public health, pending the completion of the scientific investigations needed as a basis for making determinations as to listing of such additives * * *." This provisional listing of previously marketed colors was to expire on the date, also referred to as the closing date, 2½ years after the effective date of the amendments.

Section 203 of the Amendments further provides, however, that the closing date for the provisional listing may be postponed to a later date as considered "necessary to carry out the purpose of this section, if in the Secretary's judgment such action is consistent with the objective of carrying to completion in good faith, as soon as reasonably practicable, the scientific investigations necessary for making a determination as to listing such additive, or such specified use or uses thereof, under section 706 of the basic Act."

Under the transitional provisions of the Amendments (section 203(d)(1)(E)), the Commissioner may "provide for the termination of a provisional listing (or deemed provisional listing) of a color additive or particular use thereof forthwith whenever in his judgment such action is necessary to protect the public health." On the basis of the available data, the Commissioner concludes that the color Ext. D&C Yellow No. 1 contains 4-aminobiphenyl and may yield benzidine, both known carcinogens. The presence of 4-aminobiphenyl raises serious questions about the safety of the color under conditions of use. The "Delaney Clause" of the Color Additive Amendments of 1960 (21 U.S.C. 376(b)(5)(B)(ii)) has been interpreted by some persons, however, as permitting the use of a color additive, though potentially carcinogenic when ingested, for external use if there are no data demonstrating it to be carcinogenic when so used. The petitioner has suggested use in bar soap as a condition of use that would be safe. Although the potential for 4-aminobiphenyl to induce cancer has been established in part through review of incidents of industrial exposure, which clearly would have involved dermal contact, there are no definitive animal studies establishing it as a carcinogen when applied externally. In any case, because 4-aminobiphenyl is recognized by experts in carcinogenesis as a potent human carcinogen, prudence would dictate that no color additive be approved for any use if it may be concluded that it will contain or yield 4-aminobiphenyl, even though there are no definitive data showing a hazard from the external use of such a color. Accordingly, under section 203(d)(1)(E) of the Amendments, the Commissioner concludes that the provisional listing of Ext. D&C Yellow No. 1 for use in externally applied drugs and cosmetics should be terminated because such action is necessary to protect the public health.

Under the transitional provisions of the Amendments (section 203(a)(2), the Commissioner may "terminate a postponement of the closing date at any time if he finds * * * that there has been a failure to comply with a requirement for submission of progress reports or with other conditions attached to such postponement." The Commissioner finds that the petitioner for Ext. D&C Yellow No. 1 has failed to comply with conditions established for continued provisional listing. Accordingly, under section 203(a)(2) of the Amendments, the Commissioner concludes that the provisional listing of Ext. D&C Yellow No. 1 for use in externally applied drugs and cosmetics should be terminated for this failure to comply with a condition of provisional listing.

The Commissioner also finds that the presence of 4-aminobiphenyl and the apparent inability to resolve the chemistry questions in a timely fashion prevent him from granting the petition requesting the listing of Ext. D&C Yellow No. 1 (CAP 7C0056). Published elsewhere in this issue of the FEDERAL REGISTER is a notice denying the petition proposing to list the color for use in externally applied drugs and cosmetics.

All certificates heretofore issued for batches of Ext. D&C Yellow No. 1 are revoked, and the addition of this color to any drugs or cosmetics after December 13, 1977, will cause such product to be adulterated within the meaning of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) and subject to regulatory action. This prohibition applies to the use of the straight color, its lake, and mixtures of this color or its lake. The Commissioner concludes that the protection of the public health does not require the recall from the market of drugs and cosmetics containing the color additive, or the destruction of drugs or cosmetics in preparation to which the color additive has already been added.

Manufacturers of new drugs and new animal drugs (including certifiable antibiotics for animal use) that contain Ext. D&C Yellow No. 1 may either delete the color additive or substitute a different color in accordance with the provisions of § 314.8 (d)(3) and (e) or § 514.8 (d)(3) and (e) (21 CFR 314.8 (d)(3) and (e) or 21 CFR 514.8 (d)(3) and (e)), as appropriate. The applicant shall also submit data providing the new composition and showing that the change in composition does not interfere with any assay or other control procedures used in manufacturing the drug, or that the assay and control procedures have been revised to make them adequate. In addition, the applicant shall submit data available to establish the stability of the revised formulation or, if the data are too limited to support a conclusion that the drug will retain its identity, quality, purity, and strength for a reasonable marketing period, a commitment to test the stability of marketed batches at reasonable intervals, to submit the data as they become available, and to recall from the market any batch found to fall outside the approved specifications for the drug.

The Commissioner is aware that supplies of alternative color additives may be difficult to obtain immediately. Consequently, drug and cosmetic labeling that states that the product contains "artificial color" because of the presence of Ext. D&C Yellow No. 1 or that specifically identifies Ext. D&C Yellow No. 1 may continue to be used with the uncolored product or products containing alternative colors during the time necessary to obtain supplies of revised labeling or until December 13, 1978, whichever occurs first.

The Commissioner has carefully considered the enivronmental effects of this action, and because the action will not significantly affect the quality of the human environment, has concluded that an enivronmental impact statement is not required. A copy of the FDA environmental assessment, together with copies of the other documents mentioned above, are on file with the Hearing Clerk (HFC–20, Food and Drug Administration, Room 4–65, 5600 Fishers Lane, Rockville, Md. 20857.

Therefore, under the transitional provisions of the Color Additive Amendments of 1960 (Title II, Pub. L. 86–618; sec. 203, 74 Stat. 404–407 (21 U.S.C. 376 note)) and under authority dele-

gated to the Commissioner (21 CFR 5.1), Parts 81 and 82 are amended as follows:

1. Part 81 is amended:

§ 81.1 [Amended]

a. In § 81.1 *Provisional lists of color additives,* in paragraph (c), by deleting the table entry for Ext. D&C Yellow No. 1.

b. In § 81.18 by adding new paragraph (i), to read as follows:

§ 81.10 Termination of provisional listing of color additives.

* * * * *

(i) *Ext. D&C Yellow No. 1.* The Commissioner has learned of the contamination of Ext. D&C Yellow No. 1 with 4-aminobiphenyl. The Commissioner concludes that this color cannot be produced with any reasonable assurance that it will not contain 4-aminobiphenyl as an impurity or not yield benzidine from the decomposition of a subsidiary reaction product that might be present in the color. 4-aminobiphenyl and benzidine are known carcinogens; therefore, there is no scientific evidence that will support a safe tolerance for these colors in drugs or cosmetics. In addition, insufficient data have been submitted to permit establishment of appropriate specifications for the batch certification of the color. The Commissioner of Food and Drugs, in order to protect the public health, hereby terminates the provisional listing of Ext. D&C Yellow No. 1 for use in externally applied drugs and cosmetics, effective December 13, 1977.

* * * * *

c. In § 81.30 by adding new paragraph (l), to read as follows:

§ 81.30 Cancellation of certificates.

* * * * *

(l) (1) Certificates issued for Ext. D&C Yellow No. 1 and all mixtures containing this color additive are cancelled and have no effect after December 13, 1977, and use of this color additive in the manufacture of drugs or cosmetics after this date will result in adulteration.

(2) The Commissioner finds, on the basis of the scientific evidence before him, that no action has to be taken to remove from the market drugs and cosmetics containing the color additive.

§ 82.2701a [Revoked]

2. Part 82 is amended by revoking § 82.2701a *Ext. D&C Yellow No. 1.*

Notice and public procedure are not necessary prerequisites to the promulgation of these regulations because section 203(d)(2) of Pub. L. 86-618 so provides. Because this action is final (not proposed), an economic evaluation is not required by Executive Order 11821 (3A CFR, 1975 Compilation, p. 203).

Effective date. These regulations shall be effective December 13, 1977.

(Sec. 203, 74 Stat. 404-407 (21 U.S.C. 376 note).)

Dated: December 5, 1977.

WILLIAM F. RANDOLPH,
Acting Associate Commissioner for Compliance.

[FR Doc.77-35321 Filed 12-7-77;2:28 pm]

[4310-70]

Title 36—Parks, Forests, and Public Property

CHAPTER I—NATIONAL PARK SERVICE, DEPARTMENT OF THE INTERIOR

PART 7—SPECIAL REGULATIONS, AREAS OF THE NATIONAL PARK SYSTEM

Fire Island National Seashore, New York; Vehicle Use Regulations

AGENCY: National Park Service, Interior.

ACTION: Final rule.

SUMMARY: This amendment prescribes the routes within Fire Island National Seashore on which the off-road operation of motor vehicles is permitted. It also revises the current regulations pertaining to permits for vehicles used on these routes by establishing clear standards for the issuance of these permits. Revised restrictions on the travel which will be allowed by vehicles under permit are also included in the regulations.

DATES: This amendment shall become effective on January 1, 1978.

FOR FURTHER INFORMATION CONTACT:

Richard W. Marks, Superintendent, Fire Island National Seashore, telephone 516-289-4810.

SUPPLEMENTARY INFORMATION: On July 12, 1977, the National Park Service published a notice of proposed rulemaking for amended vehicle use regulations for Fire Island National Seashore (42 FR 35859). These proposed regulations were intended to provide a greater degree of control over vehicle use within the Seashore, use which has increased greatly in recent years, despite existing regulations.

A period of 30 days after publication of the proposed regulations was originally provided for public comment. This period was later extended for an additional 30 days in order to allow for additional participation in the rulemaking process.

In all, 87 written comments were received during the 60 days provided, with 9 additional comments arriving after this period. Of this total of 96 comments, 68 were generally in favor of the regulations, while 28 opposed them.

All comments received were carefully analyzed, particularly those that included specific suggestions for changes in the regulations. From these suggestions and from further study of the proposal, it was determined that a number of changes to the regulations should be made. These changes are primarily clarifications and are not expected to have significant effects on the application of the regulations.

CHANGES MADE

The following is a discussion of the changes which have been made, other than minor editorial revisions.

Definition of residents. On the basis of comments received and further study of the situation, it was determined that the definition of the term "residents" contained in subparagraph (a)(1)(viii) of the proposed regulations was inadequate. This has been rectified in the final regulation by tightly defining those who will be considered "year-round residents" and who, therefore, have travel needs which are different from other categories of users. A definition of "part-time residents" has also been supplied in order to identify those persons who are domiciled on the island but who, because they do not reside there year-round, must meet additional requirements in order to qualify for a permit.

Route descriptions. The description of the route known as the "Burma Road," found in subparagraph (a)(2)(iv), was expanded to indicate that it may be used by fire and law enforcement vehicles, as well as public utility vehicles. This description was also changed to more accurately identify the route as being an intermittent one.

Alternative transportation. Subparagraph (a)(3)(iii), which deals with the location of transportation terminals which will be considered to determine available alternative transportation, has been modified by deleting the requirement for a planked or surfaced pathway between the terminal and the island point of origin or destination. This was found to be necessary to avoid situations in which a location very close to a terminal would have to be considered as not providing alternative transportation, when the only requirement lacking would be a very short length of pathway.

Permit issuance standards. A clarifying change was made in the language of subparagraph (a)(6), which states criteria which will be considered in issuing permits. In the proposal, one criterion had been stated to be "the existence of other permits issued to the applicant." This was felt to be unclear as to the time being referred to. Therefore, this phrase has been changed to speak of "the present or past issuance of other permits to the applicant." This more correctly states the relationship of an applicant's permit status to the decision as to whether or not a permit will be issued. In this same subparagraph, language has been added to make it clear that limitations on numbers of permits will also be a consideration.

Vehicle size limitations. The proposed restriction on vehicle capacity, in (a)(7)

(iii), used an outdated concept of vehicle size class identification. The intention of this provision was to allow the use, in most situations, of vehicles no larger than what is still frequently referred to as a "one-ton truck." Inasmuch as such vehicles now have rated capacities well in excess of 2,000 pounds, the proposed wording was incorrect. In order to establish a clear and more correct requirement, this provision has been revised to establish a limit of 10,000 pounds for the rated gross vehicle weight of permitted vehicles.

Travel closure periods. For those times or situations in which there is no alternative transportation available, subparagraph (a)(10)(ii) places limitations upon the travel that can be performed. As proposed, during the period from June 14 through September 14 any travel which was authorized due to a lack of alternative transportation could not be performed between 9 a.m. and 6 p.m. of any day. This has been modified to further restrict the periods when summer driving is permitted. Now, in addition to the daytime restrictions, travel will be prohibited at all hours on the weekends, from Friday night to Monday morning. In effect, this means that those few persons who are permitted to drive due to a lack of alternative transportation in the summertime may do so only between the hours of 6 p.m. and 9 a.m. on Monday, Tuesday, Wednesday, and Thursday nights and the following mornings.

Fire and law enforcement vehicles. It was not the intent of the proposed regulations to subject these vehicles to the restrictions of subparagraph (a)(10). However, the construction of the regulations did not make this clear. This situation has been corrected through a specific exemption in this subparagraph, relating to firefighting apparatus and law enforcement vehicles.

EFFECTIVE DATE

In as much as permits issued under existing regulations have been extended several times and expire on December 31, 1977, good cause has been found to have these revised regulations effective January 1, 1978, rather than delaying implementation for the full 30 day period normally provided after publication of a final rule. Affected persons were, through the proposed rulemaking, made aware of the changes which will be brought about by this amendment nearly 6 months prior to this effective date.

NOTE.—The National Park Service has determined that this document does not contain a major proposal requiring preparation of an Economic Impact Statement under Executive Order 11821 and OMB Circular A-107.

DANIEL J. TOBIN,
Associate Director,
Management and Operations.

In consideration of the foregoing, paragraph (a) of § 7.20 of Title 36, Code of Federal Regulations, is hereby amended to read as follows:

§ 7.20 Fire Island National Seashore.

(a) *Operation of motor vehicles.* (1) *Definitions.* The following definitions shall apply to all provisions of this paragraph (a):

(i) "Act" means the Act of September 11, 1964 (Pub. L. 88-587, 78 Stat. 928, 16 U.S.C. § 459e et seq.), or as the same may be amended or supplemented, which authorizes the establishment of the Seashore.

(ii) "Seashore lands" means any lands or interests in lands owned or hereafter acquired by the United States within the authorized boundaries of the Seashore. It shall also mean any lands or interests in lands owned by the United States which are on the island, outside the authorized boundaries of the Seashore, and managed for recreational purposes by the National Park Service pursuant to an agreement with another Federal agency.

(iii) "Island" means the entirety of Fire Island, New York, without regard for property ownership, jurisdiction, or the boundaries of Fire Island National Seashore.

(iv) "Mainland" means the land of Long Island, N.Y.

(v) "Motor vehicle" means a device which is self-propelled by internal combustion or electrical energy and in, upon, or by which any person or material is or may be transported on land.

(vi) "Dune crossing" means an access route over a primary dune which has been designated and appropriately posted.

(vii) "Public utility vehicle" means any motor vehicle operated and owned or leased by a public utility or public service company franchised or licensed to supply, on the island, electricity, water, or telephone service, while that vehicle is in use for supplying such service.

(viii) "Year-round residents" means those persons who are legally domiciled on the island and who, in addition, physically reside in their fixed and permanent homes on the island continuously, except for brief and occasional absences, for 12 months of the year.

(ix) "Part-time residents" means those persons who are legally domiciled on the island, but who physically reside in their fixed and permanent homes on the island continuously for less than 12 months of the year.

(x) "Service vehicle" means any motor vehicle other than a public utility vehicle, whose use on the island is essential to the continued use of residences on the island. This may include vehicles used for the following purposes, while in use for such purposes:

(A) Transporting heating fuel and bottled gas.

(B) Construction, repair, or maintenance of structures and plumbing, heating, or electrical facilities.

(C) Sanitation or refuse removal.

(D) Transporting material to individuals and to retail business establishments on the island.

(xi) "Official vehicle" means any motor vehicle operated and owned or leased by a Federal, State, or local governmental agency, except for law enforcement vehicles and fire fighting apparatus, while that vehicle is being used to transact the official business of that agency.

(2) *Routes for motor vehicle travel.* No motor vehicle may be operated on Seashore lands except on routes designated for that purpose and subject to the limitations of this paragraph (a). The following are the routes for off-road motor vehicle travel on Seashore lands, which shall be designated on a map available at the office of the Superintendent or by the posting of signs where appropriate:

(i) The Atlantic Ocean beach on the south shore of Fire Island, within the Seashore boundaries, from the mean high water mark to the water's edge.

(ii) A 0.5 mile route in the interior of the island, crossing the "Lighthouse Tract" from the easterly end of the paved road in the Robert Moses State Park to the eastern boundary of the Tract.

(iii) A 300 foot interior route from the eastern boundary of the detached eastern section of Robert Moses State Park to the western boundary of the community of Lighthouse Shores, across the land commonly referred to as the "Greenburg Tract."

(iv) An interior route which extends intermittently the length of the island, commonly referred to as the "Burma Road," for limited travel by public utility and law enforcement vehicles and fire fighting apparatus.

(v) Posted dune crossings from the beach to the "Burma Road" or to pathways within the island communities.

(3) *Alternative means of transportation.* In providing for access to the island, the Superintendent shall require maximum possible reliance on those means of transportation which are other than private motor vehicles and which have the minimum feasible impact on Seashore lands. As used in this paragraph (a), the term "alternative transportation" shall mean a waterborne conveyance that is licensed for hire and that provides a reasonable means of transportation between the mainland and the island. Such alternative transportation shall be deemed to exist for each particular factual situation in which:

(i) The schedule of the transportation service in question permits departure from an island terminal before 9 a.m. and departure from a mainland terminal after 5 p.m. on the same day; and

(ii) When the interval between the earliest and latest service provided by the transportation service in question on any day exceeds 8 hours, such service provides at least one round trip between the mainland and the island during that interval; and

(iii) The island transporation terminal in question is no more than one mile from the point of origin or destination on the island or from a point on the island to which access by motor vehicle is permitted; and

(iv) The mode of transportation in question is adequate to carry the person or object to be transported.

(4) *Permit required.* No motor vehicle, other than a piece of firefighting apparatus or a motor vehicle operated and owned or leased by a duly constituted law enforcement agency having jurisdiction within the Seashore, shall be operated on Seashore lands without a valid permit issued by the Superintendent.

(5) *Permit eligibility.* Any person, firm, partnership, corporation, organization, or agency falling within the categories listed below may apply to the Superintendent for a permit, using a form to be supplied for that purpose. The following will be eligible to submit permit applications:

(i) Those persons who are year-round residents.

(ii) Those persons who are part-time residents and who can demonstrate that access by motor vehicle is essential to their residency because of an ambulatory or other severe handicap, a serious health consideration, or lack of alternative transportation.

(iii) Those persons, firms, partnerships, corporations, organizations, or agencies which provide services essential to the occupancy of residences on the island.

(iv) Those persons who desire access by motor vehicle to Seashore lands in order to engage in fishing or hunting thereon, provided such access is compatible with conservation and preservation of Seashore resources.

(v) Those owners of estates in real property located on the island who have a demonstrated need for access to that property on days when there is no alternative transportation.

(6) *Standards for issuance of permits.* Permits will not be issued for the convenience of travel on Seashore lands. The Superintendent shall approve an application for a motor vehicle permit with appropriate limitations and restrictions or deny the application, in accordance with the provisions of this paragraph (a).

Permits will be issued only for those motor vehicles whose travel on Seashore lands is deemed by the Superintendent to be essential to the management or enjoyment of Seashore resources, or to the occupancy of residences or the ownership of real property on the island. In making this determination, the Superintendent shall consider the purposes of the Act in providing for the conservation and preservation of the natural resources of the Seashore and for the enjoyment of these resources by the public; the scope and purpose of such travel; the availability of alternative transportation on the day or days when the applicant for a permit requests to travel on Seashore lands; the present or past issuance of other permits to the applicant; any limitations on numbers of permits established pursuant to subparagraph (8); and, in the case of public utility, service, and official vehicles, the feasibility of basing such vehicles and related equipment on the island rather than the mainland.

(7) *Vehicle restrictions.* Any motor vehicle whose owner or operator has been found to qualify for a permit, according to the standards set forth in subparagraphs (5) and (6), must, prior to the issuance of such permit:

(i) Have a valid permit or other authorization for operation on the island issued by the local government agency or agencies within whose jurisdiction the travel is to be performed, if such permission or authorization is required by such agency or agencies.

(ii) Be capable of four-wheel drive operation.

(iii) Have a rated gross vehicle weight not in excess of 10,000 pounds, unless the use of a larger vehicle will result in a reduction of overall motor vehicle travel.

(iv) Meet the requirements of §§ 4.12, 4.19(e), 4.20, and 4.21 of this chapter and conform to all applicable State laws regarding licensing, registration, inspection, insurance, and required equipment.

(8) *Limitations on numbers of permits.* The Superintendent is authorized to limit the total number of permits for motor vehicle travel on Seashore lands, and/or to limit the number of permits issued for each category of eligible applicants listed in subparagraph (5), as he deems necessary for resource protection, public safety, or visitor enjoyment. In establishing such limits, the Superintendent shall utilize such factors as the type of use or purpose for which travel is authorized, the availability of other means of transportation, limits established by local jurisdictions, historic patterns of use, multiplicity of existing permits held by individuals, esthetic and scenic values, visitor uses, safety, soil, weather, erosion, terrain, wildlife, vegetation, noise, and management capabilities. Before making a final decision to adopt any limitation authorized by this subparagraph, notice of such intention shall be made through posting or news releases, and publication in the "FEDERAL REGISTER," and the public shall be provided a period of 30 days in which to comment upon the proposed limitation.

(9) *Permit limitations.* (i) No permit issued under these regulations shall be valid for more than one year. The Superintendent may issue permits for lesser periods, as appropriate for the travel required or the time of year at which a permit is issued.

(ii) Permits for public utility, service, and official vehicles shall specify the number of vehicles and identify each vehicle whose use is authorized thereby. Permits for other motor vehicles will apply only to the single, specific vehicle for which issued.

(iii) Permits are not transferable to another motor vehicle or to a new owner or lessee of the vehicle for which issued.

(iv) Permits may specify a single or multiple uses or purposes for which travel on Seashore lands is permitted. The limitations and restrictions on authorized travel set forth in subparagraph (10) of this paragraph shall apply, however, depending upon the specific use or purpose for which a permitted motor vehicle is being utilized at the time of travel.

(v) Permits may contain such other limitations or conditions as the Superintendent deems necessary for resource protection, public safety, or visitor enjoyment. Limitations may include, but will not be limited to, restrictions on locations where vehicle travel is authorized and times, dates, or frequency of travel, in accordance with the provisions of this paragraph (a).

(10) *Authorized travel.* (i) Except as specifically provided elsewhere in this subparagraph (10), travel across Seashore lands by motor vehicles with valid permits will be authorized only on those days in which the island location, which is the point of origin or destination of travel or is another point to which access by motor vehicle is permitted, is not served by alternative transportation.

When alternative transportation services satisfy the definition of alternative transportation in subparagraph (3), the schedule of transportation services available for the island community or communities named in the permit application shall determine the days when travel is not authorized for the motor vehicle to which that permit applies.

(ii) On any day on which travel by motor vehicle is authorized due to a lack of alternative transportation, travel shall be limited to not more than one round trip per vehicle per day between the mainland and the island, and may be performed at any time except the following periods:

(A) From 9 a.m. to 6 p.m. on all Saturdays, Sundays, and national holidays from May 1 through June 13 and from September 15 through October 31.

(B) From 9 a.m. to 6 p.m. on all weekdays, and from 6 p.m. Friday to 9 a.m. the following Monday on all weekends, from June 14 through September 14.

(iii) The Superintendent may, for situations where the restrictions in subparagraph (ii) would create a severe hardship, authorize additional trips or travel at other hours.

(iv) In the case of public utility, service, and official vehicles for which permits have been issued, the Superintendent may authorize travel on Seashore lands at any time that he determines travel by such vehicles is essential, notwithstanding the above limitations and restrictions on authorized travel.

(v) Authorization for travel pursuant to subparagraphs (iii) and (iv) above shall be made only by the terms and conditions of the permit, for recurring travel, or by written permission from the Superintendent, for single occasions.

(vi) In an emergency involving the protection of life or a threatened substantial loss of property, travel by a motor vehicle which is under permit is authorized at any time.

(vii) The Superintendent may suspend any travel by motor vehicle otherwise permitted under this paragraph (a) when in his judgment such travel is inconsistent with the purpose of the Act or when such factors as weather, tides,

or other physical conditions render travel hazardous or would endanger Seashore resources. Such suspension of travel shall be announced by the posting of appropriate signs or verbal order of the Superintendent.

(viii) In accordance with the procedures set forth in § 2.6(b) of this chapter, the Superintendent may establish a limit on the number of motor vehicles permitted on any portion of, or the entirety of, the Seashore lands at any one time when such limits are required in the interests of public safety, protection of the resources of the area, or coordination with other visitor uses.

(ix) The provisions of this subparagraph (10) shall not apply to firefighting apparatus or to motor vehicles operated and owned or leased by a duly constituted law enforcement agency having jurisdiction within the Seashore.

(11) *Rules of travel.* (i) When two motor vehicles approach from opposite directions in the same track on Seashore lands, both operators shall reduce speed and the operator with the water to his left shall yield the right of way by turning out of the track to the right.

(ii) No motor vehicle shall be operated on any portion of a dune on Seashore lands except at dune crossings.

(iii) No person shall operate a motor vehicle on Seashore lands at a speed in excess of 20 miles per hour.

(iv) The speed of any motor vehicle being operated on Seashore lands shall be reduced to five miles per hour upon approaching or passing within 100 feet of any person not in a motor vehicle, or when passing through or over any dune crossings.

(12) *Violations.* (i) Failure to comply with the conditions of any permit issued pursuant to this paragraph will constitute a violation of these regulations.

(ii) In addition to any penalty required by § 1.3(a) of this chapter for a violation of regulations in this paragraph, the Superintendent may suspend or revoke the permit of a motor vehicle involved in such a violation.

[FR Doc.77-35464 Filed 12-12-77;8:45 am]

[6820-22]

Title 41—Public Contracts and Property Management

CHAPTER 101—FEDERAL PROPERTY MANAGEMENT REGULATIONS

SUBCHAPTER D—PUBLIC BUILDINGS AND SPACE

[FPMR Amdt. D-63]

PART 101-21—FEDERAL BUILDINGS FUND

Standard Levels of Service for Flexitime

AGENCY: General Services Administration.

ACTION: Final rule.

SUMMARY: This regulation revises GSA's policy for providing standard levels of service to agencies operating under a system of flexible employee working hours. Because many Federal agencies are adopting or experimenting with flexitime schedules, it is necessary for GSA to provide policy guidance on how agencies will be charged for the additional services necessary to accommodate the expanded schedules. The intent of this rule is to specify that agencies requiring services in addition to those provided under the standard level will reimburse GSA for the cost of the additional services provided.

EFFECTIVE DATE: December 13, 1977.

FOR FURTHER INFORMATION CONTACT:

S. Keithly, Office of the Executive Director, Policy and Programs Division, Public Buildings Service, General Services Administration, Washington, D.C. 20405, 202-566-0900.

The table of contents for Part 101-21 is amended by the addition of the following entry:

Sec. 101-21.300-1 Flexitime.

Subpart 101-21.3—Standard Levels of Service

1. Section 101-21.300 is revised as follows:

§ 101-21.300 General.

The levels of service included in the Standard Level User Charge are approximately the same as those currently furnished in commercial practice. They are based on the effort required to service the occupant agency's space for a 5-day week (Monday through Friday), one-shift regular work schedule. Adequate building startup services before the occupant agency starts the regular work schedule and shutdown services after the occupant agency ceases the regular work schedule, even though the working hours of the occupant agency may be staggered, will be provided by GSA. Space, automatic elevator systems, lights, and small office and business machines may be used on an incidental basis 24 hours a day, 7 days a week without additional payment to GSA where access by the occupant is available without additional cost to GSA.

2. Section 101-21.300-1 is added as follows:

§ 101-21.300-1 Flexitime.

Occupant agencies who extend their regular work schedule by a system of flexible hours shall reimburse GSA for the actual cost of the additional services required.

(Sec. 205(c), 63 Stat. 390 (40 U.S.C. 486(c)).)

NOTE.—The General Services Administration has determined that this document does not contain a major proposal requiring preparation of an Inflation Impact Statement under Executive Order 11821 and OMB Circular A-107.

Dated: December 2, 1977.

JAY SOLOMON,
Administrator of General Services.

[FR Doc.77-35468 Filed 12-12-77;8:45 am]

[6820-24]

SUBCHAPTER E—SUPPLY AND PROCUREMENT

[FPMR Amdt. E-213]

PART 101-26—PROCUREMENT SOURCES AND PROGRAMS

Miscellaneous Changes

AGENCY: General Services Administration.

ACTION: Final rule.

SUMMARY: This regulation eliminates the requirement for use of GSA Handbook, Acquisition of Standard and Optional Forms, reflects a change of address of a GSA activity, provides current references to other regulations, and deletes references which are no longer applicable. This regulation has been developed to reduce printing costs by eliminating the requirement for use of a handbook and to provide changes of an administrative nature necessary to keep the FPMR current.

EFFECTIVE DATE: December 13, 1977.

FOR FURTHER INFORMATION CONTACT:

Mr. John I. Tait, Acting Director, Regulations and Management Control Division, Office of the Executive Director, Federal Supply Service, General Services Administration, Washington, D.C. 20406, 703-557-1914.

Subpart 101-26.3—Procurement of GSA Stock Items

Section 101-26.302 is amended by revising the introductory paragraph and paragraph (c) to read as follows:

§ 101-26.302 Standard and Optional forms.

Agencies shall obtain Standard and Optional forms by requisitioning them from GSA unless the Joint Committee on Printing (JCP) has granted authority for direct procurement or unless the forms have been approved by GSA to be stocked and distributed by the promulgating agency.

* * * * *

(c) Forms or form assemblies which deviate in any manner from those listed in the GSA Supply Catalog are not stocked or distributed by GSA. Agencies requiring such nonstock forms shall prepare and transmit a Standard Form 1, Printing and Binding Requisition, or Standard Form 1-C, Printing and Binding Requisition for Speciality Items, to General Services Administration (3FHF), Washington, D.C. 20407, for review and submission to GPO.

* * * * *

Subpart 101-26.4—Purchase of Items From Federal Supply Schedule Contracts

Section 101-26.405 is revised as follows:

§ 101-26.405 Automatic data processing equipment.

The procurement of automatic data processing equipment, software, main-

tenance services, and supplies is governed by Subpart 1–4.11 of this title.

(Sec. 205(c), 63 Stat. 390 (40 U.S.C. 486(c)).)

NOTE.—The General Services Administration has determined that this document does not contain a major proposal requiring preparation of an Inflation Impact Statement under Executive Order 11821 and OMB Circular A–107.

Dated: December 2, 1977.

JAY SOLOMON,
Administrator of General Services.

[FR Doc.77–35469 Filed 12–12–77;8:45 am]

[7035–01]

Title 49—Transportation

CHAPTER X—INTERSTATE COMMERCE COMMISSION

SUBCHAPTER A—GENERAL RULES AND REGULATIONS

[Ex Parte No. 55 (Sub-No. 25)]

PART 1003—LIST OF FORMS

SUBCHAPTER B—PRACTICE AND PROCEDURE

PART 1100—RULES OF PRACTICE

Revision of Application Procedures

AGENCY: Interstate Commerce Commission.

ACTION: Final rules.

SUMMARY: These rules revise application forms for permanent motor carrier, broker, water carrier, and freight forwarder authority. They require each applicant to submit, in addition to that information previously called for, (1) a current balance sheet and income statement, (2) a list delineating equipment and pertinent terminal locations, (3) a brief statement concerning the feasibility of the proposed operation, and (4) a certification of familiarity with applicable safety regulations. Additionally, each applicant for motor contract carrier authority must describe how its proposed service qualifies as contract carriage under section 203(a)(15) of the Interstate Commerce Act (Act). Each supporting witness must include in its certification of support (1) a brief description of the transportation services currently employed, and (2) the extent to which the proposed service, if authorized, would be used. These rules are intended to eliminate, in unopposed proceedings, the necessity for further evidentiary submissions and to expedite issuance of operating authorities. The provisions of Rule 247(f)(2), pertaining to unopposed proceedings, also have been modified slightly to dovetail with the procedural revisions adopted in this rulemaking.

EFFECTIVE DATE: April 1, 1978.

FOR FURTHER INFORMATION CONTACT:

Michael Erenberg, Assistant Deputy Director, Offices of Proceedings, Interstate Commerce Commission, Washington, D.C. 20423, phone 202–275–7292.

SUPPLEMENTARY INFORMATION: The procedural revisions adopted in this rulemaking proceeding are an outgrowth of Recommendation No. 1 contained in a Staff Task Force report issued July 6, 1977. This recommendation was endorsed overwhelmingly by interested persons who commented on the Staff Task Force report and related matters during a recently concluded series of nationwide hearings.

Written comments addressed to this specific proceeding, most of which are favorable, were received from individuals representing a broad spectrum of directly affected interests including motor carriers, motor carrier associations and conferences, a shipper organization, and a water carrier association. Written comments also were received from the Motor Carrier Lawyers Association and the United States Department of Justice. The questions, criticisms, and suggestions contained in the comments of many participants have prompted some changes in the rules as proposed. A list which identifies all individuals and groups participating in this proceeding is attached as an appendix to this document.

DISCUSSION OF SIGNIFICANT COMMENTS

A. LAWFULNESS

Several participants point out that the procedural modifications contemplated in these rules may disregard somewhat administratively established criteria which heretofore have formed the nucleus of an applicant's evidentiary presentation. See Novak Contract Carrier Application, 103 M.C.C. 555, 558 (1967). While this observation is not altogether incorrect, it must be recalled that the proposed rules are not intended to govern application proceedings which ultimately are opposed. Furthermore, the Novak criteria were not intended to chart an inflexible course to realization of a desired statutory goal; rather, their function is to serve merely as a guide in the development of an applicant's case-in-chief. See Monkem Co., Inc., Ext.—Junction City, Kans., 126 M.C.C. 844 (1977).

Under these rules, supporting witnesses would not be required to detail deficiencies, if any, in existing services (the fifth Novak criterion), which is of dubious value in unopposed application proceedings and which, as the Department of Justice has observed, would impose, at this stage of proceedings, an onerous burden upon supporting witnesses. See Revision of Application Forms, 125 M.C.C. 790 (1976). All other necessary information including data bearing on an applicant's fitness and ability to perform a proposed operation, would be set out in the revised forms. Since application forms must be verified and both applicants and their supporting witnesses are required to subscribe to the documents under penalties provided for fraud and false statements (18 U.S.C. § 1001 (1970)), the apprehensions expressed by some participants that these rules will result in proliferation of fraudulent or unnecessary applications should be allayed. In any event, to the extent that the revised procedures would supplant previously established administrative guidelines, we find that attainment of the Act's objectives requires implementation of such procedures.

The comments of several participants have brought our attention to a somewhat more significant omission in the rules as proposed. Section 203(a)(15) of the Act defines "contract carrier by motor vehicle" as "any person which engages in transportation by motor vehicle of passengers or property in interstate or foreign commerce, for compensation * * * under continuing contracts with one person or a limited number of persons either (a) for the furnishing of transportation services through the assignment of motor vehicles for a continuing period of time to the exclusive use of each person served or (b) for the furnishing of transportation services designed to meet the distinct need of each individual customer." Section 209(b) of the Act provides that a permit shall be issued to any qualified applicant if it appears, in part, that "applicant is fit, willing, and be able properly to perform the service of a contract carrier by motor vehicle * * *." Under the procedural revisions, as proposed, the Commission would be unable completely to determine whether a proposed motor contract carrier service meets the definition contained in section 203(a)(15) of the Act.

Part V(d) of current Form OP–OA–9 requires an applicant seeking motor contract carrier authority to list the person or persons for whom its service now is being performed under effective contracts pursuant to any existing permits. Additionally, the outstanding permits, subnumbers, and effective contracts of each applicant on file at the Commission are ascertained internally, as a matter of course, in each contract carrier application proceeding. Thus, information relative to the first part of the bifurcated test of contract carriage is provided on the face of the application form itself. With respect to the second alternative part, however, neither the current application form nor the proposed revisions require applicants to supply the necessary information.

The final rules, therefore, will make allowance for inclusion of such information by revising part V(d)(2) of Form OP–OR–9 to read as follows:

(2) a. The person or persons it would serve in the proposed operation: _____, and

(b). the manner in which contractual provisions are to be fulfilled (i.e., either (*1*) by furnishing transportation services through the assignment of motor vehicles for a continuing period of time to the exclusive use of each person served, or (*2*) by furnishing transportation services designed to meet the distinct need of each individual customer, and if the latter, describe briefly the distinct need for which transportation services have been designed): _____

In all other respects, we find that the procedural revisions promulgated by this document are consistent with the applicable provisions of the Interstate Commerce Act, the Administrative Procedure Act, and with principles of procedural due process. Arguments to the contrary are neither persuasive nor supportable.

B. FEASIBILITY

Many participants, while applauding the Commission's resolve to facilitate lawful issuance of authorities in unopposed application proceedings, nevertheless believe that the desired results may not be achieved through implementation of these procedural revisions. Arguments advanced in support of this belief include: (1) More, not less, time will be consumed reviewing the revised application forms since they will contain a singificant amount of data which heretofore was not required to be included, (2) under the revised procedures, additional time will be required to prepare lengthier notices of application filings, and (3) the revised procedures will encourage the filing of protests by carriers which have negligible interests in particular proceedings but are fearful that applicants may be seeking more than that to which they lawfully may be entitled. It also is argued that the revised procedures will result in duplicative filings in proceedings which ultimately are opposed and may tend to impede disposition of such proceedings.

These conjectural arguments are unpersuasive. Experience has demonstrated that application forms and related instruments are reviewed more swifty and thoroughly by specially trained employees than by clerical personnel. The amount of additional information required to be filed under the revised procedures, while not inconsequential, should not add significantly to the time otherwise required to review applications, especially since all such material is contained in or attached as an appendix to the application itself. Nor will these rules elongate Federal Register notices of application filings. All notices of application filings contained in a single issue of the FEDERAL REGISTER will be prefaced by a straightforward recitation (findings and ordering paragraph) indicating that each applicant has demonstrated satisfactorily that its proposed service should be, and absent valid protests will be, authorized upon compliance with certain requirements.

The opportunity to file so-called frivolous protests (which appear with alarming regularity) inheres under existing rules. These procedural revisions neither enhance nor, unfortunately, diminish the opportunity to file such protests. Similarly, since the revised procedures are intended only to expedite issuance of authorities in unopposed application proceedings and do not serve to mitigate the quantum of proof required to make threshold determinations, we would expect that the overall percentage of unopposed proceedings decided on their merits will remain unaffected by these rules. If it appears, however, at some future point that applicants, protestants, or any other persons are using these rules to thwart the Act's objectives or for any other questionable purposes, the Commission is prepared to, and will, move swiftly to remedy any abuses.

Under the revised procedures neither applicants nor their supporting witnesses will be required to make duplicative filings if applications ultimately are opposed. We are reminded that these rules will enable an applicant to obtain operating authority in unopposed proceedings on the strength of some written submissions (certifications of support) which are not verified. The Commission, however, is not obliged to reject or to accord lesser weight to evidentiary material which is unverified, especially where, as here, the considered material is subscribed to under penalties provided for fraud and false statements and constitutes only a threshold submission which is subject to subsequent refutation. See e.g., *FCC* v. *Pottsville Broadcasting Co.*, 309 U.S. 134, 143 (1940). Inasmuch as we will accept and accord undiminished value to the evidentiary material contained in the involved application forms and certifications of support, neither applicants nor their supporting witnesses need restate material contained in such forms, although neither will be precluded subsequently from developing futher any evidence so submitted.[1] With the exception of certifications of support, however, we will continue to insist that all other pleadings (statements) be verified.

C. SUGGESTED MODIFICATIONS AND ADDITIONAL CONSIDERATIONS

Several participants have suggested that we extend the revised procedures to applications to which protests have been filed and subsequently withdrawn as the result of either disinterest or restrictive amendments proposed by applicants. Other modifications which have been suggested include: (1) Making use of these procedures optional with the applicant, (2) limiting use of the revised procedures to application proceedings involving 10 shippers or less, (3) employing data relative to fitness and other considerations filed by applicants in previous proceedings, (4) including a requirement that applicants restrict the sought authority, where appropriate, against transportation services not contemplated by the proposal, and (5) making the revised procedures applicable to finance proceedings.

Several questions also have been raised concerning (1) the manner in which nonconforming commodity, territorial, or other descriptions contained in service proposals will be modified prior to publication, (2) the procedure to be followed by applicant when there is doubt about the appropriateness of a proposed commodity description, (3) the effect which these procedural revisions will have upon existing rules of practice, and (4) the precision with which witnesses supporting applications for expansive authority must describe the extent to which they will use an applicant's proposed service.

The Commission always has intended to apply any procedural revisions which might be adopted in this rulemaking proceeding to applications to which protests have been filed but subsequently withdrawn. Under these rules, authorization of service in unopposed application proceedings, whether or not initially protested, will be accomplished in a two-step process, as follows:

(1) All affected applications published in the FEDERAL REGISTER will be prefaced by an order-notice which will include (a) a general preliminary finding that, with the exception of applications involving impediments (e.g., unapproved common control, unresolved fitness questions, dual operations, and jurisdictional problems) to authorization of a proposed service, which impediments will be duly noted in the FEDERAL REGISTER publication,[2] each applicant has demonstrated, in accordance with the applicable provisions of the Act, that its proposed operation should be authorized and (b) a statement that in the absence of opposition at the expiration of the 30-day protest period or, if thereafter (until either a subsequent decision under the modified procedure has been rendered in a proceeding which is opposed or 30 days after referral to oral hearing)[3] the application becomes unopposed, an appropriate certificate, permit, or license (which subsequently may reflect administratively acceptable restrictions [4] to the service as proposed) will be issued to each applicant upon compliance with certain statutory requirements, and

(2) a notice of effectiveness of the order-notice, embracing a directive to comply with the requirements of the applicable provisions of the Act for issuance of operating authority (either in its originally published form or in a restrictively amended form), will be issued and served upon the parties of record in each application proceeding which, at the expiration of the 30-day protest period, is or at any prescribed time thereafter becomes unopposed. A simplified flow chart is set forth in Appendix B to assist

[1] We emphasize, however, that the quantum of proof (especially with respect to questions pertaining to existing service capabilities and competitive considerations) required for authorization of opposed application proceeding may be significantly greater than that required in unopposed proceeding. Thus, a threshold prima facie case, once established in an unopposed setting, nevertheless may not be sufficient when subjected to opposition.

[2] Unopposed application proceedings involving statutory impediments to authorization of a proposed service will be referred to a decisionmaker for a determination on the existing record or for a determination that the existing record be supplemented to permit an informed decision with respect to these issues.

[3] These procedures will apply to cases assigned to oral hearing if they become unopposed not later than 30 days after the service date of a notice that the case has been assigned for oral hearing. Compare 49 CFR 1100.247(d).

[4] Initial determinations concerning the administrative acceptability of proposed restrictive amendments will be made by Commission personnel, although final responsibility for acceptance or rejection of questionable amendments will rest with the decisionmaker.

in the understanding of this procedure.

All application proceedings in which protests have been filed and not withdrawn at the expiration of the 30-day protest period either will be designated for handling under the modified procedure or assigned for oral hearing, and in all other respects, if they remain opposed, will be dealt with under existing procedures. Protests, therefore, will serve to stay the effectiveness of the FEDERAL REGISTER order-notice until either (1) such protests are withdrawn, or (2) an appropriate decisionmaker renders a decision based upon the complete record in the opposed application proceeding.

The order-notices will take the following form:

INTERSTATE COMMERCE COMMISSION
ORDER-NOTICE

The following applications are governed by Special Rule 247 of the Commission's *Rules of Practice* (49 CFR § 1100.247). These rules provide, among other things, that a protest to the granting of an application must be filed with the Commission within 30 days after the date of notice of filing of the application is published in the FEDERAL REGISTER. Failure seasonably to file a protest will be construed as a waiver of opposition and participation in the proceeding. A protest under these rules should comply with Rule 247(d)(3) of the Rules of Practice which requires that it set forth specifically the grounds upon which it is made, contain a detailed statement of protestant's interest in the proceeding (including a copy of the specific portions of its authority which protestant believes to be in conflict with that sought in the application, and describing in detail the method—whether by joinder, interline, or other means—by which protestant would use such authority to provide all or part of the service proposed), and shall specify with particularly the facts, matters, and things relied upon, but shall not include issues or allegations phrased generally. Protests not in reasonable compliance with the requirements of the rules may be rejected. The original and one copy of the protest shall be filed with the Commission, and a copy shall be served concurrently upon applicant's representative or applicant if no representative is named. If the protest includes a request for oral hearing, such requests shall meet the requirements of section 247(d)(4) of the special rules and shall include the certification required therein.

Section 247(f) further provides, in part, that an applicant who does not intend timely to prosecute its application shall promptly request dismissal thereof, and that failure to prosecute an application under procedures ordered by the Commission will result in dismissal of the application.

Further processing steps will be by Commission notice or order which will be served on each party of record. *Broadening amendments will not be accepted after the date of this publication except for good cause shown.*

We find preliminarily that, with the exception of those applications involving duly noted impediments (e.g., unapproved common control, unresolved fitness questions, dual operations, and jurisdictional problems) to authorization of proposed services, each applicant has demonstrated, in accordance with the applicable provisions of the Interstate Commerce Act and with the Commission's rules and regulations, that its proposed service should be authorized. This decision is not a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969.

It is ordered that in the absence of legally sufficient protests, filed within 30 days of publication of this order-notice (or, if at any prescribed time thereafter, the application becomes unopposed), an appropriate certificate, permit, or license (which subsequently may reflect administratively acceptable restrictive amendments to the service proposed below) will be issued to each applicant upon compliance with certain requirements which will be set forth in a notification of effectiveness of this order-notice. To the extent that the authority sought by each applicant below may duplicate its existing authority, such duplicating authorities shall be construed, for all purposes, as a single operating right. Some of the applications may have been modified to conform to the Commission's policy of simplifying grants of operating authority.

Dated: _____.

By the Commission, [decisional body].

(Here would follow a list of all applications embraced in the order-notice.)

We believe that other suggested modifications, by and large, will not further the purposes of this rulemaking and, if adopted, could be counterproductive. Restricting use of these rules by making them either optional with applicants or inapplicable to certain types of applications would serve only to complicate and possibly to impede the decisionmaking process in opposed and unopposed application proceedings. Making use of previously filed data, even assuming that it is reliable, may present difficulties in terms of retrievability. We also doubt that the public interest would be served by encouraging applicants to restrict applications for operating authority. Finally, while we are impressed with the suggestion that these procedural revisions be extended to finance proceedings, we would prefer to evaluate separately such a proposal since dissimilar considerations are involved.

We turn now to uncertainties concerning application of these rules which are intended to complement, not displace, existing procedures. It should be emphasized that final responsibility for modifying nonconforming descriptions cotained in applications rests with the decisionmaker and not with the personnel to whom the task of reviewing applications will be assigned. If it appears, however, that preliminary modifications are necessary and that such modifications may affect the substance of a service proposal, applicant most certainly will be consulted before any changes are effected. Such consultation will most likely take the form of a telephone call so that delays are not occasioned.[5] We recognize that occasions may arise when applicants have some doubt concerning the appropriateness of proposed commodity descriptions. In case of doubt, we suggest that a complete description of the commodities sought to be transported and any pertinent examples be included as an appendix to the supporting witness' certification of support. Additionally, any of the Commission's field offices may be consulted for assistance.

We do not believe that these procedural revisions will impact more harshly either upon particular classes of applicants (e.g., general commodities carriers) or upon especially complex service proposals. In all cases, the information required in the application form and the certification of support should be developed as succinctly as possible[6] since both applicants and their supporting witnesses will be given the opportunity to expand upon their initial evidentiary presentations if the applications ultimately are opposed. For example, if traffic volume figures are unwieldy, as may be the case in applications for expansive general commodities authority, shippers may use an alternate measure (e.g., hourly, daily, weekly, etc.) to indicate the extent to which they intend to use proposed services. Similarly, in describing existing services the supporting witness need only describe generally the types (rail, water, etc.) of transportation services available and, perhaps, identify those carriers upon which it has called most often.

D. PROPOSED ALTERNATIVES

Alternatives to these procedural revisions include (1) a proposal which would institute the case-in-chief concept (see Revision of Application Forms, 125 M.C.C. 790 (1976)), making use of such procedure optional with applicants, (2) a requirement that all protests be accompanied by a $350 filing fee, and (3) the threshold rejection of all frivolous protests. None of these alternatives, however, focuses directly upon the unnecessary administrative delays which the revised procedures have been designed to reduce. Further consideration of these alternatives, therefore, would serve no useful purpose.

CONCLUSION

We are persuaded, on the basis of the comments received, that the procedural revisions adopted in this proceeding will be of substantial benefit to applicants, their supporting witnesses, the Commission, and the consuming public and will promote effective administration of the Act. Any presently indeterminable problems which implementation of these

[5] If no agreement can be reached during these consultations, the entire application proceeding, including the unresolved issues concerning any modifications, will be designated for handling under the modified procedure or assigned for oral hearing. Such telephonic conversations entered into at this preliminary stage of proceedings between the Commission's personnel and applicants' representatives will not be considered "ex parte communications" as that therm is understood in the Commission's rules of practice. See Revised Rules of Practice, App. C, decided April 28, 1977.

[6] In this regard, we do not expect applicants to submit with their application forms compendiums of their operating authorities. If authorization of a proposed service would result in dual operations or if there is some other reason (e.g., that authorization of a proposed service will result in economy and efficiency of operations) for submitting operating authorities, applicant should submit only copies of those authorities which relate to that particular issue.

rules may present in the future will be dealt with pragmatically. In any event, we intend to monitor closely the efficacy of these rules and to announce publicly our findings.

These rules, which do not constitute a major Federal action having a significant effect upon the quality of the human environment, will apply to all applications filed on or after April 1, 1978, allowing sufficient time (1) for printing the revised application forms and (2) for training of the necessary personnel.

Accordingly, 49 CFR Part 1003 is revised to reflect modification of application forms OP–OR–9, OP–OR–11, OP–WC–20, and OP–FF–10 for operating authority (1) by including in the instructions of each application form an unnumbered paragraph to read as follows:

In addition to the other information required in this form, applicant also is required to append to the form the following information:

(a) A current balance sheet and income statement;

(b) A list describing its equipment and its pertient terminal locations;

(c) A brief statement concerning the feasibility of the proposed operation; and

(d) A certification of familiarity with applicable safety regulations;

(2) By revising part V(d)(2) of Form OP–OR–9 to read as follows:

* * * * *

(2) a. the person or persons it would serve in the proposed operation:_____

_____;

and b. the manner in which contractual provisions are to be fulfilled (i.e., either (*1*) by furnishing transportation service through the assignment of motor vehicles for a continuing period of time to the exclusive use of each person served, or (*2*) by furnishing transportation services designed to meet the distinct need of each individual customer, and if the latter, describe briefly the distinct need for which transportation services have been designed):_____

_____

_____

_____

and (*3*) by inserting in the certification of support to each application form immediately preceeding the words "The undersigned shipper supports the following applications for authority similar to that sought in this application. (If none, so state)", the following unnumbered paragraphs:

Describe briefly the transportation services currently employed:_____

_____

_____

_____

Indicate the extent to which applicant's proposed service, if authorized, would be utilized by you (i.e., volume to be tendered applicant):_____

_____

_____

Additionally, 49 CFR 1100.247(f)(2) is revised to read as follows:

§ 1100.247 Special rules governing notice of filing of applications by motor carriers of property or passengers and brokers under sections 206 (except section 206(a)(6) relating to Certificates of Registration), 209 and 211, by water carriers under sections 302(e), 303, and 309, and by freight forwarders under section 410 of the Interstate Commerce Act, and certain other procedural matters with respect thereto. (Rule 247)

* * * * *

(f) * * *

(2) Proceedings in which no protests are filed within 30 days after publication in the FEDERAL REGISTER, and which are not assigned for oral hearing, will be determined on the basis of the information submitted with the application forms.

These rules are promulgated under the authority contained in 49 U.S.C. 304, 904, and 1003, and 5 U.S.C. 553 and 559 and were adopted formally at a General Session of the Interstate Commerce Commission held at its office in Washington, D.C., on the 1st day of December, 1977.

By the Commission.

H. G. HOMME, Jr.,
Acting Secretary.

APPENDIX A—REPRESENTATIONS

I. MOTOR CARRIERS

Central Transport, Inc.
CW Transport, Inc.
Great Western Trucking Co., Inc., and Texas Continental Express, Inc.
Groendyke Transport, Inc.
Michigan & Nebraska Transit Co., Inc.
Miller Transporters, Inc.
National Tank Truck Carriers, Inc.
Refrigerated Transport Co., Inc., Caudell Transport, Inc., Farwest Furniture Transport, Inc., Joseph Moving & Storage Co., Inc., Kansas-Arizona Motor Express, Inc., P. C. White Truck Line, Inc., and Willers, Inc.
J. H. Rose Truck Line, Inc., and Robertson Tank Lines, Inc.
Salem Transportation Co., Inc.

II. CARRIER ASSOCIATIONS AND CONFERENCES

American Bus Association.
American Trucking Associations, Inc.
Regular Common Carrier Conference, Inc.
Water Transport Association.

III. SHIPPER INTEREST

The National Industrial Traffic League.

IV. CARRIER LEGAL REPRESENTATIVES

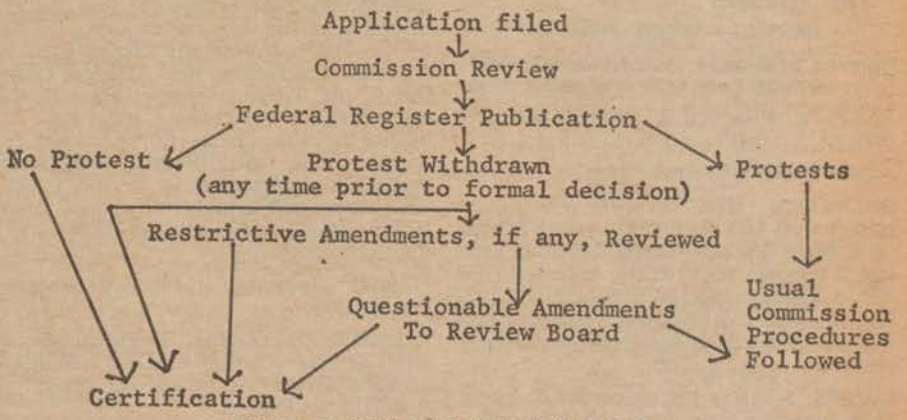
William J. Monheim.
Motor Carrier Lawyers Association.
Robbins & Newman.

V. GOVERNMENTAL INTEREST

United States Department of Justice.

APPENDIX B

PROCEDURAL FLOW CHART UNDER THE NEW RULES



[FR Doc.77-35602 Filed 12-12-77;8:45 am]

[7035-01]

[Service Order No. 1279-A]

PART 1080—CONTRACTS, FORWARDERS—MOTOR COMMON CARRIERS

Freight Forwarders of Export Traffic Authorized To Operate to Any Available Atlantic or Gulf Coast Port in The United States and to Any Port in Dominion of Canada

AGENCY: Interstate Commerce Commission.

ACTION: Emergency order (Service Order No. 1279-A).

SUMMARY: Freight forwarders unable to operate in the ports designated by their operating permits because of a labor dispute at the Atlantic and Gulf ports were authorized to operate through any available Atlantic, Gulf or Canadian port by Service Order No. 1279. Service Order No. 1279-A now vacates that Order because the labor dispute has been resolved.

DATE: Effective 11:59 p.m., December 7, 1977.

FOR FURTHER INFORMATION CONTACT:

C. C. Robinson, Chief, Utilization and Distribution Branch, Interstate Commerce Commission, Washington, D.C. 20423, Telephone 202-275-7840, Telex 89-2742.

SUPPLEMENTARY INFORMATION:

The Order is printed in full below:

At a Session of the Interstate Commerce Commission, Railroad Service Board, held in Washington, D.C., on the 7th day of December, 1977.

Upon further consideration of Service Order No. 1279 (42 FR 54552, 55819, 57692, 59503 and 61471), and good cause appearing therefor:

§ 1080.1279 **Freight Forwarders of Export Traffic Authorized To Operate to Any Available Atlantic or Gulf Coast Port in the United States and to Any Port in Dominion of Canada, Is Vacated Effective 11:59 p.m., December 7, 1977.**

(49 U.S.C. 1 (15) and (16), 17(s) and 420.)

It is further ordered, That copies of this order shall be served upon all freight forwarders; and that notice of this order be given to the general public by depositing a copy in the Office of the Secretary of the Commission at Washington, D.C., and by filing it with the Director, Office of the Federal Register.

By the Commission, Railroad Service Board, members Robert S. Turkington and Leonard L. Schloer.

H. G. HOMME, Jr.,
Acting Secretary.

[FR Doc.77-35597 Filed 12-12-77;8:45 am]

[4310-55]

Title 50—Wildlife and Fisheries

CHAPTER I—UNITED STATES FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR

PART 33—SPORT FISHING

Opening of Browns Park National Wildlife Refuge, Colo. to Sport Fishing

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Special Regulation.

SUMMARY: The Director has determined that the opening to sport fishing of Browns Park National Wildlife Refuge is compatible with the objectives for which the area was established, will utilize a renewable natural resource, and will provide additional recreational opportunity to the public.

DATES: January 1 through February 28, 1978, inclusive, and June 16 through December 31, 1978, inclusive.

FOR FURTHER INFORMATION CONTACT:

James A. Creasy, Refuge Manager, Browns Park National Wildlife Refuge, Greystone Route, Maybell, Colo. 81640, 303-365-3695.

SUPPLEMENTARY INFORMATION:

§ 33.5 **Special regulations; sport fishing; for individual wildlife refuge areas.**

Sport fishing is permitted on the Browns Park National Wildlife Refuge, Colo., only on the areas designated by signs as being open to fishing. These open areas, Beaver Creek and the Green River, comprise 1,000 acres. Information may be obtained from the refuge office and from the office of the Regional Director, U.S. Fish and Wildlife Service, 10597 West 6th Avenue, P.O. Box 25486, Denver, Colo. 80215. Sport fishing shall be in accordance with all applicable State regulations.

The provisions of this special regulation supplement the regulations which govern fishing on wildlife refuge areas generally which are set forth in Title 50 Code of Federal Regulations, Part 33. The public is invited to offer suggestions and comments at any time.

NOTE.—The U.S. Fish and Wildlife Service has determined that this document does not contain a major proposal requiring preparation of an Economic Impact Statement under Executive Order 11949 and OMB Circular A-107.

JAMES A. CREASY,
Refuge Manager, Browns Park National Wildlife Refuge, Maybell, Colo.

NOVEMBER 21, 1978.

[FR Doc.77-35456 Filed 12-12-77;8:45 am]

[4310-55]

PART 33—SPORT FISHING

Opening of Certain National Wildlife Refuges to Sport Fishing: Arizona, California, New Mexico, Oklahoma, Texas

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Special regulations.

SUMMARY: The Director has determined that the opening to sport fishing of certain national wildlife refuges in Arizona, California, New Mexico, Oklahoma, and Texas is compatible with the objectives for which these areas were established, will utilize a renewable resource, and will provide additional recreational opportunity to the public. This document establishes special regulations effective for the upcoming sport fishing seasons.

DATES: January 1, 1978, to December 31, 1978.

ADDRESSES: Contact the Refuge Manager at the address and/or telephone number listed below in the body of Special Regulations.

FOR FURTHER INFORMATION CONTACT:

W. O. Nelson, Jr., Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, N. Mex. 87103, 505-766-2036.

SUPPLEMENTARY INFORMATION: Sport fishing is permitted on the National Wildlife Refuges indicated below in accordance with 50 CFR Part 33 and the following Special Regulations. Portions of refuges which are open to sport fishing are designated by signs and/or delineated on maps. No vehicle travel is permitted except on designated maintained roads and trails. Special conditions applying to individual refuges are listed on leaflets available at refuge headquarters and from the office of the Regional Director, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, N. Mex. 87103. Fishing shall be in accordance with all applicable State regulations subject to the following conditions:

§ 33.5 **Special regulations; sport fishing; for individual wildlife refuge areas.**

Sport fishing is permitted on the following areas: Cibola National Wildlife Refuge, Box AP, Blythe, Calif. 92225. Contact George M. Constantino, Refuge Manager at 714-922-4433. Special Conditions: (1) Zone III is closed to fishing and boating from January 1 through March 15, 1978, and from September 6 through December 31, 1978. The use of boats, rafts, or floating devices or fishing from the banks of the lake or Colorado River in Zone III is prohibited during this period. This closure is necessary to protect migratory waterfowl wintering on Cibola Lake from disturbance. Zone III includes Cibola Lake and associated waters and is identified as all refuge lands lying within the area enclosed on the north by the east-west half section line of Sec. 7, T. 2 S., R. 23 W.; the refuge boundary on the east and south; and the center of the Cibola Dry Cut section of the Colorado River on the west. (2) Bullfrogs may be taken in open waters between July 1 and November 30, 1978. Frogs may be taken by spear, gig, hook and line, bow and arrow, fishing tackle, or by hand with the aid of artificial light. (3) Only conventional fishing tackle approved by State regulations (one rod with line and two hooks or lures) is authorized. The possession of any non-conventional fishing gear such as trotline, set lines, nets, etc. is illegal. (4) The taking of fish or amphibians, other than bullfrogs during the season, with bow and arrow is prohibited.

Havasu National Wildlife Refuge, P.O. Box A, Needles, Calif. 92363. Contact Tyrus W. Berry, Refuge Manager at 714-326-3853. Special Conditions: (1) The open season for sport fishing on the refuge extends from January 1 through December 31, 1978, except that the closed area, as posted, in Topock March is closed to fishing and entry from January 1 through January 31, 1978, and from October 1 through December 31, 1978. (2) The possession of trotlines or limblines on the refuge is prohibited. A trotline or limbline is any unattended hook and line arrangement that, when used, constitutes a violation of the "angling" laws of either Arizona or California. (3) The taking of fish with bow and arrow is prohibited.

Imperial National Wildlife Refuge, P.O. Box 2217, Martinez Lake, Ariz. 85364. Contact Gerald E. Duncan, Refuge Manager at 602-783-3400. Special Conditions: (1) The open season for sport fishing on the refuge extends from January 1 through Decemebr 31, 1978, except for an area of approximately 175 acres in Martinez Lake, Ariz., as posted, to be closed during the periods from January 1 through March 1, 1978, and from October 1 through December 31, 1978, and an area of approximately 60 acres in Ferguson Lake, Calif., as posted, to be closed during the same periods. (2) The use of bow and arrow for the

taking of carp, Buffalo, mullet, suckers, and bullfrogs is permitted. (3) Taking of bullfrogs, crustaceans and mollusks is permitted in refuge waters open to fishing and shall be in accordance with State regulations.

Bitter Lake National Wildlife Refuge, Box 7, Roswell, N. Mex. 88201. Contact LeMoyne B. Marlatt, Refuge Manager at 505–622–6755. Special Conditions: (1) The open season for sport fishing on the refuge in pool Units 5, 6, 7, 15, and 16 extends from April 1 through October 15, 1978. (2) The use of boats or floating devices is prohibited. (3) Fishing hours are from one hour before sunrise until one hour after sunset daily.

Bosque del Apache National Wildlife Refuge, P.O. Box 1246, Socorro, N. Mex. 87801. Contact Richard W. Rigby, Refuge Manager at 505–835–1828. Special Conditions: (1) The open season for sport fishing on all areas on the refuge extends from May 30 through September 30, 1978. (2) Fishing hours are from one-half hour before sunrise to one-half hour after sunset. (3) Trotlines and bow and arrows are prohibited. (4) The use of boats or other floating devices is prohibited. (5) Fires are prohibited. (6) Frogging is prohibited.

Salt Plains National Wildlife Refuge, Route 1, Box 76, Jet, Okla. 73749. Contact Ronald S. Sullivan, Refuge Manager at 405–626–4794. Special Conditions: (1) The open season for sport fishing on the refuge extends from April 15 through October 15, 1978, in Great Salt Plains Lake as posted; in Sand Creek; the three main channels of Salt Fork River; and north of the right-of-way of Oklahoma State Highway 11, as posted. (2) It is illegal to take game fish by any means other than hook and line. Trotlines must be removed from waters at the close of the fishing season.

Sequoyah National Wildlife Refuge, P.O. Box 398, Sallisaw, Okla. 74955. Contact Robert H. Stratton, Jr., Refuge Manager at 918–775–4931. Special Conditions: (1) The open season for sport fishing on the refuge extends from January 1 through December 31, 1978, except for an area of approximatley 2,200 acres south of Vian Creek and east of the refuge tour road as posted to be closed during the periods from January 1 through March 15, 1978, and from October 1 through December 31, 1978. (2) Some refuge roads leading to waters open to fishing may be closed, as posted, from January 1 through March 15, 1978, and from October 1 through December 31, 1978.

Tishomingo National Wildlife Refuge, P.O. Box 248, Tishomingo, Okla. 73460. Contact Ernest S. Jemison, Refuge Manager at 405–371–2402. Special Conditions: (1) The open season for sport fishing on the refuge extends from January 1 through December 31, 1978, on Rock Creek, Bell Creek, Big Sandy Creek, Dick's Pond, and Goose Pen Pond; and from March 1 through September 30, 1978 for waters of Lake Texoma within the Tishomingo National Wildlife Refuge (Washita Arm). The Washita Arm of Lake Texoma (Cumberland Pool) is closed to sport fishing and all public boating during the period October 1 through December 31, 1978. In addition, all trotlines will be removed from said waters of the Upper Washita Arm of Lake Texoma before October 1, 1978. (2) The open season for sport fishing on the Tishomingo Management Unit extends from March 1 through September 30, 1978. Fishing with trotlines in Lost Lake, Bobcat Gulch, and McAdams Pond is prohibited during the open season. (3) Camping in association with fishing is limited to 7 days unless otherwise posted and is permitted only at designated site.

Washita National Wildlife Refuge, Route 2, Box 100, Butler, Okla. 73625. Contact Evan V. Klett, Refuge Manager at 405–473–2205. Special Conditions: (1) The open season for sport fishing on the refuge extends from April 1 through October 14, 1978, except that the eastern shoreline of Foss Reservoir from Lakeview Recreation Area to Pitts Creek Recreation Area and the eastern bank of Pitts Creek itself shall be open to year-round bank fishing. (2) Seining is prohibited in all refuge waters. (3) Trotlines must be removed on or before October 14, 1978 from all refuge waters except those listed in (1) above as open to year-round bank fishing. (4) Boats and other floatation devices are prohibited in all refuge waters from January 1 through March 31, 1978, and from October 15 through December 31, 1978.

Wichita Mountains Wildlife Refuge, P.O. Box 448, Cache, Okla. 73527. Contact Robert A. Karges, Refuge Manager at 405–429–3221. Special Conditions: (1) Fishing with closely attended poles and lines, including rods and reels, is permitted. The taking of any fish by any other means is prohibited, except the taking of non-game fish from Elmer Thomas Lake by the use of gigs, spears, or other similar devices (but not including bows and arrows) containing not more than three points with no more than two barbs on each point, is permitted. (2) Fishermen may use one-man inner tube type "fishing floaters" while fishing. Wading while fishing is permitted.

Anahuac National Wildlife Refuge, P.O. Box 278, Anahuac, Tex. 77514. Contact Russel W. Clapper, Refuge Manager at 713–267–3337. Special Conditions: (1) Boats and floating devices may not be used for fishing on inland waters. (2) Fishing in inland waters is permitted only by ordinary pole and line, rod and reel, or hand-held line. Trotlines, throw lines, set lines, bow and arrows, gigs and spears may not be used in inland waters.

Brazoria National Wildlife Refuge, P.O. Box 1088, Angleton, Tex. 77515. Contact Jim E. Neaville, Acting Refuge Manager at 713–849–6062. Special Conditions: (1) Fishing is not permitted on interior waters except Nicks Lake, Salt Lake and Lost Lake.

Buffalo Lake National Wildlife Refuge, P.O. Box 228, Umbarger, Tex. 79091. Contact Paul E. Ferguson, Refuge Manager at 806–499–3382. Due to the lack of water in Buffalo Lake, the Buffalo Lake National Wildlife Refuge is closed to fishing for Calendar Year 1978.

Hagerman National Wildlife Refuge, P.O. Box 123, Sherman, Tex. 75090. Contact Bert E. Blair, Refuge Manager at 214–786–2826. Special Conditions: (1) The open season for sport fishing and frogging on the refuge extends from April 1 through September 30, 1978.

Laguna Atascosa National Wildlife Refuge, P.O. Box 2683, Harlingen, Tex. 78550. Contact Ray Rauch, Acting Refuge Manager at 512–423–8328. Special Conditions: (1) Fishing in the designated area is permitted from January 1 through December 31, 1978. (2) Fishing with trotlines is not permitted. (3) The refuge officer in charge may at his discretion close the fishing area for public safety, to protect wildlife, or to protect government property.

Muleshoe National Wildlife Refuge, P.O. Box 549, Muleshoe, Tex. 79347. Contact Paul E. Ferguson, Refuge Manager at 806–946–3341. Due to the lack of water in fishing lakes, Muleshoe National Wildlife Refuge is closed to fishing for Calendar Year 1978.

W. O. NELSON, Jr.,
Regional Director,
Albuquerque, N. Mex.

DECEMBER 2, 1978.

[FR Doc.77-35457 Filed 12-12-77;8:45 am]

[3410-10]

Title 7—Agriculture

SUBTITLE A—OFFICE OF SECRETARY OF AGRICULTURE

[Amdt. 1]

PART 16—LIMITATION ON IMPORTS OF MEAT

Section 204—Import Regulations; Restrictions on the Importation of Meat From Costa Rica, Australia, and New Zealand

AGENCY: Foreign Agricultural Service, USDA.

ACTION: Final rule.

SUMMARY: The regulations set forth in this Subpart are amended to (1) increase the quantity of meat which may be improted from Costa Rica to no more than 60.9 million pounds during calendar year 1977 and (2) prohibit the importation of meat in excess of 653.0 million pounds from Australia and 268.0 million pounds from New Zealand during calendar year 1977.

EFFECTIVE DATE: December 13, 1977. See supplementary information.

FOR FURTHER INFORMATION CONTACT:

John E. Riesz (FAS), 202–447–7198, Dairy, Livestock and Poultry Division, FAS, USDA, Room 6621 South Building, Washington, D.C. 20250.

SUPPLEMENTARY INFORMATION: The regulations set forth in this subpart

are to assist in carrying out bilateral agreements with governments of foreign countries pursuant to Section 204 of the Agricultural Act of 1956, as amended limiting the export from the respective countries and the importation into the United States of certain meat.

The Secretary of State and the Special Representative for Trade Negotiations concur in the issuance of these regulations governing the entry or withdrawal from warehouse for consumption in the United States of meat to carry out such bilateral agreements and to request the Commissioner of Customs to implement such action.

Imports of such meats from Costa Rica were previously limited to 55.6 million pounds for calendar year 1977 (42 FR 42841). The amendment increases this limitation to 60.9 million pounds for calendar year 1977 since it is anticipated that meat imports from certain other countries participating in the 1977 voluntary restraint program will fall short of the level of imports specified in such agreements.

Further, the regulation establishes quantitative restrictions applicable to meat imported from Australia and New Zealand which may be entered or withdrawn from warehouse for consumption in the United States, whether shipped directly or indirectly, at levels of 653.0 million pounds and 268.0 million pounds, respectively, during calendar year 1977. Such action is necessary in order to carry out the provisions of agreements entered into with such countries.

The action taken herewith has been determined to involve foreign affairs functions of the United States. Therefore, these regulations fall within the foreign affairs exception to the notice and effective date provisions of 5 U.S.C. 553.

EFFECTIVE DATE

Meat released under the provisions of Section 448(b) of the Tariff Act of 1930 (19 U.S.C. 1448(b) (immediate delivery)) prior to December 13, 1977, shall not be denied entry although the quotas for Costa Rica, Australia and New Zealand established herein have been filled.

Section 16.5 "Quantitative Restrictions" of subpart A, Section 204 Import Regulations, of Part 16, Limitation on Imports of Meat, of Title 7 of the Code of Federal Regulations is amended to read as follows:

§ 16.5 Quantitative restrictions.

(a) Imports from Costa Rica. During calendar year 1977, no more than 60.9 million pounds of meat, exported from Costa Rica in the form in which it would fall within the definition of meat in TSUS 106.10 and 106.20, may be entered or withdrawn from warehouse for consumption in the United States, whether such meat was shipped directly or indirectly from Costa Rica to the United States.

(b) Imports from Australia. During calendar year 1977, no more than 653.0 million pounds of meat, exported from Australia in the form in which it would fall within the definition of meat in TSUS 106.10 and 106.20, may be entered or withdrawn from warehouse for consumption in the United States, whether such meat was shipped directly or indirectly from Australia to the United States.

(c) Imports from New Zealand. During calendar year 1977, no more than 268.0 million pounds of meat, exported from New Zealand in the form in which it would fall within the definition of meat in TSUS 106.10 and 106.20, may be entered or withdrawn from warehouse for consumption in the United States, whether such meat was shipped directly or indirectly from New Zealand to the United States.

(Sec. 204, Pub. L. 540, 84th Cong., 70 Stat. 200, as amended (7 U.S.C. 1854) and Executive Order 11539 (35 F.R. 10733).)

Issued at Washington, D.C. this 12th day of December 1977.

BOB BERGLAND,
Secretary.

[FR Doc.77-35745 Filed 12-12-77;11:43 am]

proposed rules

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

[3128-01]

DEPARTMENT OF ENERGY

Economic Regulatory Administration

[10 CFR Parts 211, 214]

CANADIAN ALLOCATION PROGRAM AND BUY/SELL PROGRAM

Proposed Amendments

AGENCY: Department of Energy, Economic Regulatory Administration.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Economic Regulatory Administration (ERA) of the Department of Energy (DOE) is proposing amendments to the Mandatory Canadian Crude Oil Allocation Regulations (Canadian Allocation Program) and the Mandatory Crude Oil Allocation Program (Buy/Sell Program) intended to assist refineries in the Northern Tier States in obtaining additional supplies of crude oil to offset the reduction in Canadian exports. Under the proposed amendments to the Canadian Allocation Program, a first priority refinery would be permitted to exchange Canadian heavy crude oil for non-Canadian crude oil. The proposed amendments to the Buy/Sell Program would eliminate the base period ceiling on purchases with respect to any first priority refinery owned by a refiner-buyer, so that purchases could be made on the same basis as for other refineries. Refiner-sellers would be required to deliver the additional volume of crude oil to such refiner-buyer's refinery or, if that is not practical, to an appropriate point in the United States for exchange by the refiner-buyer for Canadian crude oil.

DATES: Comments by January 13, 1978, 4:30 p.m.; Requests to speak by December 22, 1977, 4:30 p.m.; Hearing date: December 27, 1977, 9:30 a.m.

ADDRESSES: Comments and requests to speak to: Executive Communications, Room 3317, Department of Energy, Box QM, Washington, D.C. 20461; Hearing location: Room 2105, 2000 M Street NW., Washington, D.C. 20461.

FOR FURTHER INFORMATION CONTACT:

Robert C. Gillette (Hearing Procedures), 2000 M Street NW., Room 2214-B, Washington, D.C. 20461, 202-254-5201.

Ed Vilade (Media Relations), 12th and Pennsylvania Avenue NW., Room 3104, Washington, D.C. 20461, 202-566-9833.

Robert G. Bidwell, Jr. (Canadian Allocation Program and Buy/Sell Program), 2000 M Street NW., Room 6128-P, Washington, D.C. 20461, 202-254-9707.

Robert J. Kane (Regulations and Emergency Planning), 2000 M Street NW., Room 2304, Washington, D.C. 20461, 202-254-7477.

Samuel M. Bradley (Office of General Counsel), 12th and Pennsylvania Avenue NW., Room 5134, Washington, D.C. 20461, 202-566-9565.

SUPPLEMENTARY INFORMATION: I. Background. II. Proposed Amendments to the Canadian Allocation Program. III. Proposed Amendments to the Crude Oil Buy/Sell Program. IV. Public Hearing and Written Comment Procedures.

I. Background

Prior to the activation of the Department of Energy (DOE) on October 1, 1977, the Federal Energy Administration[1] (FEA) issued two notices of public inquiry concerning various proposals to assist refineries in the Northern Tier in obtaining crude oil supply supplements to offset reductions in the exports of Canadian crude oil. On the basis of the comments received in response to these notices, the ERA has determined to propose specific regulatory amendments to the Canadian Allocation Program set forth in 10 CFR Part 214 and the Buy/Sell Program set forth in 10 CFR 211.65. The comments received in response to the two notices and these proposed amendments are discussed in the following sections.

II. Proposed Amendments to Canadian Allocation Program

On September 14, 1977 (42 FR 46543, September 16, 1977), the FEA issued a notice of public inquiry entitled "Projected Crude Oil and Petroleum Product Shortages in the Northern Tier of the United States." In the notice, the FEA requested comments on the following proposals: (1) restricting crude oil exchanges with Canada to refineries which serve the areas of greatest potential petroleum product shortages or, alternatively, requiring any refiner that receives authorization for a crude oil exchange with a Canadian refiner to "share" a portion of the Canadian crude oil with a refinery serving Montana or eastern Washington; (2) allowing time-exchanges between U.S. and Canadian refiners; (3) modifying the crude oil supplier/purchaser rule set forth in § 211.63 to permit crude oil supplies indigenous to the Northern Tier to remain in the area; and (4) modifying the restrictions in § 214.31(g)(1) on crude oil exchanges under the Canadian Allocation Program to permit first priority refineries to exchange Canadian heavy crude oil for non-Canadian crude oil. A public hearing was held in Billings, Mont., on September 29, 1977 at which 23 persons testified. In addition, 14 written comments were received.

The majority of the firms presenting oral testimony and written comments in response to the September 16 notice opposed the proposals regarding crude oil exchanges with Canada and modification of the supplier/purchaser rule as either counter-productive or unnecessary. Several commenters contended that these proposals would merely shift the crude oil supply problems of the Northern Tier to other regions of the country. Time exchanges were not supported by most refiners due to the economic uncertainty associated with repayment of crude oil received from Canada. Those comments which addressed the proposal concerning the modification of the exchange provision in § 214.31(g)(1) of the Canadian Allocation Program regulations supported it as a generally effective method of according first priority refineries in the Canadian Allocation Program greater flexibility in obtaining additional suitable crude oil through exchanges.

Based on its analysis of the comments submitted in response to the September 16 notice, the ERA is proposing to amend the exchange provision in § 214.31(g)(1) of the Canadian Allocation Program regulations in the manner discussed below. The ERA has determined not to propose at this time specific regulatory amendments with respect to the remaining proposals in the September 16 notice, but is continuing to review these and other possible alternatives and may propose one or more of them at a later time.

Section 214.31(g)(1) of the Canadian Allocation Program regulations prohibits the disposition by first priority refineries of Canadian crude oil except pursuant to barrel-for-barrel exchanges for other Canadian crude oil in which only quality and location differentials are given effect in the calculation of the exchange ratio, or matching purchase and sale transactions having the same effect as such exchanges. Second priority refineries, however, are not limited in exchanging away

[1] In DOE Delegation Order No. 0204-4, the Secretary of Energy delegated to the Administrator of the Economic Regulatory Administration (ERA) the authority previously exercised by FEA to take action with regard to the allocation and pricing of crude oil.

Canadian crude oil subject to the program in return for non-Canadian source crude oil.

At the time of their adoption, the rationale behind these provisions pertaining to exchanges was that first priority refineries by definition have limited access to non-Canadian source crude oil and therefore theoretically would be unable to exchange significant volumes of Canadian crude oil for non-Canadian source crude oil. The provision further was intended to assure that Canadian crude oil allocated to first priority refiners on a preferential basis was actually retained and utilized by those refiners.

The ERA believes these exchange provisions may be unduly restrictive for Northern Tier refineries which do not have the capability to process or receive Canadian heavy crude oil. In this regard, only five first priority refineries have the capability to process heavy crude oil, and of those five only three first priority refineries processed any Canadian heavy crude oil during the base period (November 1, 1974 through October 31, 1975). The Canadian National Energy Board has advised the ERA that the export level for Canadian heavy crude oil for the allocation period commencing January 1, 1978 will be approximately 140,000 barrels per day (B/D), while the export level for Canadian light crude oil in this period will be approximately 55,000 B/D.

As the export level for Canadian light crude oil continues to decline relative to the export level for heavy crude oil, the first priority refineries dependent upon Canadian light feedstocks will experience increasingly greater difficulty in obtaining supplies of suitable crude oil. Although first priority refineries by definition are limited in their capability to replace Canadian crude oil, the comments in response to the September 16 notice indicate that several first priority refineries could obtain additional supplies of domestic crude oil through exchanges of Canadian heavy crude oil for domestic crude oil, which is otherwise unavailable due to the supplier/purchaser rule (§ 211.63). Accordingly, the ERA is proposing to amend § 214.31(g)(1) to permit barrel-for-barrel exchanges (and matching purchase and sale transactions which have the same effect as an exchange) of Canadian heavy crude oil for non-Canadian source crude oil by first priority refineries, provided the crude oil received by the first priority refinery making such an exchange is processed in that refinery. Transactions involving more than two parties, such as three-way exchanges, would be permissible under the proposed amendment. As is the case under the current regulations, the proposed amendment would permit only quality and location differentials to be given effect in the calculation of the exchange ratios.

The ERA recognizes the possibility that under the proposed amendment some first priority refineries that did not use or used only a small volume of Canadian heavy crude oil in the base period may nominate for a substantial volume of Canadian heavy crude oil solely for the purposes of exchanges, thereby resulting in a reduced allocation for heavy crude oil for first priority refineries that are dependent thereupon. To ensure that this does not occur, the ERA also is proposing to amend the allocation method for Canadian heavy crude oil in § 214.31(a)(3) to accord first priority refineries that processed Canadian heavy crude oil in the base period a preference with respect to the allocation of this crude oil. Under the proposed amendments, the base period volume requirements for Canadian heavy crude oil of such first priority refineries would be satisfied before any rights for Canadian heavy crude oil were issued to first priority refineries that did not process Canadian heavy crude oil in the base period. As is the case under the current regulations, all first priority refineries, irrespective of whether they processed Canadian heavy crude oil in the base period, would be permitted to fill out their base period volume of Canadian crude oil with heavy crude oil before any rights for Canadian heavy crude oil would be issued for any second priority refinery.

III. Proposed Amendments to the Crude Oil Buy/Sell Program

In a notice issued on September 30, 1977, (42 FR 54257, October 5, 1977), the FEA requested comments on the desirability of mdifying or eliminating § 211.65(b)(4) of the crude oil Buy/Sell Program regulations, which limits purchases of domestic crude oil by a refiner-buyer for processing in any first priority refinery owned by the refiner-buyer to the average volumes thereof purchased by that refiner-buyer for that refinery in the period September 1, 1976 to August 31, 1977. Comments were also requested regarding the modification of § 211.65(f)(2)(ii), which establishes a corresponding ceiling on the sales obligation of any refiner-seller that owns a first priority refinery. These provisions were adopted to make the Buy/Sell Program conform with the Canadian Allocation Program. The ceiling on the purchase opportunities of refiner-buyers that own first priority refineries reflects the fact such refiners have limited ability to receive non-Canadian source crude oil. The ceiling with respect to the sales obligations of refiner-sellers that own first priority refineries was established to prevent the diversion of necessary crude oil supplies from those refineries. In requesting comments on the modification or elimination of the ceiling on refiner-buyers' purchase opportunities, the FEA recognized that, as a result of the reductions in Canadian crude oil exports, the Buy/Sell Program may become a more significant supply source for some Northern Tier refiners.

In response to the October 5, 1977 notice, the ERA received comments from seven interested parties. Several of the comments stated that the ceiling on the purchase opportunities of refiner-buyers which own first priority refineries should be eliminated, inasmuch as such refineries do not have the ability to offset the substantial reductions in exports of Canadian crude oil. The large refineries commenting opposed elimination of the ceiling on purchase opportunities of refiner-buyers on the ground that it would reduce the incentives of those refiners to secure alternative sources of crude oil. All comments reflected agreement that the ceiling on the sales obligations of refiner-sellers that own first priority refineries should be retained.

The ERA has determined, on the basis of the comments submitted in response to the October 5, 1977 notice and other available information, to propose an amendment to § 211.65(b)(4) which would permit refiner-buyers that own first priority refineries to purchase their full allocation for such refineries under the Buy/Sell Program. It is the ERA's tentative determination that the ceiling on purchase opportunities of refiner-buyers that own first priority refineries is no longer justified in light of the substantial reductions in exports of Canadian crude oil. Moreover, elimination of the ceiling may assist refineries serving areas of the Northern Tier that are projected to experience shortages of crude oil and petroleum products to obtain additional supplies of crude oil. The ERA has further determined, however, that the ceiling on sales obligations of refiner-sellers which own first priority refineries should be retained in view of the increasing difficulty these refiners are experiencing in acquiring necessary volumes of crude oil for these refineries.

Under the Buy/Sell Program, a refiner-seller is now required to deliver allocated crude oil to the refiner-buyer's refinery. The ERA recognizes, however, that few if any refiner-sellers have the capability of delivering additional domestic crude oil into the Northern Tier. Accordingly, under the proposed amendment, if the additional volume of crude oil is not practical for delivery to a refiner-buyer's refinery, a refiner-seller would be required to deliver such additional volume of crude oil to a location in the United States which would be practical for the refiner-buyer to exchange the crude oil for Canadian crude oil. However, as a precondition of such an exchange, the refiner-buyer concerned would be required to obtain approval of the exchange of the allocated crude oil for Canadian crude oil from the Director, Oil Imports, pursuant to § 213.28(b)(1) of the Oil Import Regulations and an export license from the Department of Commerce.

IV. Public Hearing and Written Comment Procedures

A. Written Comments

Interested persons are invited to participate in this rulemaking by submitting data, views or arguments with respect to the proposals set forth in this notice. Comments should be submitted to the address indicated in the addresses section of this preamble and

should be identified on the outside envelope with the designation "Amendments to Canadian Crude Oil Allocation Program and Buy/Sell Program." Fifteen copies should be submitted. All comments received by the ERA will be available for public inspection in the ERA Reading Room, Room 2107, Federal Building, 12th and Pennsylvania Avenue NW., between the hours of 8 a.m. and 4:30 p.m., Monday through Friday.

Any information or data considered by the person furnishing it to be confidential must be so identified and submitted in writing, one copy only. The ERA reserves the right to determine the confidential status of the information or data and to treat it according to its determination.

B. PUBLIC HEARING

1. *Request procedure.* The time and place for the hearing is indicated in the dates section of this preamble. If necessary to present all testimony, the hearing will be continued to 9:30 a.m. of the first business day following the date of the hearing shown above.

Any person who has an interest in the proposed amendments issued today, or who is a representative of a group or class of persons that has an interest in today's proposed amendments, may make a written request for an opportunity to make an oral presentation. The person making the request should be prepared to describe the interest concerned, if appropriate, to state why he or she is a proper representative of a group or class of persons that has such an interest, and to give a concise summary of the proposed oral presentation and a phone number where he or she may be contacted through the day before the hearing.

Each person selected to be heard will be so notified by the ERA before 4:30 p.m., e.d.t., December 23, 1977 and must submit 50 copies of his or her statement to the address indicated in the addresses section of this preamble before 9:30 a.m., e.d.t. on December 27, 1977.

2. *Conduct of the hearing.* The ERA reserves the right to select the persons to be heard at this hearing, to schedule their respective presentations, and to establish the procedures governing the conduct of the hearing. The length of each presentation may be limited, based on the number of persons requesting to be heard.

An ERA official will be designated to preside at the hearing. This will not be a judicial or evidentiary-type hearing. Questions may be asked only by those conducting the hearing, and there will be no cross-examination of persons presenting statements. At the conclusion of all initial oral statements, each person who has made an oral statement will be given the opportunity, if he or she so desires, to make a rebuttal statement. The rebuttal statements will be given in the order in which the initial statements were made and will be subject to time limitations.

Any interested person may submit questions to be asked of any person making a statement at the hearing to the address indicated above for requests to speak before 9:30 a.m., e.d.t., December 27, 1977. Any person who wishes to ask a question at the hearing may submit the question, in writing, to the presiding officer. The ERA or the presiding officer, if the question is submitted at the hearing, will determine whether the question is relevant, and whether the time limitations permit it to be presented for answer.

Any further procedural rules needed for the proper conduct of the hearing will be announced by the presiding officer.

A transcript of the hearing will be made and the entire record of the hearing, including the transcript, will be retained by the ERA and made available for inspection at the Freedom of Information Office, Room 2107, Federal Building, 12th and Pennsylvania Avenue NW., Washington, D.C., between the hours of 8 a.m. and 4:30 p.m., Monday through Friday. Any person may purchase a copy of the transcript from the reporter.

As required by section 7(c)(2) of the Federal Energy Administration Act of 1974, Pub. L. 93–275, a copy of this notice has been submitted to the Administrator of the Environmental Protection Agency for his comments concerning the impact of this proposal on the quality of the environment. The Administrator had no comments on this proposal.

NOTE.—The ERA has determined that this document does not contain a major proposal requiring preparation of an Inflationary Impact Statement under Executive Order 11821 and OMB Circular A–107.

(Emergency Petroleum Allocation Act of 1973, Pub. L. 93–159, as amended, Pub. L. 93–511, Pub. L. 94–99, Pub. L. 94–133, Pub. L. 94–163, and Pub. L. 94–385; Federal Energy Administration Act of 1974, Pub. L. 93–275, as amended, Pub. L. 94–332, Pub. L. 94–385, Pub. L. 95–70, and Pub. L. 95–91; Department of Energy Organization Act, Pub. L. 95–91; E.O. 11790, 39 FR 23185; E.O. 12009, 42 FR 46267.)

In consideration of the foregoing, it is proposed to amend Parts 211 and 214 of Chapter II, Title 10 of the Code of Federal Regulations, as set forth below.

Issued in Washington, D.C., December 8, 1977.

DAVID J. BARDIN,
Administrator, Economic Regulatory Administration.

1. Section 214.31 is amended by revising subparagraph (3) of paragraph (a) and by revising subparagraph (1) of paragraph (g) to read as follows:

§ 214.31 Allocation of Canadian light and heavy crude oil.

* * * * *

(a) *Basis for issuance of Canadian crude oil rights.* * * *

(3) *Canadian crude oil rights for heavy crude oil.* (i) FEA shall first issue a number of rights for Canadian heavy crude oil for first priority refineries that processed Canadian heavy crude oil in the base period on a pro-rata basis with reference to (but not to exceed) one-fourth of their respective base period volumes of Canadian heavy crude oil (as adjusted under the provisions of paragraphs (c) and (d) of this section).

(ii) In the event that the allocable supply of Canadian heavy crude oil for a particular allocation period is greater than the total number of rights calculated under subparagraph (3)(i) above, FEA shall issue a number of rights for Canadian heavy crude oil for first priority refineries and second priority refineries on a pro-rata basis with reference to (but not to exceed) one-fourth of their respective base period volumes of Canadian light and heavy crude oil (as adjusted under the provisions of paragraphs (c) and (d) of this section), less the number of rights for Canadian light and/or heavy crude oil issued for each first and second priority refinery under subparagraphs (2) and (3)(i) of this paragraph, *Provided,* That the base period volume requirements or nominations, whichever is less, of such first priority refineries will be satisfied before any rights for Canadian heavy oil are issued for second priority refineries.

(iii) In the event that the allocable supply of Canadian heavy crude oil for a particular allocation period is greater than the total number of rights calculated under subparagraphs (3)(i) and (ii) above, FEA shall issue a number of additional rights for Canadian heavy crude oil for first and second priority refineries on a pro-rata basis with reference to (but not to exceed) their respective nominations for Canadian heavy crude oil to FEA for that allocation period pursuant to paragraph (h) of this section, *Provided,* That the nominations of first priority refineries will be satisfied before any additional rights for Canadian heavy crude oil are issued for second priority refineries.

* * * * *

(g) *Permitted exchanges and sales of Canadian crude oil.* (1) No volumes of Canadian crude oil subject to this part shall be sold or otherwise disposed of by refiners or other firms with respect to first priority refineries that they own or control except pursuant to (i) crude oil exchanges which involve only (directly or indirectly) Canadian crude oil and in which only quality and location differentials are given effect in the calculation of the exchange ratio or ratios, or (ii) matching purchase and sale transactions which involve only (directly or indirectly) Canadian crude oil and which have the same effect as an exchange described in clause (i) of this subparagraph (1); or (iii) exchanges of Canadian heavy crude oil for non-Canadian crude oil in which only quality and location differentials are given effect in the calculation of the exchange ratio or ratios and matching purchase and sale transactions having the same effect as such exchanges, *Provided,* That the volume of non-Canadian crude oil received by a first priority refinery pursuant to such a transaction is processed by that refinery.

* * * * *

2. Section 211.65 is amended by revising subparagraph (4) of paragraph (b) and subparagraph (3) of paragraph (i) to read as follows:

§ 211.65 Method of Allocation.

* * * * *

(b) *Purchase opportunities of refiner-buyers.* * * *

(4) No refiner-buyer shall purchase under this section crude oil imported from Canada for processing in any first priority refinery (as defined in Part 214 of this chapter) owned by that refiner-buyer.

* * * * *

(i) *Conditions of sale.* * * *

(3) The crude oil offered for sale by a refiner-seller must be practical for delivery to and physically capable of being delivered to the refiner-buyer's refinery. The refiner-seller is responsible for arranging delivery of allocated crude oil to the refiner-buyer's refinery; *Provided,* That in the event that a refiner-seller offers for sale or is directed to sell pursuant to paragraph (j) of this section crude oil to a refiner-buyer for processing in any first priority refinery (as defined in Part 214 of this chapter) owned by that refiner-buyer in excess of the average volume of domestic crude oil purchased by the refiner-buyer for that refinery in the period September 1, 1976 to August 31, 1977, and if such excess volume of crude oil is not practical for delivery to such refiner-buyer's refinery, such refiner-seller shall deliver such excess volume of crude oil to the most practical location within the United States at which the refiner-buyer can arrange for the exchange of the crude oil for Canadian crude oil; *Provided further,* That in the event of an exchange the refiner-seller may require the refiner-buyer to demonstrate that it has obtained approval of the exchange from the Director, Oil Imports, pursuant to Part 213 of this chapter and has been issued an export license by the Department of Commerce for the volume of crude oil involved.

[FR Doc. 77-35598 Filed 12-12-77;8:45 am]

[6750-01]

FEDERAL TRADE COMMISSION

[16 CFR Part 438]

PROPRIETARY VOCATIONAL AND HOME STUDY SCHOOLS

Oral Presentation Announcement

AGENCY: Federal Trade Commission.

ACTION: Announcement of the convening of an oral presentation before the Federal Trade Commissioners. Placement of a staff summary of post-record comments and the final views of the Director of the Bureau of Consumer Protection on the rulemaking record.

SUMMARY: The Federal Trade Commission has decided to hold an oral presentation before the Commissioners in the trade regulation rule proceeding concerning Proprietary Vocational and Home Study Schools (42 FR 20303, April 19, 1977). The Commission has placed on the rulemaking record a summary of the comments filed by the public on the final reports of the staff and the presiding officer. In addition, the Commission has placed on the rulemaking record the final views of the Director of the Bureal of Consumer Protection.

DATES: Oral presentation scheduled for January 12, 1978, at 10 a.m. Requests to participate in the oral presentation before the Commission must be received on or before December 23, 1977.

ADDRESS: Oral presentation will be held in Room 432 of the Federal Trade Commission Building, Sixth and Pennsylvania Avenue NW., Washington, D.C. 20580. Written requests to participate should be submitted to the Secretary, Federal Trade Commission, Sixth Street and Pennsylvania Avenue NW., Washington, D.C. 20580.

FOR FURTHER INFORMATION CONTACT:

Terry S. Latanich, Federal Trade Commission, 202-523-2432.

SUPPLEMENTARY INFORMATION: The Federal Trade Commission has decided to convene an oral presentation before the Commission in the rulemaking proceeding concerning Proprietary Vocational and Home Study Schools. Participation in this oral presentation will be restricted to persons who have participated in the proceeding to date. The Commission has invited the following groups or organizations to participate in this oral presentation:

(1) Veteran's Administration.
(2) Office of Education, Department of Health, Education, and Welfare.
(3) Association of Independent Colleges and Schools.*
(4) National Home Study Council.*
(5) National Association of Trade and Technical Schools.*
(6) San Francisco Consumer Action.
(7) National Consumer Law Center.
(8) National Association of State Administrators and Supervisors of Private Schools.*
(9) Control Data Corporation*
(10) LaSalle Extension University and Katherine Gibbs Schools.*

Oral presentations must be restricted to evidence already in the rulemaking record in this proceeding. It is anticipated that participants will be permitted no more than 30 minutes to address comments to the Commission and to respond to questions.

However, the Commission reserves the right to limit or expand the amount of time allotted for comment as it deems necessary. Staff will also be present to respond to specific questions posed by the Commissioners.

The Commission believes that the above listed groups and organizations, who have participated in the prior stages of this proceeding, adequately represent the interests affected by the proposed rule. However, other persons who have previously participated in this proceeding, who desire to make an oral presentation to the Commission, and who believe that the invited participants are unlikely to adequately represent their interests at the oral presentation, should submit a written request to participate to the Secretary, Federal Trade Commission, Sixth Street and Pennsylvania Avenue NW., Washington, D.C., 20580 no later than December 23, 1977. If feasible and not burdensome, persons filing requests to participate should submit 3 copies of their requests. Each request must state the extent and the nature of the prior participation in this proceeding by the person seeking to address the Commission and the reasons why the invited participants are unlikely to represent their interests. No additional written comments may be submitted to the Commission.

The oral presentation before the Commission will commence on January 12, 1978, in Room 432, Federal Trade Commission, Sixth Street and Pennsylvania Avenue NW., Washington, D.C. 20580, at 10 a.m.

The Commission also announces that pursuant to § 1.13(h) of the Commission's rules of practice, comments were invited from the public on the final reports of the staff and presiding officer in this proceeding. The Commission has directed the rulemaking staff to prepare a summary of those comments. That summary has been placed on the rulemaking record in this proceeding for public inspection.

The Commission has further directed that the additional views of the Director of the Bureau of Consumer Protection submitted to the Commission on a proposed rule after the conclusion of the post-record comment period specified in § 1.13(h) of the Commission's rules of practice be placed on the rulemaking record in this proceeding for public inspection.

By direction of the Commission.

CAROL M. THOMAS,
Secretary.

[FR Doc.77-35498 Filed 12-12-77;8:45 am]

*These organizations have previously expressed a desire to make an oral presentation to the Commission.

[6740-02]

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[18 CFR Parts 2, 154]

[Docket No. RM78-4]

COMPENSATION PROVISIONS FOR CURTAILMENT PLANS

Procedure for Compiling Service List and Serving Comments

AGENCY: Federal Energy Regulatory Commission.

ACTION: Procedure for serving comments.

SUMMARY: Each party desiring to participate in this proceeding, which involves a proposed rule on compensation provisions for curtailment plans (42 FR

62018, December 8, 1977), shall notify the Secretary in writing of his or her intention to participate. A service list will then be prepared so that all parties may reply to initial comments.

DATES: Notices of intention to participate are due on or before December 15, 1977.

FOR FURTHER INFORMATION CONTACT:

Kenneth F. Plumb, Secretary, Federal Energy Regulatory Commission, 202–275–4166.

KENNETH F. PLUMB,
Secretary.

[FR Doc.77-35534 Filed 12-12-77;8:45 am]

[4110-03]

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Food and Drug Administration

[21 CFR Part 81]

[Docket No. 76N-0366]

PROVISIONALLY LISTED COLOR ADDITIVES

Postponement of Closing Dates; Restatement of Conditions for Continued Provisional Listing

AGENCY: Food and Drug Administration.

ACTION: Proposed Rule.

SUMMARY: This proposal would amend the color additive regulations by extended the closing dates for five color additives and revising the dates by which certain reports must be submitted to the Food and Drug Administration. The proposed action would permit the continued use of these color additives until the new closing dates. This proposal also discusses the progress made thus far in meeting the conditions for continued provisional listing precribed by regulation and would amend the color additive regulations by updating the conditions that color additives must meet to remain on the provisional list.

DATES: Comments by January 12, 1978. The Commissioner of Food and Drugs expects to issue final regulations based on this proposal no later than January 31, 1978, which shall be effective on the date of their publication in the FEDERAL REGISTER.

ADDRESS: Written comments to the Hearing Clerk (HFC-20), Food and Drug Administration, Room 4-65, 5600 Fishers Lane, Rockville, Md. 20857.

FOR FURTHER INFORMATION CONTACT:

Gerad L. McCowin, Bureau of Foods (HFF-334), Food and Drug Administration, Department of Health, Education, and Welfare, 200 C Streeet SW., Washington, D.C. 20204, 202-472-5740.

SUPPLEMENTARY INFORMATION: The Commissioner of Food and Drugs is addressing two aspects of the provisional listing of color additives. First, FDA, on its own initiative, proposes to postpone the closing date for the use of certain provisionally listed color additives beyond January 31, 1978. The postponement would be conditioned on the completion of appropriate scientific investigations and the submission of data to FDA on a prescribed schedule. Second, the document discusses the extent to which petitioners have complied with the conditions of provisional listing that are set forth in § 81.27 *Conditions of provisional listing of additives* (21 CFR 81.-27), and it proposes to revise certain of these conditions. The conditions in § 81.-27 were prescribed in regulations published in the FEDERAL REGISTER of February 4, 1977 (42 FR 6992). Interested persons have until January 12, 1978, to submit comments.

Under Title II of the Color Additive Amendments of 1960 (Pub. L. 86-618; sec. 203(a)(2), 74 Stat. 404 (21 U.S.C. 376 note)) and under authority delegated to him, the Commissioner is authorized to postpone the closing date of a provisional listing of a color additive on his own initiative or upon the application of an interested person. Section 203(d)(1) of the Amendments requires promulgation, insofar as practicable, of a current listing of color additives and the particular uses thereof deemed provisionally listed. The agency issued regulations in the FEDERAL REGISTER of February 4, 1977 (42 FR 6992) establishing categories of closing dates for each of the 52 color additives that remained on the provisional list. These regulations also established specific conditions and a timetable for submission of reports about the scientific investigations concerning the color additives to be met as a condition for continued provisional listing.

The February 4 regulation had been prceeded by a proposal published in the FEDERAL REGISTER of September 23, 1976 (41 FR 41860). The purpose of the proposal and the regulation was to announce the Commissioner's intention to reach final decisions on all provisionally listed color additives and to establish a rigorous time schedule for making those decisions. The Commissioner anticipated that as each of the deadlines established in the regulation occurred, regulations would issue either listing the color additives permanently or, if the data were inadequate, terminating the provisional listing. The regulation also provides for immediate termination of the provisional listing of a color additive if the conditions specified for it are not met or scientific evidence shows that the color is no longer safe.

The proposal discussed, in general terms, the types of data that had to be submitted for each of the provisionally listed color additives before listing regulations could be issued. The proposal also set forth a timetable for the submission of final reports of the studies necessary for developing these data. Certain comments on the proposal said the timetable did not provide sufficient time to produce the necessary data. The comments did not, however, propose an alternative timetable for the submission of the data, nor did they discuss with any particularity why the proposed timetable could not be met. The original timetable was proposed and subesquently adopted on the basis of the data before FDA and the Commissioner's best estimate about when the data could be submitted. Because of the Commissioner's intent to resolve finally the status of the provisionally listed color additives, the preamble to the February 4 regulation clearly stated that the closing dates for the provisionally listed colors would only be extended "in the unlikely event that unforeseen and unavoidable circumstances arise to make compliance with the requirements of the final regulation virtually impossible" (42 FR 6998).

Since the regulation was issued, however, the petitioners for a number of the provisionally listed colors have conveyed to FDA specific reasons why certain aspects of the timetable for the submission of data cannot be met. Copies of correspondence from the petitioners and memoranda of meetings and telephone conversations concerning the requirements in § 81.27 for the provisionally listed colors are on file at the office of the Hearing Clerk (HFC-20), Food and Drug Administration, Room 4-65, 5600 Fishers Lane, Rockville, Md. 20857. In addition, FDA and petitioners have had experience with the specific timetables set forth in § 81.27. The timetables in § 81.27 establish a date for the submission of final reports and a date by which a final decision would be made for each of the requirements established for the color additives, i.e., July 1, 1977 and October 31, 1977 for chemistry data and short-term studies. A date of August 4, 1980 was established by which final reports would be submitted for chronic studies, with a final decision to be made by January 31, 1981 on the 32 color additives requiring chronic studies. The Commissioner's intent then and now is that the provisional list of color additives permitted for use in food, drugs, and/or cosmetics will cease to exist on January 31, 1981. Nevertheless, some of the dates for the submission of data appear, in retrospect, to have been unrealistic.

After considering the efforts of the petitioners to meet the requirements of § 81.27 and data that must be submitted to support listing of the various colors, the Commisioner concludes that inadequate time was provided for compliance with portions of § 81.27 and also concludes that it is necessary and appropriate to revise the timetable for the submission of final reports for certain colors. The proposed revisions in the timetable would apply only to those colors for which the Commissioner is satisfied that the petitioners have diligently attempted to comply with the requirements of § 81.27. Where the Commissioner does not believe that the petitioners have been diligent, termination of the provisional listing is appropriate and will be implemented. Further, the revision will apply only where an extension of not more than 18 months is all the

time that is required for the petitioners to develop the necessary data and for the Commissioner to reach a final conclusion on listing.

The Commissioner emphasizes that the revision of the timetable for the submission of the data and the corresponding extension of closing dates does not affect the January 31, 1981 closing date for certain color additives. Thus, this proposal reconfirms the Commissioner's intent that January 31, 1981 is still a reasonable date for final resolution of the status of each of the color additives provisionally listed for use in food, drugs, and/or cosmetics.

The extent to which the petitioners have complied with the requirements of § 81.27 is described below. Generally, at least one of the petitioners had agreed by March 7, 1977 to conduct the necessary studies. Furthermore, in the majority of the cases the established timetable for the submission of final reports has been met.

The petitioners for any of the colors for which new conditions for continued provisional listing or extensions in time limits are being proposed should advise the Commissioner in writing if they no longer intend to conduct the required studies. The Commissioner will take action to terminate the provisional listing for any color for which a petitioner does not intend to conduct the required studies.

I. Colors Requiring Eye Area Studies

There were 14 color additives that, under § 81.27(a), required the submission by March 21, 1977 of final reports giving the results of 4-week eye area studies. A closing date of July 1, 1977 was established for these 14 color additives as the date after which they could no longer be used if the specified conditions were not met. The agency reviewed the final reports and concluded that these data demonstrated the safety of the 14 color additives for use in the area of the eye. This conclusion and subsequent action to list 12 of the 14 color additives have made the requirement for submission of final reports resolved, and further inclusion in § 81.27 is unnecessary. But, this conclusion was not reached in time for final listing regulations to issue and become effective for the 12 colors for which this was the only pending requirement. Accordingly, the closing date for these 12 colors was extended until August 30, 1977 by a regulation published in the Federal Register of July 1, 1977 (42 FR 33724). Listing regulations have issued for 10 of the 12 color additives, and their effectiveness has been confirmed in the Federal Register. Objections were received to the listing regulations for chromium hydroxide and oxide greens and for ferric ammonium ferrocyanide. A regulation confirming the effectiveness of the listing regulations for these colors and addressing objections is expected to be published soon. At that time, the requirements pertaining to the submission of reports on 4-week eye area studies in § 81.27(a) will be revoked. Because the regulation confirming effectiveness is expected to be published before this proposal is made final, this change is included in the proposed regulation set forth below (paragraph (a) of § 81.27 is deleted and "reserved").

The remaining two color additives that require eye area studies, caramel and graphite, are discussed elsewhere in this proposal.

II. Colors Requiring Short-Term Studies

A. BISMUTH OXYCHLORIDE

The closing date for bismuth oxychloride was postponed in § 81.27(b) until October 31, 1977 on the condition that a final report of the results of a short-term rabbit study be submitted to FDA by August 3, 1977. This requirement for a short-term study for bismuth oxychloride has been resolved, and a final listing regulation was issued in the Federal Register of September 30, 1977 (42 FR 52394). This regulation became effective on November 1, 1977 except to the extent to which it may be stayed by the filing of valid objections. The date for the filing of objections was October 31, 1977. The Commissioner is unaware of any objections that would stay the effectiveness of the listing regulation. A confirmation of effectivenes regulation will soon issue, at which time the requirement for submission for a short-term study for bismuth oxychloride will be deleted. Because this confirmation is expected to occur before this proposal is made final, this change is reflected in the proposal below.

B. BISMUTH CITRATE

The closing date for bismuth citrate was postponed in § 81.27(b) until October 31, 1977 on the condition that final reports of a short-term rabbit and a short-term human absorption study be submitted by August 3, 1977. The requirements for a short-term rabbit and a short-term human absorption study for bismuth citrate have not been met. Although the petitioner has offered arguments concerning its failure to comply with the requirements of § 81.27(b), the Commissioner is not satisfied that diligent efforts were made to comply with these requirements, nor that the requirements were unreasonable and could not have been met. A final regulation published in the Federal Register of November 15, 1977 (42 FR 59064) terminated the provisional listing of bismuth citrate. With issuance of that regulation, the requirement in § 81.27(b) for submission of a final report on the short-term studies became obsolete. This is reflected by deletion of bismuth citrate from proposed § 81.27(b) below.

C. CARAMEL

The closing date for caramel for use in coloring externally applied cosmetics was postponed in § 81.27(d) until January 31, 1981 on the condition that a final report of a lifetime mouse skin-painting study be submitted by August 4, 1980. In addition, § 81.27(b) established an interim closing date of October 31, 1977 on the condition that a final report of a short-term rabbit study be submitted to the FDA by August 3, 1977. The petitioner has failed to comply with this condition.

The Commissioner has considered the arguments of the petitioner concerning why this condition could not be met and concludes that the original deadline of August 3, 1977 was too stringent and and should be extended. The paramount problem encountered by the petitioners in initiating the necessary studies for caramel has been selection of the material to be tested and subsequent production of the test material. This was a significant problem because there are three types of caramel that may be distinguished by their particular manner of manufacture.

Questions about the safety of caramel were raised by recent studies in rats in which ammonia-processed caramel was fed. These studies, conducted by the British Industrial Biological Research Association (BIBRA), suggest that ammonia-processed caramel may cause leucopenia in rats. Subsequently, collaborative studies were conducted in Holland (Central Institute for Nutrition and Food Research (CIVO)), England (BIBRA), and Canada (Bio Research Laboratories, Ltd.) to determnie whether the leucopenia could be due to caramel itself and therefore would be caused by more than one type of caramel, or whether it is limited to the ammonia-treated form. Final reports on these studies are being evaluated by FDA so that a decision can be made about the safe use of caramel for ingested products. Copies of these reports are on file with the Hearing Clerk, Food and Drug Administration.

The Commissioner believes that the petitioner's caution in determining the type of carmel to be tested is justified. Although the petitioner may have taken too much time in reaching a decision on the type of caramel to be used, the overall problem does support an extension of the provisional listing for caramel so the necessary short-term dermal study in rabbits can be conducted. The petitioner has stated in writing that a final report on this study will be submitted by March 17, 1978. Therefore, the Commissioner proposes to postpone the closing date in § 81.27(b) for provisional listing of caramel until July 31, 1978 to allow time for the report to be submitted by the petitioners and to be evaluated by FDA as to its effects on the continued provisional listing of caramel for cosmetics pending submission and evaluation of a lifetime mouse skinpainting study. The deadline for submission of the final report on the short-term dermal study in rabbits for caramel will be March 31, 1978. Failure to meet this deadline will result in immediate termination of the provisional listing of caramel for external cosmetic use.

The agency's review of the various feeding studies on caramel mentioned above is expected to be completed by De-

cember 31, 1977. A proposal will be issued to amend the listing regulations for the use of caramel in foods or drugs if this review indicates that caramel or certain types of caramel might present a health hazard.

D. LEAD ACETATE

The closing date for lead acetate was postponed under § 81.27(b) until October 31, 1977, on the condition that final reports of a short-term absorption study be submitted to FDA by August 3, 1977. The petitioner submitted the results of a short-term absorption study on time. However, the study does not resolve the questions concerning the possible absorption of lead from the use of lead acetate in the coloring of hair. Because of the strict timetables, the petitioner did not have adequate time to attempt to resolve the questions left unresolved by the first study.

On February 29, 1977, the petitioners for lead acetate submitted a final report of an absorption study with a lead acetate hair dye. In this study, a lead acetate hair dye was applied daily to the hair of men for 3 weeks, followed by a 5-week period during which the material was applied twice a week. Analysis of urine and blood did not disclose any noteworthy difference in lead levels between the control groups and those using the lead acetate hair dye.

Nevertheless, the Commissioner finds that the results of available absorption studies are insufficient to prescribe adequate conditions for the safe use of lead acetate. Although the available data from absorption studies indicate that lead absorption is unlikely under the test conditions, these data do not permit a conclusion on the safety of lead acetate in cosmetic formulations other than under the precise conditions tested. The formulation tested was based on a water and alcohol vehicle, whereas other available formulations may contain other vehicles, e.g., oil-in-water or water-in-oil emulsions containing surfactants, mineral oil, or petrolatum vehicles which may enhance percutaneous absorption of lead. In addition, the study did not investigate the possible effect of various hair-grooming aids on percutaneous absorption of lead. Hair-grooming aids may be used in conjunction with lead acetate hair dyes that do not themselves provide sufficient grooming. Because hair-grooming aids may contain mineral or vegetable oils, surfactants, and other substances that may increase the absorption of lead, human absorption studies with the lead acetate hair dyes must also investigate the potential effects of grooming aids.

In addition, the Commissioner finds that the conditions of the submitted test were not exaggerated to provide a margin from which safe conditions of use could be determined. In fact, the actual conditions of use may be more extreme than those encountered in this test.

In view of the potential effect of grooming aids on absorption and the limitations of the submitted study with lead acetate, the Commissioner concludes that the data are insufficient to permit listing of lead acetate. The Commissioner has considered the alternatives of (1) terminating the provisional listing of the color additive pending the submission of the additional information necessary for listing lead acetate, or (2) extending its provisional listing for the period necessary to conduct studies that would furnish appropriate data to determine safe conditions of use for lead acetate hair dyes, including their use in conjunction with generally available hair-grooming aids. The Commissioner has concluded that the first alternative, termination of the provisional listing, is unnecesary because of the short time needed to conduct the appropriate studies and because it is unlikely, on the basis of available studies, that there is significant absorption of lead from use of the color additive. Because the continued use of lead acetate does not appear to present a hazard to public health, the second alternative is the most appropriate action.

The continued use of lead acetate hair dyes will be contingent on the satisfactory completion of studies to be conducted using a protocol approved by FDA. The Commissioner has considered the possibility of establishing specific protocols to be followed in developing the type of data necessary to support listing of lead acetate. He has concluded, however, that it would be more appropriate to identify factors to be considered in the preparation of protocols and the conduct of the studies. It would then be the responsibility of the petitioner to propose an adequate protocol for the necessary studies. The proposed regulations would prescribe a timetable to be followed in developing an approved protocol for the conduct of any studies that are to be undertaken.

Specifically, the petitioner would be required to submit proposed protocols to the Division of Food and Color Additives (HFF-334), Food and Drug Administration, 200 C St., SW., Washington, D.C. 20204, within 1 month after the date of publication of final regulations to this proposal in the FEDERAL REGISTER The agency would comment in writing on the acceptability of the protocol within 3 weeks after receipt of the protocol. An additional 3 weeks would be provided after that for discussion between FDA and the petitioner to resolve any differences of opinion on the protocol. The proposed regulation would require that the protocol be given a final approval by FDA on or before publication of a final order in the FEDERAL REGISTER. The Commissioner recognizes that these are very short time limits, but concludes that they are necessary so that the highest priority is given to development of the protocol and subsequent conduct of the studies. Obviously, the petitioner should not wait for a final order to begin developing a protocol. The agency's concern about the inadequacies of the data for lead acetate hair dyes was discussed in a meeting between the petitioner and personnel from the Bureau of Foods on October 13, 1977. Minutes of this meeting are on public display in the office of the Hearing Clerk (HFC-20), Food and Drug Administration.

Basically, the study that the Commissioner will require for lead acetate involves a human absorption study similar to that already conducted by the petitioner. A copy of the report of this study is on public display in the office of the Hearing Clerk. But several revisions in the protocol are necessary. First, the study should use a formulation or formulations that would permit extrapolation of the results to the variety of lead acetate hair dyes that are marketed and/or for which the petitioners seek listing of lead acetate. Second, any studies that are conducted must include a degree of exaggeration to reflect also those conditions of use that exceed recommended usage but are still likely to occur.

The type of study that is considered necessary to assess the possibility for lead absorption should have a minimum of three dosage groups for each type of hair dye that is to be tested: a control group, a group following typical label instructions for the use of the hair dye, and a group using the hair dye at exaggerated conditions of use. For this latter group, the Commissioner suggests daily application of the hair dye for a month, followed by application every other day for an additional 60 days. For each group, there should be a suitable baseline value determination period. This would be followed by the period during which the test material would be applied to the respective groups. The total time for application of the test material should encompass at lease 90 days for each group. The application period would then be followed by a washout period during which the test material would no longer be applied.

If the test formulation for the hair dye has principally a hydroalcoholic vehicle, then there should also be a test group to assess the effects of grooming aids on lead absorption. In this group, the hair dye should be applied in the exaggerated manner. After the initial 30-day daily application of the hair dye, the hair dye and an emulsion type of grooming aid should be applied on alternate days. The grooming aid should be representative of the types marketed.

The study shall include analysis for blood levels of lead. In addition, because blood levels of lead by themselves are not reliable indicators of systemic levels of lead, they should be augmented by measurement of spontaneous urinary lead and at least one other factor related to systemic lead levels. The Commissioner suggests the following as possibilities that might be considered:

1. Chelatable lead (by calcium ethylenediaminetetracetate mobilization).
2. Erythrocyte protoporphyrin.
3. Urinary delta-aminolevulinic acid.
4. Delta-aminolevulinic acid dehydratase.

Because more than 90 percent of blood lead is bound in red blood cells, the findings for the blood levels of lead can be affected by moderate-to-severe anemia.

Therefore, the data should include values for the hematocrit and red blood counts for each of the blood samples taken.

Each of these tests has limitations and advantages and no single test would be expected to resolve adequately the questions concerning lead absorption. The Commissioner concludes, however, that the combination of a variety of tests as suggested above would provide meaningful data that could be used to evaluate the potential for lead absorption.

The proposal would prescribe a timetable for the submission and development of an approved protocol. The Commissioner reserves the right to make the final decision on the protocol that must be followed in performing the necessary absorption studies for lead acetate. The Commissioner proposes to postpone the closing date for lead acetate until April 30, 1979 to allow time for the report to be submitted by the petitioners and evaluated by FDA. The proposed regulations would require the submission of a final report to FDA by December 31, 1978. The provisional listing for lead acetate will be terminated if the petitioner fails to submit the protocol, to undertake the study in a timely fashion, or if the evidence shows that the color additives may be unsafe.

III. Colors Requiring Chemistry Data

Nine color additives under § 81.27(c) required resolution of chemistry questions by August 3, 1977 as a condition for their continued provisional listing. A closing date of October 31, 1977 was established for the nine color additives as the date after which they could no longer be used if these conditions were not met. These requirements have been met for only two of the colors. The Commissioner has considered the available data for the remaining seven colors, along with the degree of diligence made in attempting to resolve the questions for these color additives by the petitioner. The status of each of these color additives and the reasons why the closing dates for provisional listing should or should not be extended beyond October 31, 1977 are discussed below.

A. D&C Yellow No. 10

The closing date for D&C Yellow No. 10 is postponed in § 81.27(d) until January 31, 1981, on the condition that a final report of a chronic toxicity feeding study be submitted by August 4, 1980. Section 81.27(c) established an interim closing date of October 31, 1977 on the condition that final data for the resolution of chemistry questions be submitted to FDA by August 3, 1977.

The chemistry questions for D&C Yellow No. 10 have been resolved, and therefore the conditions established for its continued provisional listing set forth in § 81.27 have become obsolete. This is reflected below in the proposed § 81.27, by the deletion of D&C Yellow No. 10 from the colors listed in § 81.27(c).

B. D&C Red Nos. 6 and 7

The closing date for D&C Red Nos. 6 and 7 is postponed in § 81.27(d) until January 31, 1981 on the condition that a final report of a chronic toxicity feeding study be submitted by August 4, 1980. Section 81.27(c) established an interim closing date of October 31, 1977 on the condition that final data for the resolution of chemistry questions be submitted to FDA by August 3, 1977. The petitioner has partially complied with this condition.

The Commissioner has considered the arguments offered by the petitioner concerning why this condition could not be fully met and concludes that a sufficient basis has been established that the original deadline of August 3, 1977 was too stringent and should be extended. The petitioner has developed a precise analytical method to analyze the color; however, data from the analysis of a number of samples of the color to validate the accuracy and reproducibility of the method have not yet been submitted to FDA for evaluation. The petitioner has advised that these data will be submitted to the agency within the next few months.

The chronic toxicity study for D&C Red Nos. 6 and 7 has been initiated and should be completed by the deadline of August 4, 1980. Because the chronic studies have been initiated and the chemistry questions appear to have been resolved, the Commissioner concludes that the original interim closing date of October 31, 1977 should be extended for sufficient time to permit the petitioner to submit data from several samples of these colors to demonstrate the adequacy of the method that they have developed. The Commissioner has concluded that the petitioners should be given until July 31, 1978 to supply the necessary data and that the interim closing date should be extended until October 31, 1978 for a final decision on the adequacy of the analytical method. This proposed action does not affect the August 4, 1980 date for submission of a final report on the chronic study, nor does it affect the present closing date of January 31, 1981.

C. D&C Red No. 30

The closing date for D&C Red No. 30 is postponed in § 81.27(d) until January 31, 1981 on the condition that a final report of a chronic toxicity feeding study be submitted by August 4, 1980. Section 81.27(c) establishes an interim closing date of October 31, 1977 on the condition that final data for the resolution of chemistry questions be submitted to FDA by August 3, 1977. The petitioner has failed to comply with this condition.

The Commissioner has considered the arguments offered by the petitioner concerning why this condition could not be met and concludes that a sufficient basis has been established that the original deadline of August 3, 1977 was too stringent and should be extended. The chronic toxicity study has been initiated and should be completed by the deadline of August 4, 1980.

The specific chemistry problem with D&C Red No. 30 is the identification of the components of a particular fraction of the color additive. Analysis of the color additive reveals that there is approximately 2.8 percent that may be distinguished from the rest of the color because it is soluble in acetone. Thin-layer chromatography has shown that this 2.8 percent fraction can contain as many as 21 unknown substances. In addition, the make up of this 2.8 percent acetone-soluble fraction may change both qualitatively and quantitatively from batch to batch.

Review of agency files reveals that the specific chemistry deficiencies attributed to D&C Red No. 30 inadvertently were not formally brought to the petitioner's attention until January 31, 1977. The resolution of chemistry questions such as those that exist for D&C Red No. 30 is very complex and will involve considerable time. Because the petitioner has not had a reasonable opportunity to resolve the chemistry questions for D&C Red No. 30, the Commissioner concludes that an extension should be granted. The manufacturer of this color has proposed a schedule for the resolution of the chemistry questions concerning D&C Red No. 30 that appears to be acceptable. The manufacturer also advised FDA that a final report should be available for submission to FDA by July 1978.

The proposal would require the petitioner to complete work on the chemistry questions and submit a final report by July 31, 1978. The proposal would also establish a new interim closing date of October 31, 1978.

D. D&C Orange No. 4

The closing date for D&C Orange No. 4 is postponed in § 81.27(c) until October 31, 1977 on the condition that final reports of data sufficient for resolving chemistry questions be submitted to FDA by August 3, 1977. The chemistry questions have been resolved, and final listing regulations were issued in the Federal Register of September 30, 1977 (42 FR 52395). These regulations became effective November 1, 1977, except to the extent to which they may be stayed by the filing of valid objections. The date for the filing of objections was October 31, 1977. The Commissioner is unaware of any objections that would stay the effectiveness of the listing regulations. A confirmation of effectiveness regulation will issue shortly, at which time the requirement for the resolution of the chemistry questions for D&C Orange No. 4 will be deleted. Because the confirmation notice is expected to publish before this proposal is made final, the change is included in the proposal below.

E. D&C Blue No. 6

The closing date for D&C Blue No. 6 is postponed in § 81.27(d) until January 31, 1981 on the condition that a final report of a chronic toxicity feeding study be submitted by August 4, 1980. Section 81.27(c) established an interim closing date of October 31, 1977 on the condition that final reports of data sufficient to resolve chemistry questions concerning its composition be submitted by August 3, 1977. The requirements for the resolu-

tion of the chemistry questions for D&C Blue No. 6 have not been met. Although the petitioner has offered arguments concerning the failure to comply with requirements of § 81.27(c), the Commissioner is not satisfied that diligent efforts were made to comply with these requirements, nor that they were unreasonable and could not have been met. In addition, the petitioner has advised FDA that it no longer plans to conduct the required chronic toxicity studies on the color. Available animal studies on D&C Blue No. 6 applicable to sutures establish the safety of the color for that use. The maximum quantity of the color to which individuals might be exposed over a lifetime from its use in surgical sutures is extremely small. Therefore, the Commissioner concludes that resolution of the chemistry questions and new chronic feeding studies are not necessary for the listing of this color for its petitioned use in sutures. Published elsewhere in this issue of the FEDERAL REGISTER are regulations terminating the provisional listing of D&C Blue No. 6 for use in drugs and cosmetics and listing it for use in sutures. With issuance of these regulations, the requirement in § 81.27(c) for the resolution of the chemistry questions becomes obsolete. This is reflected by deletion of D&C Blue No. 6 from § 81.27(c) in the proposal below.

F. EXT. D&C YELLOW NO. 1

The closing date for Ext. D&C Yellow No. 1 was postponed in § 81.27(c) until October 31, 1977 on the condition that final reports of data sufficient to resolve chemistry questions concerning its composition be submitted by August 3, 1977. The requirements for the resolution of the chemistry questions for Ext. D&C Yellow No. 1 have not been met. Although the petitioner has offered arguments concerning the failure to comply with requirements of § 81.27(c), the Commissioner is not satisfied that diligent efforts were made to comply with these requirements, nor that they were unreasonable and could not have been met. Although the petitioner was first advised of these chemistry questions in 1971, there are still several alternative chemical analytical procedures that the petitioner has not explored. A question has also risen concerning the contamination of the color with 4-aminobiphenyl, a known carcinogen. Published elsewhere in this issue of the FEDERAL REGISTER is a final order terminating the provisional listing of Ext. D&C Yellow No. 1. With issuance of that regulation, the requirement in § 81.27(c) for the resolution of the chemistry questions becomes obsolete. This is reflected by deletion of Ext. D&C Yellow No. 1 from § 81.27(c) of the proposal below.

G. EXT. D&C GREEN NO. 1

The closing date for Ext. D&C Green No. 1 was postponed in § 81.27(c) until October 31, 1977 on the condition that final reports of data sufficient to resolve chemistry questions on the composition of the color be submitted by August 3, 1977. The requirements for the resolution of the chemistry questions for Ext. D&C Green No. 1 have not been met. Although the petitioner has offered arguments concerning the failure to comply with the requirements of § 81.27(c), the Commissioner is not satisfied that diligent efforts were made to comply with these requirements, nor that they were unreasonable and could not have been met. Although the petitioner was advised that the data submitted under § 80.27(c) were inadequate, no indication has been given that any further study is contemplated by the petitioner. A final order terminating the provisional listing of Ext. D&C Green No. 1 was published in the FEDERAL REGISTER of November 29, 1977 (42 FR 60736). With issuance of that regulation, the requirement in § 81.27(c) for the resolution of the chemistry questions became obsolete. This is reflected by deletion of Ext. D&C Green No. 1 from § 81.27(c) of the proposal below.

H. GRAPHITE

The closing date for graphite was postponed in § 81.27(c) until October 31, 1977 on the condition that final reports of data sufficient to resolve chemistry questions concerning the composition of the color be submitted by August 3, 1977. The petitioner submitted analytical data on time. Samples for two distinct types of graphite, Mexican and Korean, were submitted, of which only the graphite that is mined in Mexico was identified as used for cosmetics. The analyses of samples of these two different types of graphite revealed that each contained extractable polynuclear aromatic hydrocarbons (PNA's). Only the Korean graphite contained PNA's that have been demonstrated to be carcinogenic. The Mexican graphite was found to contain some unidentified fluorescent substances, however, that could be carcinogenic PNA's. The petitioner has requested an extension of the closing date to conduct further analysis on the Mexican graphite to determine whether it contains carcinogenic PNA's in the unknown fraction. The petitioner expects the analysis to be completed in the next few months.

The agency has evaluated the data on graphite and concludes that there is a strong probability that Mexican graphite will also be found to contain carcinogenic PNA's. The Mexican and Korean graphites are similar in their general physical and chemical characteristics. The Commissioner can find no reason to expect that the Mexican graphite would not contain the same PNA's as Korean graphite, including those that are carcinogenic, though perhaps at lower levels. Therefore, the Commissioner has concluded that the provisional listing for graphite should be terminated. A final order terminating the provisional listing of graphite was published in the FEDERAL REGISTER of November 29, 1977 (42 FR 60734). With issuance of that regulation, the requirement in § 81.27(c) for the resolution of the chemistry questions became obsolete. This is reflected by deletion of graphite from § 81.27(c) of the proposal below.

IV. COLORS REQUIRING CHRONIC STUDIES

There were 32 color additives that, under § 81.27(d), required the submission of final reports of chronic toxicity studies by August 4, 1980 as a condition for their continued provisional listing until January 31, 1981. The petitioners had to agree to conduct the necessary chronic studies for each of the colors or the provisional listing would be terminated. The necessary studies have been initiated with most of the colors, and it appears that the deadline of August 4, 1980 will be met for 25 of the 32 color additives.

The petitioners for the remaining seven color additives have notified FDA that they do not plan to conduct chronic feeding studies on those colors. These seven color additives are: D&C Red No. 10, D&C Red No. 11, D&C Red 12, D&C Red No. 13, D&C Orange No. 10, D&C Orange No. 11, and D&C Blue No. 6. Under the provisions of § 81.27, if a petitioner does not agree to conduct the necessary studies for a color, the closing date for its provisional listing will be terminated.

Public elsewhere in this issue of the FEDERAL REGISTER is a final order terminating the provisional listing of D&C Blue No. 6. With issuance of that regulation, the requirement in § 81.27(d) for the submission of progress reports and a final report on the chronic toxicity feeding study becomes absolete and, accordingly, D&C Blue No. 6 is deleted from § 81.27(d) of the proposal below.

Published elsewhere in this issue of the FEDERAL REGISTER is a final order terminating the provisional listing of D&C Red Nos. 10, 11, 12, and 13—the petitioner has withdrawn the color additive petition for those four colors. With issuance of that regulation, the requirements in § 81.27(d) for the submission of progress reports and final reports on the chronic toxicity feeding studies become obsolete; this is reflected by deletion of D&C Red Nos. 10, 11, 12, and 13 from § 81.27(d) of the proposal below.

The petitioner for D&C Orange Nos. 10 and 11 has advised that it does not plan to conduct the chronic toxicity feeding studies for these color additives and has requested that these color additives be listed for external drug and cosmetic use only. The provisional listing of D&C Orange Nos. 10 and 11 will be terminated for their use in ingested drugs and cosmetics, when regulations for their use in externally applied drugs and cosmetics become effective. The requirement for chronic toxicity studies for D&C Orange Nos. 10 and 11 will also be deleted from § 81.27(d) at that time. Because this is expected to happen before January 31, 1978, these anticipated changes are reflected below in the restatement of the proposed § 81.27.

V. COLORS REQUIRING MULTIGENERATION STUDIES

In the proposal of September 23, 1976 (41 FR 41860), the Commissioner stated that the colors FD&C Red No. 3, D&C Red No. 33, and D&C Orange No. 10

might require new reproduction studies. The agency has reviewed the reproduction studies on these three colors submitted by the petitioners and, though no adverse effects were seen, questions were raised because the procedures prescribed in the protocol for randomly selecting the animals were not strictly followed. The petitioners were therefore requested to submit data to support their view that the results of the reproduction studies were valid. The Commissioner announced that when the questions regarding the reproduction studies were resolved, a notice would be published in the FEDERAL REGISTER advising of the resolution and amending § 81.27 if new reproduction studies on the three colors were required.

After reviewing the additional data submitted by the petitioners to support the validity of the multigeneration reproduction studies, the Commissioner has concluded that the studies are inadequate for assessing the potential for the colors to have adverse effects upon reproduction following ingestion. The selection of test animals for the succeeding generations was not made randomly, introducing a possible bias in the outcome of the studies. Evaluation of weaning weights of the animals to be used for subsequent generations disclosed that heavier, and, therefore, presumably healthier, test animals were selected in more instances that would have been dictated by random selection. This is an improper manner of selection as test animals selected for subsequent breeding should be representative of the available animals as a whole. The possible bias that was introduced by not selecting animals randomly but rather by weight may have resulted in the nonselection of animals exhibiting adverse effects.

The evaluation of potential toxicological effects of compounds on the reproductive systems of animals is an important consideration in the evaluation of the safety of color additives that may be subject to ingestion. Accordingly, in view of the inadequacy of the reproductive studies for FD&C Red No. 3, D&C Red No. 33, and D&C Orange No. 10, the Commissioner finds that it will be necessary for new multigeneration reproduction studies to be conducted with these colors. The regulations set forth below will make the conduct of new multigeneration reproduction studies a condition for the continued provisional listing of FD&C Red No. 3 and D&C Red No. 33. The petitioners for these colors have already been advised of the necessity of conducting these studies again. Copies of this correspondence, as well as other related correspondence and memoranda, are on public display in the office of the Hearing Clerk, Food and Drug Administration, Rm. 4–65, 5600 Fishers Lane, Rockville, Md. 20857.

The petitioner for D&C Orange Nos. 10 and 11 has advised that it will not be conducting chronic feeding studies with the color as required by § 81.27. Final listing regulations will be published shortly for the use of D&C Orange Nos. 10 and 11 in externally applied drugs and cosmetics and terminating provisional listing for ingested uses. Because there is no need for multigeneration reproduction studies to support the external use of D&C Orange Nos. 10 and 11, the proposed regulation requiring that multigeneration reproduction studies be done does not include D&C Orange Nos. 10 and 11.

The Commissioner further concludes that it is not necessary to extend the closing date for FD&C Red No. 3 and D&C Red No. 33 beyond January 31, 1981. There will be sufficient time between now and August 4, 1980, the date on which a final report is required, for the conduct of the new multigeneration reproduction studies. There is no need for a new protocol to be developed for these studies. It is only necessary that an appropriate method of randomization, methods of which are widely described in the literature, be used in the conduct of the study. Furthermore, the original reproduction studies for these colors required only a little more than 2 years from the time they were initiated until a final report was submitted to FDA.

The proposal would amend § 81.27 by establishing a new paragraph to require the petitioner for FD&C Red No. 3 and D&C Red No. 33 to conduct and submit final reports on multigeneration reproduction studies with these two colors. This proposed action does not affect the August 4, 1980 date for submission of a final report on chronic studies with these colors, nor does it affect their present closing date of January 31, 1981.

VI. SUMMARY OF PROPOSED ACTION

The Commissioner has described above the status of the efforts of petitioners to comply with the conditions that were established by regulation of February 4, 1977 for the continued provisional listing of color additives. The Commissioner has concluded that the regulations setting forth the conditions for provisional listing should be revised to reflect the current status of the various color additives. Thirty days are being provided for the submission of comments. The Commissioner expects that final regulations will be issued before January 31, 1978 and that they will be effective upon publication. The proposed regulations that are set forth below include a complete presentation of § 81.27, with the exception of the introductory paragraph, to permit reviewers of this proposal an opportunity to see the regulation in its entirety. However, comments are solicited only on the proposed changes that are being made in paragraphs (b), (c), or (e) as regards caramel, lead acetate, FD&C Red No. 3, D&C Red No. 6, D&C Red No. 7, D&C Red No. 30, and D&C Red No. 33. The other changes in § 81.27 from that originally published in the FEDERAL REGISTER of February 4, 1977 have been the subject of final regulations published previously and elsewhere in this issue of the FEDERAL REGISTER and are repeated below only for clarity of presentation.

Nothing in this proposed action affects the Commissioner's authority under the transitional provisions of the Color Additive Amendments of 1960 to terminate a closing date, terminate a listing, or impose restrictions with respect to any color additive on the provisional list.

The Commissioner has carefully considered the environmental effects of the proposed regulation and, because the proposed action will not significantly affect the quality of the human environment, has concluded that an environmental impact statement is not required. Copies of the FDA environmental and economical impact asessments are on file with the Hearing Clerk, Food and Drug Administration.

Accordingly, the Commissioner is proposing to change the closing date for lead acetate listed in paragraph (g) of § 81.1 and to revise the conditions for continued provisional listing under § 81.27 by revising paragraphs (b) and (c) and adding new paragraph (e). (Note: § 81.27 is set forth in its entirety as it is expected to appear when final regulations to this proposal are issued. Changes in § 81.27 (a), (b), (c), and (d) from the wording as it originally appeared in the FEDERAL REGISTER of February 4, 1977 (42 FR 6992) have been made in response to final regulations subsequently published in the FEDERAL REGISTER. Comments are being sought only on those portions of paragraphs (b), (c), and (e) as discussed in this proposal.):

Therefore, under the transitional provisions of the Color Additive Amendments of 1960 (Title II, Pub. L. 86–816; sec. 203, 74 Stat. 404–407 (21 U.S.C. 376 note)) and under authority delegated to him (21 CFR 5.1), the Commissioner proposes that Part 81 be amended as follows:

§ 81.1 [Amended]

1. In § 81.1 Provisional lists of color additives by changing the closing date for the entry for lead acetate listed in paragraph (g) to read "April 30, 1979."

2. In § 81.27 by revising paragraphs (b) and (c) and adding a new paragraph (e). As set forth in their entirety, paragraphs (b), (c), and (e) of § 81.27 read as follows:

§ 81.27 Conditions of provisional listing.

* * * * *

(a) [Reserved]

(b) The closing date for caramel is postponed until July 31, 1978, and for lead acetate the closing date is postponed until April 30, 1979, while short-term studies are conducted and evaluated, and subject to compliance with the requirements of this paragraph.

(1) At least one petitioner for each of the two color additives listed in paragraph (b) of this section shall agree in writing by March 7, 1977 to undertake the short-term studies on the color additives.

(2) The petitioner for lead acetate shall submit a protocol for the conduct of human absorption studies with lead acetate by (date 30 days after effective date of the final regulations). The Food and Drug Administration will advise the petitioner of its comments on the protocol by (date 51 days after effective date of the final regulations). The petitioner is then provided with additional time to reconcile any differences between it and FDA so that an approved protocol is adopted by (date 72 days after effective date of the final regulations).

(3) A full written report on the absorption studies for lead acetate shall be submitted by December 31, 1978, and a full written report on the subchronic studies for caramel shall be submitted by March 31, 1978 to the Division of Food and Color Additives (HFF-334), Food and Drug Administration, 200 C St. SW., Washington, D.C. 20204

(4) The petitioners undertaking the studies shall immediately notify the Division of Food and Color Additives of any findings that indicate a potential for the color additives to cause adverse effects.

(c) The closing date for the following three color additives is postponed until October 31, 1978 while chemistry data and analytical methods to establish specifications for them are developed and evaluated, and subject to compliance with the requirements of this paragraph: D&C Red No. 6, D&C Red No. 7, and D&C Red No. 30.

(1) At least one petitioner for each of the three color additives listed in paragraph (c) of this section shall agree in writing by March 7, 1977 to undertake to develop the necessary chemistry data and analytical methods for the color additives.

(2) The required chemistry data and analytical methods shall be submitted to the Division of Food and Color Additives, Food and Drug Administration, 200 C St. SW., Washington, D.C. 20204, by July 31, 1978.

(3) The petitioners undertaking the studies shall immediately notify the Division of Food and Color Additives of any findings that indicate a potential for the color additive to cause adverse effects.

(d) The closing date for the following 25 color additives is postponed until January 31, 1981, while chronic toxicity feeding studies for 24 of the colors and, in the case of caramel, a lifetime mouse skin-painting study, are conducted and evaluated, and subject to compliance with the requirements of this paragraph: FD&C Yellow No. 5, FD&C Yellow No. 6, D&C Yellow No. 10, FD&C Red No. 3, D&C Red No. 6, D&C Red. No. 7, D&C Red No. 8, D&C Red No. 9, D&C Red No. 19, D&C Red No. 21, D&C Red No. 22, D&C Red No. 27, D&C Red No. 28, D&C Red No. 30, D&C Red No. 33, D&C Red No. 36, D&C Red No. 37, FD&C Green No. 3, D&C Green No. 5, D&C Green No. 6, FD&C Blue No. 1, FD&C Blue No. 2, D&C Orange No. 5, D&C Orange No. 17, and caramel.

(1) At least one petitioner for each of the 25 color additives listed in paragraph (d) of this section shall agree in writing by March 7, 1977 to undertake the required studies on the color additives.

(2) The petitioners undertaking the studies shall submit a protocol for the conduct of the studies to the Division of Food and Color Additives (HFF-334), Food and Drug Administration, 200 C St. SW., Washington, D.C. 20204 for review, and acceptance or rejection, by April 5, 1977.

(3) An initial progress report of the studies on the color additivies shall be submitted to the Division of Food and Color Additives by December 31, 1977. Further progress reports shall be submitted at 6-month intervals thereafter. A full report of the studies conducted on the colod additives shall be submitted to the Division of Food and Color Additives by August 4, 1980.

(4) The petitioners undertaking the studies shall immediately notify the Division of Food and Color Additives of any findings that indicate potential for the color additive to cause adverse effects.

(e) The closing date for the following two color additives is postponed until January 31, 1981 while multigeneration reproduction studies are conducted and evaluated, and subject to compliance with the requirements of this paragraph: FD&C Red No. 3 and D&C Red No. 33.

(1) At least one petitioner for each of the two color additives listed in paragraph (e) of this section shall agree in writing by (date 30 days after date of publication of final regulations in the FEDERAL REGISTER) to undertake multigeneration reproduction studies on the color additives.

(2) An initial progress report of the studies on the color additives shall be submitted by July 1, 1978 and at 6-month intervals thereafter. A full report of the studies conducted on the color additives shall be submitted to the Division of Food and Color Additives by August 4, 1980.

(3) The petitioners undertaking the studies shall immediately notify the Division of Food and Color Additives of any findings that indicate potential for the color additives to cause adverse effects.

Interested persons may, on or before January 12, 1978, submit to the Hearing Clerk (HFC-20), Food and Drug Administration, Rm. 4-65, 5600 Fishers Lane, Rockville, Md. 20857, written comments regarding this proposal. Four copies of all comments shall be submitted, except that individuals may submit single copies of comments, and shall be identified with the Hearing Clerk docket number found in brackets in the heading of this document. Received comments may be seen in the above office between the hours of 9 a.m. and 4 p.m., Monday through Friday.

The Food and Drug Administration has determined that this document does not contain a major proposal requiring preparation of an economic impact statement under Executive Order 11821 (as amended by Executive Order 11949) and OMB Circular A-107. A copy of the economic impact assessment is on file with the Hearing Clerk, Food and Drug Administration.

Dated: December 5, 1977.

WILLIAM F. RANDOLPH,
Acting Associate Commissioner for Compliance.

[FR Doc.77-35322 Filed 12-7-77;2:28 pm]

[3810-70]

DEPARTMENT OF DEFENSE

Office of the Secretary

[32 CFR Part 288]

[DoD Instruction No. 7230.7]

USER CHARGES

Policies and Procedures Governing Charges for Special Services

AGENCY: Office of the Secretary of Defense.

ACTION: Proposed Change to DoD Instruction 7230.7.

SUMMARY: This proposed rule revises Department of Defense (DoD) policies regarding "User Charges." The new user charges policy will be consistent with the foreign military sales policy by using the same percentage factors of direct costs to determine management, supervision, and asset use charges. Moreover, the "net book value" for use in determining lease charges is being defined. Finally, a requirement that the leasee indemnify the Government is made specific.

DATE: Comments must be received by January 12, 1978.

ADDRESS: Office of the Deputy Assistant Secretary of Defense, (Management Systems), The Pentagon, Room 3E-831, Washington, D.C. 20301.

FOR FURTHER INFORMATION CONTACT:

Mr. Robert E. Flaherty, 202-697-7296.

SUPPLEMENTARY INFORMATION: In FR Doc 67-4159 as published in the FEDERAL REGISTER on April 14, 1967 (32 FR 6025), the Office of the Secretary of Defense issued this part establishing polices and procedures for improved implementation of the "user charges" as expressed in Title V of the Independent Offices Appropriation Act of 1952 (5 U.S.C. 140) and Bureau of the Budget Circular No. A-25, September 23, 1959, as amended, Subject: "User Charges." Subsequently, there were published modifications to certain sections of this part; namely, 34 FR 12339 of July 26, 1969; 36 FR 22236 of November 23, 1971; and 37 FR 23719 of November 8, 1972. This proposed revision permits, in the computation of charges for special services, the use of an administrative surcharge in determining the proportionate share of management and supervisory costs of the DoD Component and an assets use charge in lieu of depreciation and inter-

est on investment on the Government's investment in DoD owned capital assets. It further defines the net book value of the fixed assets for use in determining lease charges.

Accordingly, § 288.4 and § 288.5 are revised as follows:

Sec.
288.4 Charges and fees.
288.5 Collections.

AUTHORITY.—5 U.S. Code, sec. 140; Title V, Pub. 2. 137, 82d Cong., Act of Aug. 21, 1951, 65 Stat. 290.

§ 288.4 Charges and Fees.

(a) Special Services. Charges for special services will be based on the total costs to perform such services as determined or estimated from the best available records or fair market value, whichever is higher. The maximum charge for a special service will be governed by its total cost or fair market value, whichever is higher, and not by the value of the service to the recipient. Cost accounting systems will not be established solely for the purpose of determining charges but the results of existing cost accounting systems will be used. Costs shall include all direct and indirect costs, such as:

(1) Civilian salaries or wages and personnel costs of leave and Government contributions for retirement, medical expense, insurance, etc., and the cost of military personnel services as prescribed in DoD 7220.9H "DoD Accounting Guidance Handbook."

(2) Cost of materials, supplies, travel expense, communications, utilities, equipment and property rental, and maintenance of property and equipment.

(3) A 3 percent of direct costs administrative surcharge to cover general and administrative costs of the DoD component.

(4) The cost of research, establishing standards and regulations when directly associated with the service performed.

(5) A 4 percent of direct costs asset use charge to cover depreciation and interest on investment in the DoD-owned fixed assets.

(b) Fees and rates for the recovery of full costs or fair market value, whichever is higher, of a special service will be established in advance when feasible. All fees and rates established with the Department of Defense shall be reviewed at least once a year, or whenever significant changes in costs occur, and necessary revisions made to ensure recovery of full costs. § 288.10 provides a schedule of fees and rates for certain services for use throughout the Department of Defense. Recommendations for additions and revisions to the schedule will be made to the Assistant Secretary of Defense (Comptroller).

(i) Lease or Sale of Property. Charges for lease or sale of property will be based on determination of fair market value.

(1) Sale of Material. In the absence of a known market value, a fair value for sale of material will be determined on the basis of the aggregate of the following:

(i) Standard price of the item carried in inventory or at reduced price when so authorized for sale within the Department of Defense;

(ii) Accessorial and administrative costs as provided for in DoD Instruction 7510.4.[1]

(2) Lease or Rental of Property.

(i) Fair market value for lease or rental of property will normally be determined in accordance with commercial rates for similar property in the local geographical area.

(ii) In those cases involving the lease or rental of military equipment where there is no commercial counterpart, fair market value will be based on the computation of an annual rent which will be the sum of the annual depreciation plus interest on investment. The amount of interest on investment is determined by applying the interest rate to net book value. That is, acquisition cost plus additions less depreciation. The interest rate to be used for this purpose will be 10%. Support, if furnished, and applicable general administration expenses will be extra.

(iii) Leases must indemnify the Federal Government against third party liabilities and loss or damage of the property.

§ 288.5 Collections.

(a) Normally, collection of charges and fees will be made in advance of rendering the service. In some instances, it may be more practical to collect charges and fees at the time of conveying the service or property to the recipient.

(b) Collections of fees and charges will normally be deposited to Miscellaneous Receipts of the Treasury. However, when authorized by law, or by law and instructions promulgated pursuant thereto, collections of fees and charges will be deposited to the credit of the appropriation or fund responsible for the principal financial support of the services. Collections in excess of recovery of full costs, determined pursuant to § 288.3, resulting from charges based on fair market value will be deposited to Miscellaneous Receipts of the Treasury.

(c) Collections for utilities and services in connection with the lease of property will be deposited to the appropriation or fund responsible for financing the operations of the equipment and facility. When authorized by law, proceeds from sale of property, other than those related to the Disposal Program and the Exchange Sale Program, will be credited to the appropriation or fund responsible for its replacement, and for property not to be replaced, sale proceeds will be deposited to Miscellaneous Receipts of the Treasury. Proceeds from the Disposal and Exchange Sale Programs will be accounted for in accordance with DoD Instructions 4160.1 and 7310.1.[1]

MAURICE W. ROCHE,
Director, Correspondence & Directives, Washington Headquarters Service, Department of Defense.

DECEMBER 8, 1977.

[FR Doc.77-35565 Filed 12-12-77;8:45 am]

[6560-01]

ENVIRONMENTAL PROTECTION AGENCY

[40 CFR Part 52]

[FRL 828-7]

APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS

Revisions to Section IX of the Texas Plan

AGENCY: Environmental Protection Agency.

ACTION: Proposed rule.

SUMMARY: This rule proposes the approval of minor revisions to Section IX of the Texas State Implementation Plan (SIP) for modifications to the State Air Quality Surveillance System.

The Texas Air Control Board (TACB) requests that approval be given to changing the designation and location of several SIP monitoring sites. These changes will improve the information produced by the network and allow the State Air Quality Surveillance System to be fully operational by the end of August, 1977.

DATE: Comments due: January 13, 1978.

ADDRESSES: Copies of the State's submittal are available at the locations below:

Air Programs Branch, Environmental Protection Agency, Region VI, 1201 Elm Street, Dallas, Tex. 75270.

Environmental Protection Agency, Public Information Reference Unit, 401 M Street SW., Room 2922, Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT:

Oscar Cabra, Jr., Air Program Branch, Region VI, Dallas, Tex. 75270, 214-749-3837.

SUPPLEMENTARY INFORMATION: On January 28, 1972, the Governor of Texas submitted the SIP for attainment and maintenance of the National Ambient Air Quality Standards (NAAQS). Provisions are provided within EPA regulations for States to periodically update or revise the SIP. Administrative or minor revisions of the SIP may be submitted by the State Agency rather than

[1] Filed as part of the original. Single copies may be obtained, if needed, from U.S. Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120, Attention: Code 301

the Governor, and they are normally not subject to public hearing. Accordingly, the TACB submitted a number of minor revisions to Section IX of the Texas SIP on August 12, 1977. These revisions are discussed below.

AMARILLO-LUBBOCK

AIR QUALITY CONTROL REGION 211

In the recent particulate matter "Attainment Analysis" (Volume 1, Causes of Nonattainment) completed by the Texas Air Control Board in January 1977, construction activity and wind-blown dust were described as the predominant reasons for non-attainment of the standards in the Lubbock Area. With the conclusion of a major construction project in downtown Lubbock, it is anticipated that the major source of high particulate levels in the future will be windblown dust. Currently the data are not sufficient to determine whether the particulate measured in Lubbock and other metropolitan areas in the panhandle is primarily the result of emissions generated within the cities or from regional background sources. Therefore, a change is proposed in the particulate monitoring site designation from Air Quality Surveillance to Background. It is hoped that a background site, instead of a third metropolitan site, would provide information that could be used in determining the nature of the particulate measured in this region.

CORPUS CHRISTI-VICTORIA

AIR QUALITY CONTROL REGION 214

A change is proposed in the new ozone monitor designation from Background to Maximum Concentration. This new monitor would be located downwind of the petrochemical and industrial section of Corpus Christi in the area of expected maximum oxidant concentration. It, plus the existing monitor located in the center city area, would provide better coverage for the area than the addition of a background ozone monitor located on the coast. Population growth patterns are towards the proposed monitor location, which increases the desirability of having a monitor located there.

A change is proposed in the sulfur dioxide/hydrogen sulfide monitor designation from Air Quality Surveillance to Growth Area. This monitor will be located downwind of the petrochemical and industrial section of Corpus Christi in the same vicinity as the new ozone monitor discussed above. With the increasing use of higher sulfur content fuels in the industrial sector, this area will probably be exposed to higher levels of sulphur dioxide and hydrogen sulfide than other parts of Corpus Christi, and could well become a maximum concentration area in the near future.

DALLAS-FORT WORTH

AIR QUALITY CONTROL REGION 215

Because of siting problems with the proposed Denton location, the TACB requests that the Sherman particulate monitoring site be designated in place of Denton as the SIP site. The Sherman monitor satisfies all EPA siting criteria and has been in operation since 1974, so a high data return can be expected. In addition, this change will allow the Sherman-Denison Standard Metropolitan Statistical Area to be represented in the SIP.

SHREVEPORT-TEXARKANA-TYLER

AIR QUALITY CONTROL REGION 022

It is proposed that the location for the ozone and sulfur dioxide monitors be changed from the City of Tyler to the Gregg County Airport, south of Longview, Tex. This area is seventh among the twelve Texas Air Quality Control Regions in emissions of sulfur dioxide. Emissions from power plants already under construction, along with a number of lignite-fueled plants presently in the planning stage, will make this region one of the top three regions in sulfur dioxide emissions. The new monitor site location was selected because of its proximity to a large concentration of these power plants and thus will allow the TACB to monitor present levels of sulfur dioxide as well as any increase in levels which may occur when more units come on line. Since the area is sparsely populated and there is very little activity at the airport, the move should not affect the status of the ozone monitor, which is to be a regional background site.

Other proposed changes to Section IX pp. 5, 7, 19, and 20, include correction of typographical errors, revision of the New Site Development narrative to reflect the above proposals, and the addition of other site information that has become available since the May, 1976 revision.

PUBLIC COMMENT

Interested persons may participate in this proposed rulemaking by submitting written comments to the Environmental Protection Agency, Region VI, at the address above. All comments received within 30 days of publication of this notice will be considered.

This notice of proposed rulemaking is issued under the authority of Section 110(a) of the Clean Air Act, as amended, 42 U.S.C. 1857c-5(a).

Dated: November 25, 1977.

ADLENE HARRISON,
Regional Administrator.

It is proposed to amend Part 52 of Chapter I, Title 40 of the Code of Federal Regulations as follows:

Subpart SS—Texas

In § 52.2270 paragraph (c) is amended by adding paragraph (14) as follows:

§ 52.2270 Identification of Plan.

* * * * *

(c) * * *

(14) A revision to Section IX, Air Quality Surveillance Plan, which includes minor revisions to the surveillance network, was submitted by the Texas Air Control Board on August 12, 1977.

[FR Doc.77-35465 Filed 12-12-77;8:45 am]

[4310-84]

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[43 CFR Part 2800]

RIGHTS-OF-WAY ON PUBLIC LANDS

AGENCY: Bureau of Land Management, Interior Forest Service, USDA.

ACTION: Advance notice of proposed rulemaking.

SUMMARY: The Bureau of Land Management, U.S. Department of the Interior, and the Forest Service, U.S. Department of Agriculture, are jointly studying regulation changes required by Title V of the Federal Land Policy and Management Act of 1976 (Pub. L. 94-579, 90 Stat. 2743, 43 U.S.C. § 1761). Notice is hereby given that an outline of proposed rulemaking, suggesting procedural aspects of obtaining rights-of-way, is available for review at all Bureau of Land Management State Offices, Forest Service Regional Offices, and the Washington, D.C. offices of both agencies.

DATES: Written comments should be received on or before February 1, 1978.

Public meetings are scheduled to be held as follows:

Jan. 9, 1978	Sacramento, Calif.
Jan. 11, 1978	Salt Lake City, Utah.
Jan. 13, 1978	Denver, Colo.
Jan. 16, 1978	Washington, D.C.

ADDRESSES: Send comments to: Director (210), Bureau of Land Management, Washington, D.C. 20240, or the Chief, Forest Service, Washington, D.C. 20013.

FOR FURTHER INFORMATION CONTACT EITHER:

John Tucker, Forest Service, Room 1013, 1621 N. Kent St., Rosslyn, Va., telephone 703-235-2161; or Tom Rodda, Bureau of Land Management, Room 508, Board of Trade Bldg., 1129 20th Street, NW., Washington, D.C., telephone 202-343-5537.

SUPPLEMENTARY INFORMATION: The outline suggests, for comment purposes, a common approach to issuing rights-of-way on the public lands and National Forests. Rights-of-way for roads, railroads, pipelines (other than oil and gas), communications, water developments, and electric power are involved. In addition, the new law requires for the first time that communities, counties, State and Federal agencies will have to apply for rights-of-way for public roads and other facilities on lands administered by the Bureau of Land Management.

The agencies would prefer written statements which will be made a part of

the record. However, informal public meetings will also be held for the purpose of receiving viewpoints of interested groups and individuals prior to developing formal regulations. Public meetings are scheduled to be held as follows:

Jan. 9, 1978	Room 102, Consumer Affairs Building, 1020 North Street, Sacramento, Calif.
Jan. 11, 1978	Room 128, The Salt Palace, 100 S. West Temple, Salt Lake City, Utah.
Jan. 13, 1978	Room 708, Colorado State Bank Bldg., 1600 Broadway, Denver, Colo.
Jan. 16, 1978	Main Auditorium, Interior Bldg., 18th and C Streets, NW., Washington, D.C.

Meetings will begin at 2 p.m. and reconvene at 7 p.m., except the Washington, D.C. meeting which will begin at 9 a.m. with no evening session.

Although the meetings will be informal, interested individuals, representatives of organizations, and public officials wishing to speak at the meetings should contact the Public Affairs Officer at the Bureau of Land Management State Offices in the cities listed not later than one week before the meetings in order to be scheduled on the program. Oral statements will be limited to 15 minutes. Forest Service and Bureau of Land Management personnel will be present to respond to questions.

All comments and recommendations received will be considered in drafting proposed regulations. When developed, the proposed regulations will be published in the FEDERAL REGISTER as proposed rules, allowing opportunity for further comment before final regulations are adopted. Resolution of conflicting public comments and/or rejection of comments on policy or legal grounds are the continuing responsibility of the Secretary of the Interior and the Secretary of Agriculture.

GEORGE L. TURCOTT,
Acting Director.

DECEMBER 8, 1977.

[FR Doc.77-35570 Filed 12-12-77;8:45 am]

[6315-01]

COMMUNITY SERVICES ADMINISTRATION

[45 CFR Part 1067]

[CSA Instruction 6100-1b]

FUNDING OF CSA GRANTEES

Program Account Structure

AGENCY: Community Services Administration.

ACTION: Proposed rule.

SUMMARY: The Community Services Administration is proposing to revise and expand its program account structure. These revisions will provide a more detailed and meaningful breakout of the purposes for which CSA is using its grant funds.

DATES: Comments received on or before January 12, 1977 will be considered and this proposed rule changed to reflect comments where warranted.

ADDRESS: Please send all comments to: Mr. Frank Beier, Community Services Administration, Office of Management, Office of the Controller, Room B400E, 1200 19th Street NW., Washington, D.C. 20506.

FOR FURTHER INFORMATION CONTACT:

Mr. Frank Beier, 202-254-6310.

SUPPLEMENTARY INFORMATION: This rule revises and promulgates in the FEDERAL REGISTER CSA Instruction 6100-1a which was not previously published in the FEDERAL REGISTER because it became effective in 1971, prior to the enactment of Section 623 of the Economic Opportunity Act of 1964, as amended, which requires publication of all CSA Instructions in the FEDERAL REGISTER.

During the zero based budgeting process this past year it became evident that a more detailed breakout of some program accounts was necessary before the next budget cycle begins. As a result, the program account structure has been expanded from forty accounts to fifty-eight accounts. A summary of these accounts by type of program is included as Appendix A. A more detailed description of the program accounts is included in numerical sequence in Appendix B.

No change has been made in the local initiative program, but under the proposed rule grantees will be required to subdivide certain categorical grant efforts into two or more types of program efforts. For example, the community nutrition program, formerly funded under Program Account 55, is now broken out into ten program accounts. In this way CSA can more readily determine the extent to which funds are used for self help projects, supplementary programs, crisis relief programs, etc.

This proposed rule is not intended to reduce grantee funding flexibility as a result of the increased number of program accounts. Appropriate changes in 45 CFR 1067.40 (CSA Instruction 6710-1 Ch. 11), published at 42 FR 10689, will be published at a later date to insure that grantee funding flexibility is not decreased.

AUTHORITY: Sec. 602, 78 Stat. 530; 42 U.S.C. 2942.

GRACIELA (GRACE) OLIVAREZ,
Director.

45 CFR 1067 is proposed to be amended by adding new §§ 1067.41-1 and 1067.41-2 to read as follows:

Sec.
1067.41-1 Procedures.
1067.41-2 Description of Program Accounts.

§ 1067.41-1 Procedures.

Any fiscal year 1978 grant which does not reflect these revised program accounts because it was funded prior to the effective date of this Instruction may, by request of the CSA administering office, be modified using a CAP Form 325b "Justification for Program Account Amendment." This document will, with the concurrence of the grantee, serve as the basis for amending the CSA Form 314 to reflect these revised program accounts.

§ 1067.41-2 Description of Program Accounts.

Appendix A lists all program accounts by type of program. Appendix B includes a brief description of each program account, including the section of the Community Services Act the account implements.

APPENDIX A
PROGRAM ACCOUNT CODES

01—Local initiative/CAA administration	
05—Local initiative program	
02—Youth sports	Summer personnel.
03—Youth sports	Other.
04—Youth sports	Winter program.
60—Summer recreation	Personnel.
10—Summer recreation	Other.
06—SOS	Personnel.
07—SOS	Non personnel.
08—SEOO	Training.
09—SEOO	Other.
12—Nutrition	Advocacy/monitoring.
13—Nutrition	Self-help.
14—Nutrition	Supplementary programs.
16—Nutrition	Crisis relief.
29—Nutrition	Research.
39—Nutrition	Demonstrations.
42—Nutrition	T&TA, seminars.
43—Nutrition	T&TA, on-site assistance.
44—Nutrition	T&TA, other.
48—Nutrition	Evaluation.
18—Migrants and seasonal farmworkers	
21—Energy	Weatherization.
22—Energy	Crisis intervention.
23—Energy	Consumer information, education, legal assistance.
24—Energy	Transportation.
25—Energy	Alternate energy sources.
50—Energy	Research.

APPENDIX A

PROGRAM ACCOUNT CODES—Continued

53—Energy	Demonstration.
54—Energy	T&TA, seminars.
56—Energy	T&TA, on-site assistance.
57—Energy	T&TA, other.
58—Energy	Evaluation.
19—Technical assistance	Grantee administration.
27—Technical assistance	Grantee program.
28—Technical assistance	Other.
31—Rural housing	Community development.
32—Rural housing	Management services.
33—Rural housing	Training and technical assistance.
36—Rural housing	New home manufacture.
37—Rural housing	Repair/rehabilitation.
38—Rural housing	Housing subsidies.
64—Special assistance	
63—Economic development	Special impact.
49—Economic development	Rural programs.
51—Economic development	Rural development finance.
52—Economic development	Community development finance.
61—Economic development	Training and technical Assistance.
66—Economic development	Demonstration.
67—Economic development	Research.
68—Economic development	Evaluation.
69—Economic development	Planning grants.
71—Evaluation	Type I.
73—Evaluation	Type II.
75—Evaluation	Type III.
78—Evaluation	Other.
82—Research and evaluation	
98—Program administration	

APPENDIX B

DESCRIPTIONS OF ACTIVITIES WHICH MAY BE CONDUCTED, SINGLY OR IN COMBINATION UNDER EACH PROGRAM ACCOUNT

01. *Local Initiative/CAA Administration (221).* Includes support for general administration and management of central staff, facilities, and equipment of the community action agency. Coordination, mobilization of resources, general management, information collection and use, as well as planning, program development, and evaluation activities undertaken by CAAs as part of their overall administrative and management responsibilities are included in this account. Support of the CAA board's functioning should also be included. Administrative overhead costs for delegate agencies or general support functions performed by the CAA for such delegate agencies where these costs are not related to specific programs may be included as appropriate. However, this activity does *not* include administration or management directly linked to specific program activities such as community nutrition activities, etc. Such administrative overhead should be reported under the account designated for that program.

02. *Youth Sports—Summer Personnel (227).* Includes the personnel costs to operate the national youth sports program during the summer months, June through late August or mid September. This program provides disadvantaged youths the opportunity for sports skills instruction, sports competition, learning good health practices, and career and educational opportunities. Stipends should not be included in this account.

03. *Youth Sports—Summer Other (227).* Includes the non-personnel costs to operate the national youth sports program during the summer months, June through late August or mid September.

04. *Youth Sports—Winter Program (227).* Includes all costs, both personnel and non personnel to operate the national youth sports program during the winter months, September through May.

05. *Local Initiative Program (221).* The basic purpose of community action programs as stated in the Economic Opportunity Act is "to stimulate a better focusing of all available local, State, private, and Federal resources upon the goal of enabling low-income families, and low-income individuals of all ages, in rural and urban areas, to attain the skills, knowledge, and motivations and secure the opportunities needed for them to become fully self-sufficient." This purpose may be accomplished by programs designed and/or selected at the local level to meet specific community needs. They may deal with particular concerns in such areas as housing, manpower, education, health, day care, consumer affairs, economic development, general social services, etc. They may focus on particular target groups such as youth. They may employ some types of neighborhood center(s) as a means of reaching persons and delivering services.

06. *Senior Opportunities and Services—Personnel (222)(a)(7).* Includes the personnel costs to identify and meet the needs of older poor persons above the age of 60, in projects which serve or employ older persons as the predominant or exclusive beneficiary or employee group. Among other things, such projects may seek to develop and provide new employment and volunteer services; effective referral to existing health, welfare, employment, housing, legal, consumer, transportation, education, recreational, and other services; stimulation and creation of additional services and programs to remedy gaps and deficiencies in presently existing services and programs; modification of existing procedures, eligibility requirements and program structures to facilitate the greater use of, and participation in, public services by the older poor; development of all-season recreation and service centers controlled by older persons themselves; and such other activities and services as are necessary or specially appropriate to meet the need of the older poor and to assure them greater self-sufficiency.

07. *Senior Opportunities and Services—Non Personnel (222)(a)(7).* Includes the non-personnel costs associated with the program described in Program Account 06, above.

08. *SEOO—Training (231).* Includes all costs directly associated with providing training and technical assistance by the SEOOs to communities, state and local agencies and to community action agencies in carrying out the programs under the Community Services Act.

09. *SEOO—Other (231).* Includes other costs incurred by the SEOOs not included as training and technical assistance under account 08.

10. *Summer Recreation—Other (222)(a)(13).* Includes non-personnel costs associated with the summer recreation program which is aimed at expanding and improving recreational services and activities for the economically disadvantaged youths. (Personnel costs associated with this program are shown under Program Account 60)

12. *Nutrition—Advocacy/Monitoring (222)(a)(5).* Includes operating program costs associated with the monitoring or analyzing of existing Federal food and nutrition programs, the development of methods to improve participation in and accessibility to these programs, the dissemination of food and nutrition information including the conducting of educational programs, or the representation of the interests of the poor in public proceedings involving nutrition policy.

13. *Nutrition—Self-Help (222)(a)(5).* Includes operating program costs associated with projects designed to foster self-sufficiency through the mobilization of financial and community resources. Examples include buying clubs, community gardens, food raising co-ops, community canneries, farmer-to-consumer sales and greenhouse food production.

14. *Nutrition—Supplementary Program (222)(a)(5).* Includes operating program costs associated with projects which extend, supplement, broaden or improve other feeding projects. Examples include transportation to feeding sites, distribution of surplus commodities, or supplementing a school breakfast or lunch program.

16. *Nutrition—Crisis Relief (222)(a)(5).* Includes operating program costs associated with the provision of food vouchers, foodstuffs or funds to purchase food stamps on a temporary or crisis basis. (For additional program accounts dealing with nutrition see numbers 29, 39, 42, 43, 44 and 48.)

18. *Migrants and Seasonal Farmworkers (Title III–B).* Includes costs associated with the provision of services to migrant and seasonal farmworkers such as weatherization, transportation, housing, training, technical assistance, etc.

19. *Training And Technical Assistance—Grantee Administration (230).* Includes costs associated with providing training and technical assistance to improve and maintain the administrative and managerial capacity of CSA-funded grantees, such as accounting, personnel, property or Board training. (For additional program accounts dealing with Technical Assistance see numbers 27 and 28).

21. *Energy—Weatherization (222)(a)(12).* Includes costs associated with home repairs and energy saving improvements to minimize heat transfer and improve thermal efficiency of dwellings.

22. *Energy—Crisis Intervention (222)(a)(12).* Includes costs associated with the intervention to prevent hardship or danger to health due to utility shut-off or lack of fuel.

23. *Energy—Consumer Information, Education and Legal Assistance (222)(a)(12).* Includes costs associated with the dissemination of energy conservation information, conduct of energy conservation educational activities, and the representation of the interests of the poor in public proceedings, for example, energy policy and utility rate structure.

24. *Energy—Transportation (222)(a)(12).* Includes costs association with efforts to offset the increased costs to the poor of transportation needed for access to essential services and employment.

25. *Energy—Alternate Energy Sources (222)(a)(12).* Includes costs associated with the development and application to energy needs of the poor those technologies that capitalize on non-fossil fuels and renewable energy resources, or make conventional fuels available to the poor at substantially decreased costs and/or at increased energy efficiency. (For additional program accounts dealing with Energy see numbers 50, 53, 54, 56, 57 and 58).

27. *Training and Technical Assistance—Grantee Program (230).* Includes costs associated with the providing of training and technical assistance in specific program areas such as housing, mobilization of resources, etc.

28. *Training and Technical Assistance—Other (230).* Includes costs associated with training and technical assistance which does not relate specifically to grantee administration or grantee program areas.

29. *Nutrition—Research (222)(a)(5).* Includes costs associated with the development of new knowledge about hunger and malnutrition among the poor and/or ways to deal with their problems approved under the authority of Section 222(a)(5) of the CSA Act.

31. *Rural Housing—Community Development (222)(a)(11); (232).* Includes costs associated with providing assistance to effect infra-structure development (e.g. water, sewer, zoning and housing projects).

32. *Rural Housing—Management Services (222)(a)(11); (232).* Includes costs associated with providing management services to assist grantees in the acquisition and maintenance of default housing. Also, includes costs associated with providing housing assistance (such as homeownership and default counselling, homesteading, advocacy and legal services) to individuals and tenant organizations.

33. *Rural Housing—Training and Technical Assistance (222)(a)(11); (232).* Includes costs associated with area and state-wide housing development corporations designed to provide technical assistance, seed money, training and advocacy support in the housing area. Also includes costs associated with developing innovative and effective packaging techniques to obtain loan subsidies for self-help, home repair, rehabilitation and construction projects.

36. *Rural Housing—New Home Manufacture (222)(a)(11); (232).* Includes costs associated with the development of housing factory delivery systems for building low cost housing.

37. *Rural Housing—Repair/Rehabilitation (222)(a)(11); (232).* Includes costs associated with the repair and rehabilitation of housing for low-income families. Also includes costs associated with removing architectural barriers from the homes of low-income disabled individuals.

38. *Rural Housing—Housing Subsidies (222)(a)(11); (232).* Includes costs associated with the development of alternative financing mechanisms for low cost housing production.

39. *Nutrition—Demonstrations (222)(a)(5).* Includes costs associated with experimental, pilot or demonstration projects which test new or improved approaches to combatting the problems of hunger and malnutrition.

42. *Nutrition—T&TA Seminars (222)(a)(5).* Includes costs associated with holding nutrition related T&TA seminars for persons from two or more agencies. Such seminars should help grantees plan, conduct and/or evaluate nutrition programs.

43. *Nutrition—T&TA On Site Assistance (222)(a)(5).* Includes the cost of providing nutrition related T&TA services to specific grantee personnel at the grantee's location. Such services should help a specific grantee plan, conduct and/or evaluate nutrition programs.

44. *Nutrition—T&TA Other (222)(a)(5).* Includes any costs of a T&TA nature related to nutrition which is not classified as seminar or on-site assistance in program accounts 42 and 43.

48. *Nutrition—Evaluation (222(a)(5).* Includes costs associated with evaluation of nutrition projects approved under the authority of Section 222(a)(5) of the CSA Act. Does not include cost for grantees self evaluations.

49. *Economic Development—Rural Programs (Title VII).* Includes costs associated with meeting the special economic needs of rural communities and areas pursuant to Title VII, Part B of the CSA Act.

50. *Energy—Research (222)(a)(12).* Includes costs of research related to energy type projects approved under the authority of Section 222(a)(12) of the CSA Act.

51. *Economic Development—Rural Development Finance (Title VII, Part C).* Includes costs associated with the development, testing and operation of rural financial support mechanisms in conjunction with loans from the Rural Development Loan Fund.

52. *Economic Development—Community Development Finance (Title VII, Part C).* Includes costs associated with the development, testing and operation of community financial support mechanisms in conjunction with loans from the Community Development Loan Fund.

53. *Energy—Demonstrations (222)(a)(12).* Includes costs associated with experimental, pilot or demonstration projects which test new or approved approaches to solving the energy problems of the poor.

54. *Energy—T&TA Seminars (222)(a)(12).* Includes costs associated with holding energy related T&TA seminars for persons from two or more grantees. Such seminars should help grantees plan, conduct and/or evaluate energy programs.

56. *Energy—T&TA On Site Assistance (222)(a)(12).* Includes the cost of providing energy related T&TA services to specific grantee personnel at the grantees' location. Such services should help a specific grantee plan, conduct and/or assesses energy projects.

57. *Energy—T&TA Other (222)(a)(12).* Includes any cost of a T&TA nature related to Energy which is not classified as services or on-site assistance in program accounts 54 and 56.

58. *Energy—Evaluation (222)(a)(12).* Includes costs associated with evaluation of energy projects approved under the authority of Section 222(a)(12) of the CSA Act.

60. *Summer Recreation—Personnel (222)(a)(13).* Includes all personnel costs associated with the summer recreation program which is aimed at expanding and improving recreational services and actvities for the economically disadvantaged youths. (Non-personnel costs associated with this program are shown under Program Accounts 10).

61. *Economic Development—Training and Technical Assistance (Title VII, Part D).* Includes training and technical assistance costs related to economic development projects approved under the authority of Title VII, Part D of the CSA Act.

63. *Economic Development—Special Impact (Title VII, Part A).* Includes costs associated with community development corporation projects approved under the authority of Title VII, Part A of the CSA Act.

64. *Special Assistance (234).* Includes costs associated with projects serving groups of low income individuals who are not being effectively served by other Title II programs.

66. *Economic Development—Demonstration (Title VII, Part D).* Includes costs associated with pilot and demonstration activities approved under the authority of Title VII, Part D of the CSA Act.

67. *Economic Development — Research (Title VII, Part D).* Includes costs associated with research activities approved under the authority of Title VII, Part D of the CSA Act.

68. *Economic Development — Evaluation (Title VII, Part D).* Includes costs associated with evaluation activities approved under the authority of Title VII, Part D of the CSA Act.

69. *Economic Development — Planning Grants (Title VII, Part D).* Includes costs associated with economic development planning grants approved under the authority of Title VII, Part D of the CSA Act.

71. *Evaluation—Type I (Title IX).* Includes costs associated with national impact evaluation strategies approved under the authority of Title IX.

73. *Evaluation—Type II (Title IX).* Includes costs associated with determining the relative effects of different program strategies, intervention techniques and administrative processes employed to implement a national program.

75. *Evaluation—Type III (Title IX).* Includes costs associated with assessing the effectiveness and efficiency of individual grantees and projects.

78. *Evaluation—Other (Title IX).* Includes costs associated with assessment projects not included under program accounts 71, 73 and 75. Examples might include short-term studies that respond to policy, relevant questions.

82. *Research and Evaluation (Title I); (232).* Includes costs associated with basic research and related evaluation conducted to provide meaningful information for formulating new programs and policies affecting the poverty population in program areas not included elsewhere. Specifically excluded are nutrition (29, 39, 48) energy (50, 53, 58) rural housing (31, 32, 33, 36, 37, 38) economic development (67, 68) and Title IX (71, 73, 75, 78).

98. *Program Administration.* Includes costs incurred by Federal employees for the overall direction, management, coordination and support of all CSA programs and related anti-poverty programs of other Federal, State and local agencies.

[FR Doc.77-35487 Filed 12-12-77;8:45 am]

[6712-01]

FEDERAL COMMUNICATIONS COMMISSION

[47 CFR Part 87]

[Docket No. 21495; FCC 77-791]

MONITORING OF EMERGENCY LOCATOR TRANSMITTER SIGNALS TO IMPROVE SAFETY COMMUNICATIONS ON THE AERONAUTICAL EMERGENCY FREQUENCIES

Notice of Inquiry

AGENCY: Federal Communications Commission.

ACTION: Notice of Inquiry.

SUMMARY: The high incidence of inadvertent emergency locator transmitter

activation has had a debilitating effect on aeronautical search and rescue operations. This Notice solicits comments concerning monitoring of the aeronautical emergency frequencies by certain aeronautical control stations to decrease the time required to locate activated aeronautical transmitters.

DATES: Comments must be received on or before February 9, 1978 and reply comments must be received on or before March 13, 1978.

ADDRESSES: Send comments to: Federal Communications Commission, Washington, D.C. 20554.

FOR FURTHER INFORMATION CONTACT:

R. C. McIntyre, Safety and Special Radio Services Bureau, 202–632–7197.

SUPPLEMENTARY INFORMATION:

Adopted: November 22, 1977.

Released: December 5, 1977.

By the Commission:

In the matter of monitoring of emergency locator transmitter signals to improve safety communications on the aeronautical emergency frequencies; Notice of inquiry.

1. This Inquiry is instituted under Section 403 of the Communications Act of 1934, as amended, to review problems attendant to the high incidence of inadvertent emergency locator transmitter (ELT) activations which occur on the aeronautical emergency frequencies 121.5 and 243.0 MHz. A Commission proposal concerning the monitoring of these emergency frequencies is discussed and comments concerning alternative solutions to this problem are sought.

2. On March 7, 1973, the Commission adopted a Report and Order in Docket No. 19385 which provided for the authorization of emergency locator transmitters to be used in aircraft stations. This rule making was initiated in response to legislation[1] and at the request of several Government and non-Government entities.

3. The comments received to the Commission's Notice indicated no objection to the basic proposal, and most respondents stated their support for the adoption of the proposed rules. The basic emergency locator transmitter was intended to satisfy the need for an emergency signalling device to facilitate search and rescue efforts. Section 87.5 of the Commission's rules defines an ELT as "a transmitter intended to be activated manually or automatically and operated as a part of an aircraft or a survival craft station, with an A9 emission, as a locating aid for survival purposes." The device simultaneously transmits carriers on the frequencies 121.5 and 243 MHz which are modulated by a downward sweeping audio signal within the range of 1600–300 Hz. This type of signal, when detected by a receiver, has a distinctive, easily recognizable characteristic sound, and the A9 emission is compatible with direction finding equipment used by search and rescue personnel.

4. ELT's can be activated by manual or automatic means in a distress situation; the emitted signal may be used to aid search vehicles and parties in locating the scene of an emergency as well as to communicate into a safety communications system for alerting purposes. ELT's used as part of an aircraft station are designed to be automatically activated by a switch which is sensitive to acceleration forces ("g" switch).[2] When the aircraft in which an ELT is installed crashes or is forced to land in such a manner as to exceed a specified number of "g's" at the transmitter a signal is automatically radiated. Alternatively, an ELT may be manually activated by a pilot in distress.

5. The area over which ELT signals may be received by aircraft in flight is significant since RF propagation at 121.5 and 243 MHz is virtually line of sight. Radio frequency waves exhibiting such propagation characteristics generally travel in a straight line, however, they are subject to absorption, reflection and slight bending due to variations in refractive index of the earth's atmosphere. If the transmitter and receiving antenna are within a few feet of the earth's surface, communications can be established for distances of 2–7 miles depending on terrain factors. If either the transmitting or receiving antenna is at a high altitude, which is the usual case in aviation situations, radio communications can be established over much longer distances. For example, a receiver at an altitude of 30,000 feet can detect signals from an ELT on the ground 300 miles away.

6. ELT's can be activated in a number of ways, but, unless such activation is in response to an emergency situation, signals so radiated create harmful interference to the aeronautical emergency frequencies 121.5 and 243 MHz. The Commission's rules (§ 87.5) define harmful interference as follows:

> Harmful interference: Any emission, radiation or induction which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radio communications service operating in accordance with this chapter.

Inadvertent activation of ELT's causes harmful interference to emergency frequencies and, additionally, such interference is in violation of Section 87.181 of the Commission's rules which require that communications by an aircraft in the aeronautical mobile service shall be limited to the necessities of safe aircraft operation.

7. One advantage gained by a pilot using established aeronautical emergency frequencies in a distress situation is that the communications range is good. Further, prior knowledge of other frequencies being monitored by various facilities in the area is not necessary to establish communications. The emergency frequencies 121.5 and 243 MHz are guarded by all military towers, military aircraft, most civil towers, direction finding stations and radar facilities. These channels can be used for voice communications (A3 emissions) and ELT transmissions (A9 emissions).

8. Inadvertently activated transmitters are often located in aircraft on or adjacent to a landing area and, therefore, nearly ideal conditions exist to radiate strong signals. Aircraft at high altitudes receive such interference on emergency frequencies over considerable distances. ELT's activated in an emergency situation may be transmitting under less than optimum conditions (e.g., from an overturned aircraft), moreover, the presence of interference may mask entirely or significantly reduce the probability of a valid signal being received. Direction finding at VHF frequencies is a difficult procedure and often requires trained personnel to rapidly locate a crash site when reflections, refraction or bending of radio frequency energy are encountered. When two signals are located in the same geographical area, the problem of locating the signal source becomes complicated since multiple signals cause ambiguities in bearings and delay locating signals.[3]

9. The validity of the Commission's concern over the number of false signals on the emergency frequencies is evidence by reported cases of interference and reviewing data published by the Air Force Rescue Coordination Center (AFRCC), Scott Air Force Base, Ill., concerning ELT incidents. During the calendar year 1975 statistics indicated that 6603 ELT activations were reported to the center. The signals from 4503 reported incidents were terminated prior to being located

[1] Section 31 of Public Law 91–596 (49 U.S.C. 142), December 29, 1970, requires that emergency locator beacons shall be installed on most general aviation aircraft.

[2] The intensity of forces is often defined in terms of a "g" value which is the peak acceleration in dimensionless gravitational units.

[3] "AFRCC Quarterly Report of SAR Activity Related to Aviation—July, August, and September 1976"; Department of the Air Force, Headquarters Aerospace Rescue and Recovery Service; Dated November 9, 1976, excerpt from SAR Mission Summary:

MISSION 8–946—27 AUGUST 1976

The SAR objective was a Cessna 150 with one person on a local flight out of Brackett Field, Lavern, Calif. No flight plan was filed. The Alert Notice was issued 12 hours after departure. Los Angeles Center asked traffic to monitor ELT signals. ELT signals had been reported earlier but had stopped. When new reports were received, an HC–130 was scrambled out of McClellan AFB and the CAP was activated. Two nondistress ELT signals overrode the distress signal and were silenced before a Rescue HC–130 from the 303 ARRS (Reserve) from March AFB located the crash site by DF'ing the weak signal. A Los Angeles County Sheriff's Dept H–34 recovered the surviving pilot and delivered him to a nearby hospital. SAR forces included 41 ARRS, 303 ARRS, California CAP, San Bernardino Sheriff's and Los Angeles County Sheriff's Departments.

SAR efforts: 12 aircraft, 15 sorties, 21.5 hours.

by the rescue center. Signals from the remaining 2100 ELT incidents reported to the rescue center were located and terminated; 54 of these 2100 incidents resulted from activation of the ELT due to a forced landing or a crash and the transmitter signals were, in most cases, instrumental in locating the accident sites. It is the large number of inadvertent activations (6603−54=6549) causing harmful interference to the emergency frequencies which prompted our initiation of this proceeding.

10. The inadvertent activation of ELT's has been attributed to a number of causes which include:

Defective parts such as "g" switches and batteries.

Closure of the "g" switch during landings, in shipment from the manufacturer, in flight, or in ground handling of the aircraft.

Lack of education of the user commnity.

Human error in handling equipment.

Misuse by hunters, hikers, etc.

In an ttempt to reduce the number of activations and improve the distress system, efforts have been directed toward education of the user community, investigation of the use of monitoring and location systems (including satellite aided systems) and development of new performance standards for the ELT. We do not expect these efforts to eliminate the inadvertent activation of ELT's but we do not expect that continued efforts in these areas will eventually lead to a reduction in the number of such activations and the attendant harmful interference which is generated.

11. The Federal Aviation Administration (FAA) has initiated a program whereby film and slide presentations are shown at meetings of various aviation oriented organizations. Additionally the FAA and public interest groups prepare articles for publication in aviation oriented periodicals discussing ELT's. The Inter-Agency Committee on Search and Rescue has undertaken a study to determine the feasibility of using satellites for ELT monitoring and detection; the results of this effort should be available in the near future. The Radio Technical Commission for Aeronautics (RTCA) is in the process of finalizing an improved minimum performance standard for the next generation ELT which corrects identified deficiencies in existing transmitters. As of January 1, 1975, the majority of the more than 161,000 aircraft in the general aviation fleet were equipped with emergency locator transmitters and consequently, it may be many years before such equipment is replaced with an improved ELT. Statistics for the first part of 1976 have not shown a significant reduction in inadvertent activations. The Commission is of the opinion that, notwithstanding the above corrective actions, RF interference to the emergency frequencies in the foreseeable future will remain near the present level unless some further immediate action is taken.

12. In the normal course of responding to an ELT signal, the very difficult problem of locating the source must be addressed once the signal is reported to the AFRCC (the reporting time will range from a few minutes to a few hours). The time required to locate an ELT after it is reported will normally vary between 2–5 hours depending on the geographical location, availability of personnel, number of reports received and terrain features at the source location. In some cases, ELT's have been activated for as long as 18 hours before the signal was terminated. First reports on ELT signals are usually received from high altitude military or commercial aircraft and, consequently, the area in which the signal is assumed to emanate from may be larger than the state of California. Additional reports from lower flying aircraft or ground units are required and must be solicited to narrow the source of the signal to a reasonable area. Ninety percent of inadvertently activated transmitters are usually located on or adjacent to airport landing areas. Once the signal has become localized fixed base operators in the general vicinity are contacted to determine if the signal is being transmitted by a source located at their facility. If the ELT cannot be located at an airport facility in the area of concern assistance is requested from local government or search and rescue organizations.

13. The main weakness in the present distress system is the lack of monitoring facilities to promptly detect and localize the source of transmissions to a specific area. Airports which have control towers operated by the FAA are equipped to monitor these frequencies, and consequently, ELT activations which occur at or near such facilities are rapidly detected and located. Ground based monitoring at control towers will detect ELT signals emitted from:

Aircraft on the ground in the immediate airport area (2–7 miles) which is reported to include 90 percent of the inadvertently activated transmitters.

Aircraft in flight for a period of time determined by the aircraft's speed, range and altitude.

Units undergoing over-the-air testing which is permitted during the first five minutes of every hour for a period of three audio sweeps.

Airports which have FAA operated control towers represent less than 6 percent of the approximately 7300 airports open to the public and listed in the FAA Airport Directory.

14. Considering the absence of a formal program for monitoring the emergency frequencies, the 2–5 hours required to locate an inadvertently activated ELT after it is reported is readily understood. However, it is the Commissioner's view that the transmission of false signals for such periods is not acceptable. The Commission has considered that one solution to this problem might be to require licensees of aeronautical advisory (UNICOM) stations to monitor 121.5 and/or 243 MHz at uncontrolled airports. The efficacy of such action has been discussed with various government and non-government groups through the Interagency Committee on Search and Rescue (ICSAR). Letters indicating support for such action were received from agencies[*] directly concerned with search and rescue.

15. The Commission has authorized approximately 2100 airport advisory stations at uncontrolled airports. If these stations were to augment the monitoring provided by the FAA, 36 percent of the nation's airports open to the public would have the capability to detect ELT signals. It is the larger uncontrolled airports which generally provide UNICOM service and, therefore, landing areas accommodating the highest traffic densities would have the capability to detect ELT signals if monitoring is provided at UNICOM stations. It is expected that such monitoring would significantly reduce the delay which is being experienced in locating and receiving notification of inadvertently activated signals.

16. We do not anticipate that a requirement to monitor an emergency frequency will result in a significant economic burden being placed on the advisory station licensee. If 10,000 of these incidents were to be reported in a given year each licensee would be required to report an average of 5 incidents per year. At present the majority of ELT signals reported are terminated by concerned fixed base operators who are advised by authorities that signals are emanating from the vicinity of their airport. We expect that monitoring and the continued voluntary effort of airport operators will result in a significant decrease in the duration of interference on the emergency frequencies.

17. This Notice is instituted to solicit comments on the monitoring requirement described above and to obtain recommendations concerning alternative solutions to the problem caused by large numbers of inadvertent ELT activations on the emergency frequencies 121.5 and 243 MHz. Accordingly, attention is directed at the following areas:

(a) Comments on the concept of monitoring by UNICOM stations during their hours of operation.

(b) Assuming monitoring by UNICOM stations is considered to be a desirable solution, comments concerning the technical standards applicable to the moni-

[*] The following agencies supported the Commission's proposal: U.S. Coast Guard, letter dated May 25, 1976; U.S. Air Force, letter dated May 11, 1976; Federal Aviation Administration, letter dated June 8, 1976.

toring receiver should address the following characteristics:

Sensitivity.
Type of emission.
Frequency requirements.
Squelch requirements.
Provisions to reject test signals.
Period of required monitoring.

(c) Recommendations concerning alternative systems which can be used to reduce the number and/or duration of inadvertent ELT transmissions are requested.

18. Interested persons who desire to submit comments on these, or related matters, may do so on or before February 9, 1978. Replies to any suggestions or comments may be submitted not later than March 13, 1978. All relevant and timely comments, replies, or other relevant information before the Commission will be considered by the Commission before taking final action on this matter.

19. In accordance with the provision of Section 1.419 of the Commission's rules, an original and 5 copies of all statements, briefs, or comments filed shall be furnished to the Commission. Responses will be available for public inspection during regular business hours in the Commission's Public Reference Room at its headquarters in Washington, D.C.

FEDERAL COMMUNICATIONS COMMISSION,
WILLIAM J. TRICARICO,
Acting Secretary.

[FR Doc.77-35271 Filed 12-12-77;8:45 am]

notices

This section of the FEDERAL REGISTER contains documents other than rules or proposed rules that are applicable to the public. Notices of hearings and investigations, committee meetings, agency decisions and rulings, delegations of authority, filing of petitions and applications and agency statements of organization and functions are examples of documents appearing in this section.

[3410-37]

DEPARTMENT OF AGRICULTURE

Food Safety and Quality Service

SULFONAMIDE RESIDUES IN SWINE

Public Meeting

Notice is hereby given of a public meeting on sulfonamide residues in swine to be held in Conference Room B Interdepartmental Auditorium, 1301 Constitution Avenue NW., Washington, D.C. on January 16, 1978, at 10:00 a.m. Swine producers, feed manufacturers, drug manufacturers, meat packers and consumers are encouraged to attend.

Sulfonamide drugs are used as feed additives for the control of certain swine diseases. In late 1974, USDA began detecting sulfonamide residues in tissues of swine being sent to slaughter. These tissues were collected as part of the Department's program for monitoring residues in the meat and poultry supply. Results from the program indicated sulfonamide residue violations are occuring in 10-15 percent of the pork tissues being sampled. Such violations are a cause of adulteration within the meaning of the Federal Meat Inspection Act (21 U.S.C. 601 et seq.).

The purpose of the meeting is to provide an opportunity for a frank exchange of the issues surrounding this problem and to open avenues which may lead to its solution. Some of the issues which need discussion are: (a) Withdrawal periods, (b) tolerances, (c) toxicology, (d) legal requirements, (e) husbandry practices, (f) methodology, and (g) alternatives.

Officials of the Food and Drug Administration and USDA's Food Safety and Quality Service will open the meeting with brief statements concerning the regulatory responsibilities of their respective agencies and background information relative to the sulfonamide problem. Audience members will then be asked to give their views and offer information on the issues and points which have been raised or identified.

The meeting will be open to the public on a first come, first served basis due to the limited space available. Further requests for information concerning the meeting should be directed to Miss Kerri Ridenour, 202-447-5593.

Done at Washington, D.C. on December 6, 1977.

ROBERT ANGELOTTI,
Administrator, Food Safety and Quality Service.

[FR Doc. 77-35323 Filed 12-12-77; 8:45 am]

[3410-37]

Food Safety and Quality Service

NITRATES AND NITRITES IN MEAT PRODUCTS

Extension of Time For Submission of Data

AGENCY: Food Safety and Quality Service, USDA.

ACTION: Notice—extension of time.

SUMMARY: On October 18, 1977, the Department published in the FEDERAL REGISTER (42 FR 55626-55627) a notice concerning data from the industry demonstrating whether the use of nitrates and/of nitrites in the production of cured products results in the formation of carcinogenic nitrosamines during ordinary processing and/of preparation for eating. The time periods allotted for submitting such data for the various cured products remain in effect except the January 16, 1978, deadline for bacon, which is hereby extended 60 days.

DATES: The period for submission of the data regarding the use of nitrates and nitrites in bacon is extended to March 17, 1978.

ADDRESS: Send the information to: Hearing Clerk, U.S. Department of Agriculture, Room 1077, South Agriculture Building, Washington, D.C. 20250.

FOR FURTHER INFORMATION CONTACT:

Mr. Irwin Fried, Acting Director, Product Labels and Standards Staff, Food Safety and Quality Service, U.S. Department of Agriculture, Room 202, Annex, Washington, D.C. 20250, 202-447-6042.

SUPPLEMENTARY INFORMATION: The Department has determined it necessary to extend the period of time for industry to submit data concerning the use of nitrates and nitrites in bacon. Additional time is needed to arrange for the efficient use of the Department's resources and the development of commercial laboratory capabilities found necessary to generate the data pursuant to the October 18 notice.

Since the Department is interested in receiving factual and meaningful data, these circumstances are considered sufficient justification for an extension of the time originally allotted for submitting data concerning bacon. In all other respects, the October 18 notice shall continue to apply.

Done at Washington, D.C., on December 7, 1977.

ROBERT ANGELOTTI,
Administrator, Food Safety and Quality Service.

[FR Doc. 77-35493 Filed 12-12-77; 8:45 am]

[3410-15]

Rural Electrification Administration

WABASH VALLEY POWER ASSOCIATION, INC.

Final Environmental Impact Statement

Notice is hereby given that the Rural Electrification Administration (REA), has adopted the following as REA's Final Environmental Impact Statement, in accordance with section 102(2)(C) of the National Environmental Policy Act of 1969, in connection with a request for a loan guarantee commitment from the Wabash Valley Power Association, Inc., Indianapolis, Ind. 46224 (Wabash Valley), for participation in the Marble Hill Nuclear Generating Station, Units 1 and 2: (1) the Final Environmental Statement dated September 1976, issued by the U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation; and (2) the August 22, 1977, Partial Initial Decision—Limited Work Authorization of the Atomic Safety and Licensing Board (see Part 51, Subpart D, § 51.52 of the Nuclear Regulatory Commission Regulations).

The proposed loan guarantee commitment will enable Wabash Valley to acquire a 17 percent undivided interest in the Marble Hill Nuclear Generating Station, Units 1 and 2.

Additional information may be secured upon request submitted to Mr. Richard F. Richter, Assistant Administrator—Electric, Rural Electrification Administration, U.S. Department of Agriculture, Washington, D.C. 20250.

Final REA action with respect to this matter including any release of funds may be taken after January 12, 1978, but only after REA has reached satisfactory conclusions with respect

to its environmental effect and after compliance with the National Environmental Policy Act of 1969.

Dated at Washington, D.C., this 8th day of December 1977.

DAVID A. HAMIL,
Administrator, Rural Electrification Administration.

[FR Doc. 77-35599 Filed 12-12-77; 8:45 am]

[3410-15]

WESTERN ILLINOIS POWER COOPERATIVE AND SOYLAND POWER COOPERATIVE

Final Environmental Impact Statement

Notice is hereby given that the Rural Electrification Administration (REA), has adopted the following as REA's Final Environmental Impact Statement, in accordance with section 102(2)(C) of the Environmental Policy Act of 1969, in connection with requests for financial assistance from the cooperatives identified below for participation in Unit 1 of the Clinton Power Station: (i) the Final Environmental Statement dated October 1974, issued by the U.S. Atomic Energy Commission Directorate of Licensing; (ii) the September 30, 1975, Partial Initial Decision—Environmental and Site Suitability Determinations of the Atomic Safety and Licensing Board; and (iii) the July 23, 1976, Decision of the Atomic Safety and Licensing Appeal Board. (See Part 51, Subpart D, § 51.52, of the Nuclear Regulatory Commission Regulations.)

The proposed financial assistance consists of approval by REA of advances of loan funds on account of guaranteed loans in the aggregate amount of $232,715,000 to enable Western Illinois Power Cooperative (WIPCO), of Jacksonville, Ill., and Soyland Power Cooperative (Soyland), of Decatur, Ill., to purchase ownership shares in said Unit 1 of the Clinton, Ill., Nuclear Power Station. The agreed upon undivided ownership in Unit 1 will be Illinois Power Co. of Decatur, Ill. (80 percent), WIPCO (9.5 percent), and Soyland (10.5 percent).

Additional information may be secured upon request submitted to Mr. Richard F. Richter, Assistant Administrator—Electric, Rural Electrification Administration, U.S. Department of Agriculture, Washington, D.C. 20250.

Final REA action with respect to this matter including any advances of funds may be taken after January 12, 1978, but only after REA has reached satisfactory conclusions with respect to its environmental effect and after compliance with the National Environmental Policy Act of 1969.

Dated at Washington, D.C., this 8th day of December 1977.

DAVID A. HAMIL,
Administrator, Rural Electrification Administration.

[FR Doc. 77-35600 Filed 12-12-77; 8:45 am]

[3410-16]

Soil Conservation Service

BONE CREEK WATERSHED PROJECT, NEBR.

Intent To Prepare an Environmental Impact Statement

Pursuant to section 102(2)(C) of the National Environmental Policy Act of 1969; the Council on Environmental Quality Guidelines (40 CFR Part 1500); and the Soil Conservation Service Guidelines (7 CFR Part 650); the Soil Conservation Service, U.S. Department of Agriculture, gives notice that an environmental impact statement is being prepared for the Bone Creek Watershed Project, Butler County, Nebr.

The environmental assessment of this Federal action indicates that the project may cause significant local, regional, or national impacts on the environment. As a result of these findings, Mr. Benny Martin, State Conservationist, has determined that the preparation and review of an environmental impact statement is needed for this project.

The project concerns a plan for watershed protection and flood prevention. The planned works of improvement include land treatment measures and a system of floodwater detention structures.

A draft environmental impact statement will be prepared and circulated for review by agencies and the public. The SCS invites participation of agencies and individuals with expertise or interest in the preparation of the draft environmental impact statement. The draft environmental impact statement will be developed by Mr. Benny Martin, State Conservationist, Soil Conservation Service, Federal Building, U.S. Courthouse, room 345, Lincoln, Nebr. 68508.

(Catalog of Federal Domestic Assistance Program No. 10.904, Watershed Protection and Flood Prevention Program—Pub. L. 83-566, 16 U.S.C. 1001-1008.)

Dated: December 5, 1977.

JOSEPH, W. HAAS,
Assistant Administrator for Water Resources, Soil Conservation Service, U.S. Department of Agriculture, Washington, D.C.

[FR Doc. 77-35535 Filed 12-12-77; 8:45 am]

[3410-16]

MAPLE CREEK WATERSHED PROJECT, NEBRASKA

Intent To Prepare an Environmental Impact Statement

Pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969; the council on Environmental Quality Guidelines (40 CFR Part 1500); and the Soil Conservation Service Guidelines (7 CFR Part 650); the Soil Conservation Service, U.S. Department of Agriculture, gives notice that an environmental impact statement is being prepared for the Maple Creek Watershed Project, Dodge, Cuming, Colfax, Stanton, and Platte Counties, Nebr.

The environmental assessment of this Federal action indicates that the project may cause significant local, regional, or national impacts on the environment. As a result of these findings, Mr. Benny Martin, State Conservationist, has determined that the preparation and review of an environmental impact statement is needed for this project.

The project concerns a plan for watershed protection, flood prevention, and recreation. The planned works of improvement include land treatment measures, installation of a system of floodwater detention structures, and the development of one or more multipurpose floodwater-recreation structures.

A draft environmental impact statement will be prepared and circulated for review by agencies and the public. The SCS invites participation of agencies and individuals with expertise or interest in the preparation of the draft environmental impact statement. The draft environmental impact statement will be developed by Mr. Benny Martin, State Conservationist, Soil Conservation Service, Federal Building, U.S. Courthouse, Room 345, Lincoln, Nebr. 68508.

(Catalog of Federal Domestic Assistance Program No. 10.904, Watershed Protection and Flood Prevention Program—Pub. L. 83-566, 16 U.S.C. 1001-1008.)

Dated: December 5, 1977.

JOSEPH W. HAAS,
Assistant Administrator for Water Resources, Soil Conservation Service, United States Department of Agriculture, Washington, D.C.

[FR Doc. 77-35536 Filed 12-12-77; 8:45 am]

[3410-16]

MIDDLE BIG NEMAHA WATERSHED PROJECT, NEBR.

Intent To Prepare an Environmental Impact Statement

Pursuant to section 102(2)(C) of the National Environmental Policy Act of

1969: the Council on Environmental Quality Guidelines (40 CFR Part 1500); and the Soil Conservation Service Guidelines (7 CFR Part 650); the Soil Conservation Service, U.S. Department of Agriculture, gives notice that an environmental impact statement is being prepared for the Middle Big Nemaha Watershed Project, Johnson, Gage, and Pawnee Counties, Nebr.

The environmental assessment of this Federal action indicates that the project may cause significant local, regional, or national impacts on the environment. As a result of these findings, Mr. Benny Martin, State Conservationist, has determined that the preparation and review of an environmental impact statement is needed for this project.

The project concerns a plan for watershed protection, flood prevention, grade stabilization, and recreation development. The planned works of improvement include land treatment measures, floodwater detention structures, grade stabilization structures, and one or more multipurpose floodwater-recreation structures.

A draft environmental impact statement will be prepared and circulated for review by agencies and the public. The SCS invites participation of agencies and individuals with expertise or interest in the preparation of the draft environmental impact statement. The draft environmental impact statement will be developed by Mr. Benny Martin, State Conservationist, Soil Conservation Service, Federal Building, U.S. Courthouse, room 345, Lincoln, Nebr. 68508.

(Catalog of Federal Domestic Assistance Program No. 10.904, Watershed Protection and Flood Prevention Program—Pub. L. 83-566, 16 U.S.C. 1001-1008.)

Dated: December 5, 1977.

JOSEPH W. HAAS,
Assistant Administrator for Water Resources, Soil Conservation Service, Department of Agriculture, Washington, D.C.

[FR Doc. 77-35537 Filed 12-12-77; 8:45 am]

[3410-16]

STEVENS-CALLAHAN WATERSHED PROJECT, NEBRASKA

Intent To Prepare an Environmental Impact Statement

Pursuant to section 102(2)(C) of the National Environmental Policy Act of 1969; the Council on Environmental Quality Guidelines (40 CFR Part 1500); and the Soil Conservation Service Guidelines (7 CFR Part 650); the Soil Conservation Service, U.S. Department of Agriculture, gives notice that an environmental impact statement is being prepared for the Stevens-Callahan Watershed Project, Lancaster, Cass, and Saunders Counties, Nebr.

The environmental assessment of this Federal action indicates that the project may cause significant local, regional, or national impacts on the environment. As a result of these findings, Mr. Benny Martin, State Conservationist, has determined that the preparation and review of an environmental impact statement is needed for this project.

The project concerns a plan for watershed protection, flood prevention, agricultural water management, flood plain zoning, and recreation. The planned works of improvement include land treatment measures, delineation in part of the 100-year flood plain, a system of floodwater detention structures, and one or more multipurpose floodwater-recreation structures.

A draft environmental impact statement will be prepared and circulated for review by agencies and the public. The SCS invites participation of agencies and individuals with expertise or interest in the preparation of the draft environmental impact statement. The draft environmental impact statement will be developed by Mr. Benny Martin, State Conservationist, Soil Conservation Service, Federal Building, U.S. Courthouse, Room 345, Lincoln, Nebr. 68508.

(Catalog of Federal Domestic Assistance Program No. 10.904, Watershed Protection and Flood Prevention Program—Pub. L. 83-566, 16 U.S.C. 1001-1008.)

Dated: December 5, 1977.

JOSEPH W. HAAS,
Assistant Administrator for Water Resources, Soil Conservation Service, Department of Agriculture, Washington, D.C.

[FR Doc. 77-35538 Filed 12-12-77; 8:45 am]

[3410-16]

SWAN CREEK WATERSHED PROJECT, NEBR.

Intent To Prepare an Environmental Impact Statement

Pursuant to section 102(2)(C) of the National Environmental Policy Act of 1969; the Council on Environmental Quality Guidelines (40 CFR Part 1500); and the Soil Conservation Service Guidelines (7 CFR Part 650); the Soil Conservation Service, U.S. Department of Agriculture, gives notice that an environmental impact statement is being prepared for the Swan Creek Watershed Project, Saline and Jefferson Counties, Nebr.

The environmental assessment of this Federal action indicates that the project may cause significant local, regional, or national impacts on the environment. As a result of these findings, Mr. Benny Martin, State Conservationist, has determined that the preparation and review of an environmental impact statement is needed for this project.

The project concerns a plan for watershed protection, flood prevention, and recreation. The planned works of improvement include land treatment measures, a system of floodwater detention structures, and a multipurpose floodwater-recreation structure or structures.

A draft environmental impact statement will be prepared and circulated for review by agencies and the public. The SCS invites participation of agencies and individuals with expertise or interest in the preparation of the draft environmental impact statement. The draft environmental impact statement will be developed by Mr. Benny Martin, State Conservationist, Soil Conservation Service, Federal Building and U.S. Courthouse, room 345, Lincoln, Nebr 68508.

(Catalog of Federal Domestic Assistance Program No. 10.904, Watershed Protection and Flood Prevention Program, Pub. L. 83-566, 16 U.S.C. 1001-1008.)

Dated: December 5, 1977.

JOSEPH W. HAAS,
Assistant Administrator for Water Resources, Soil Conservation Service, U.S. Department of Agriculture, Washington, D.C.

[FR Doc. 77-35539 Filed 12-12-77; 8:45 am]

[3410-16]

UPPER LITTLE NEMAHA WATERSHED PROJECT, NEBR.

Intent To Prepare an Environmental Impact Statement

Pursuant to section 102(2)(C) of the National Environmental Policy Act of 1969; the Council on Environmental Quality Guidelines (40 CFR Part 1500); and the Soil Conservation Service Guidelines (7 CFR Part 650); the Soil Conservation Service, U.S. Department of Agriculture, gives notice that an environmental impact statement is being prepared for the Upper Little Nemaha Watershed Project, Lancaster, Cass, and Otoe Counties, Nebr.

The environmental assessment of this Federal action indicates that the project may cause significant local, regional, or national impacts on the environment. As a result of these findings, Mr. Benny Martin, State Conservationist, has determined that the preparation and review of an environmental impact statement is needed for this project.

The project concerns a plan for watershed protection, flood prevention, grade stabilization, and recreation development. The planned works of im-

provement include land treatment measures, a system of floodwater detention and grade stabilization structures, and one or more multipurpose floodwater-recreation structures.

A draft environmental impact statement will be prepared and circulated for review by agencies and the public. The SCS invites participation of agencies and individuals with expertise or interest in the preparation of the draft environmental impact statement. The draft environmental impact statement will be developed by Mr. Benny Martin, State Conservationist, Soil Conservation Service, Federal Building and U.S. Courthouse, room 345, Lincoln, Nebr. 68508.

(Catalog of Federal Domestic Assistance Program No. 10.904, Watershed Protection and Flood Prevention Program—Pub. L. 83-566, 16 U.S.C 1001-1008.)

Dated: December 5, 1977.

JOSEPH W. HAAS,
Assistant Administrator for Water Resources, Soil Conservation Service, U.S. Department of Agriculture, Washington, D.C.

[FR Doc. 77-35540 Filed 12-12-77; 8:45 am]

[3410-16]

WOLF-WILDCAT WATERSHED PROJECT, NEBRASKA

Intent To Prepare an Environmental Impact Statement

Pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969; the Council on Environmental Quality Guidelines (40 CFR Part 1500); and the Soil Conservation Service Guidelines (7 CFR Part 650); the Soil Conservation Service, U.S. Department of Agriculture, gives notice that an environmental impact statement is being prepared for the Wolf-Wildcat Watershed Project, Gage and Pawnee Counties, Nebr.

The environmental assessment of this Federal action indicates that the project may cause significant local, regional, or national impacts on the environment. As a result of these findings, Mr. Benny Martin, State Conservationist, has determined that the preparation and review of an environmental impact statement is needed for this project.

The project concerns a plan for watershed protection, flood prevention, and grade stabilization. The planned works of improvement include land treatment measures and a system of floodwater detention and grade stabilization structures.

A draft environmental impact statement will be prepared and circulated for review by agencies and the public. The SCS invites participation of agencies and individuals with expertise or interest in the preparation of the draft environmental impact statement. The draft environmental impact statement will be developed by Mr. Benny Martin, State Conservationist, Soil Conservation Service, Federal Building and U.S. Courthouse, Room 345, Lincoln, Nebr. 68508.

Dated: December 5, 1977.

(Catalog of Federal Domestic Assistance Program No. 10.904, Watershed Protection and Flood Prevention Program—Pub. L. 83-566, 16 U.S.C. 1001-1008.)

JOSEPH W. HAAS,
Assistant Administrator for Water Resources, Soil Conservation Service, United States Department of Agriculture, Washington, D.C.

[FR Doc. 77-35541 Filed 12-12-77; 8:45 am]

[6320-01]

CIVIL AERONAUTICS BOARD

[Order 77-12-22; Docket 30679]

FLORIDA-ATLANTA COMPETITIVE NONSTOP SERVICE CASE

Order on Reconsideration

Adopted by the Civil Aeronautics Board at its office in Washington, D.C., on the 1st day of December 1977.

By Order 77-3-167, the Board instituted the *Atlanta-Daytona Beach/Sarasota-Bradenton Nonstop Proceeding*, Docket 30679, to examine the need for first competitive service in the Atlanta-Daytona Beach and Atlanta-Sarasota/Bradenton markets. By Order 77-7-144, we expanded the scope of this proceeding to include the Atlanta-Tallahassee market. At the same time, we specifically rejected the addition of the Tallahassee-Miami, Tallahassee-Orlando, Tallahassee-Tampa, Tallahassee-Eglin A.F.B./Panama City/Pensacola/Sarasota/Fort Lauderdale/Jacksonville, and Tallahassee-Daytona Beach/Gainesville/Key West/Melbourne/West Palm Beach markets.

Northwest Airlines has petitioned for reconsideration of our instituting order requesting that the proceeding be expanded so as to permit service between Daytona Beach and Sarasota-Bradenton to Tampa and/or Miami. Further, Northwest urges that Tampa be considered as an alternate gateway to the Midwest in addition to Atlanta. In support of its petition, Northwest raises the question of stub-end restrictions at Daytona Beach and Sarasota-Bradenton and the congestion at the Atlanta airport. In effect, Northwest seeks to add Tampa and Miami as terminal points as opposed to Daytona Beach and Sarasota-Bradenton and add Tampa as a gateway point.

The Tampa Bay area parties filed an answer in support of the petition. Eastern Air Lines, the Sarasota-Bradenton parties and Daytona Beach parties have filed answers in opposition. Delta Air Lines filed an answer indicating that it would prefer to have the case remain scoped in line with the instituting order.[1]

We will expand the case to allow the applicants an opportunity to propose service beyond Daytona Beach, Sarasota-Bradenton and Tallahassee to Tampa or Miami on flights also serving Atlanta and one of the Florida points now in issue. We will not grant Northwest's request to include Tampa as an alternative northern gateway (with Atlanta).

It is our judgment that a limited consideration in this case of the Daytona Beach/Sarasota-Bradenton/Tallahassee-Tampa/Miami markets is desirable. Many of the Tampa/Miami markets are relatively small and well served and would not, standing alone, necessarily warrant a priority hearing at this time.[2] However, as Northwest points out, neither Delta, Northwest nor Southern has existing stations at Daytona Beach or Sarasota-Bradenton, and neither Northwest nor Delta serves Tallahassee. As a result, only stub-end operations could be conducted if these carriers were selected to provide service from Atlanta. Such service may not be efficient and we prefer not to foreclose the possibility for more efficient operations as a procedural matter.[3] We emphasize that we would not include these markets if we believed that their inclusion would unduly increase the complexity of the case or shift the primary focus of the investigation from an examination of

[1] Northwest filed what it styled a "Supplement" to its petition and Eastern has responded. Both pleadings were accompanied by motions to file an otherwise unauthorized document which are granted.

[2] Eastern states that the Daytona Beach/Miami markets generated only 4 daily local O. & D. and interline connecting passengers and 25 daily passengers per day each way, respectively, in 1975, while the Sarasota-Bradenton-Tampa/Miami markets generated 40 passengers and 33 passengers per day each way, respectively. The Tallahassee markets are larger, having generated 110 daily passengers (Miami) and 57 daily passengers (Tampa) each way.

[3] Northwest observes that a stub-end operation requires aircraft serving a point to turn around and return to Atlanta, sit on the ground for prolonged periods, or be ferried to or from some other authorized point. However, Eastern states that it currently has aircraft remain overnight at both Daytona Beach and Sarasota, and that this practice allows the carrier to utilize its equipment efficiently. Eastern therefore argues that there is no operational need to expand the case to include Miami and Tampa authority. All parties will have an opportunity to address this issue at the hearing.

the need for Atlanta-Daytona Beach/Sarasota/Bradenton/Tallahassee service. See *Iowa/Illinois-Atlanta Route Proceeding*, Order 77-9-4, September 1, 1977. See generally *Seattle/Portland-Japan Service Investigation*, Order 76-10-33, October 7, 1976, aff'd *St. Louis Airport Authority-City of St. Louis* v. *CAB*, No. 76-2068 (8th Cir., filed August 24, 1977). We are satisfied that the limited addition of these markets will not shift the focus of the case. While the additlion of the markets will delay the case slightly, such delay is outweighed by the potential benefits which could result from the addition of the markets.

The addition of Tampa as an alternate gateway for new Florida service to the north through the inclusion of the Tampa-Daytona Beach/Sarasota-Bradenton/Tallahassee nonstop markets would clearly shift the emphasis of this proceeding and, unlike the addition of Miami or Tampa as southern terminal points for flights serving Daytona Beach, Sarasota-Bradehton or Tallahassee, is not needed to avoid the problem of stub-end operations. Accordingly, we find that the addition of Tampa as an alternative nonstop gateway (in addition to Atlanta) would simply complicate and delay the case and is not required by the public interest. See The *Fort Myers-Atlanta Case*, Order 75-2-50, February 11, 1975. Northwest's petition for reconsideration is denied in this respect.

Accordingly, *it is ordered*, That:

1. The proceeding shall be expanded to include consideration of the following issues:

(a) Do the public convenience and necessity require the certification of an air carrier or air carriers to engage in nonstop air transportation between and among Atlanta, Ga., Daytona Beach, Sarasota-Bradenton, and/or Tallahassee, Fla., and Tampa or Miami, Fla.?

(b) If the answer to (a) is in the affirmative, which air carrier or carriers should be authorized to engage in such service?

(c) What terms, conditions, and/or limitations, if any, should be attached to any new authority which may be awarded?

2. Any authority granted in this case shall be in the form of a separate segment or segments and shall be ineligible for Federal subsidy;[4]

3. Any applicant now authorized to serve Atlanta, on the one hand, and Tampa or Miami, on the other,[5] may propose one-stop service via Daytona Beach, Sarasota-Bradenton, or Tallahassee between such currently authorized points. Any authority awarded in the Daytona Beach/Sarasota-Bradenton/Tallahassee-Tampa/Miami markets shall be subject to the restriction that all flights serving Tampa or Miami shall also serve Atlanta and one or more of the following intermediate points between Atlanta and Tampa or Miami: Daytona Beach, Sarasota-Bradenton, Tallahassee;

4. The applications of Allegheny Airlines, Inc., docket 30749; Braniff Airways, Inc., dockets 31275, 31276, and 31277; Delta Air Lines, Inc., docket 29126; Northwest Airlines, Inc., docket 29152, and Southern Airways, Inc., docket 31279, to the extent that they conform to the scope of docket 30679, be consolidated with that proceeding;

5. Applications within the expanded scope of the case, and motions to consolidate, shall be filed within 21 days of the service date of this order, and answers to those applications or motions shall be filed 7 days later; and

6. Except to the extent granted, all petitions, motions, and requests are denied.

This order shall be published in the FEDERAL REGISTER.

By the Civil Aeronautics Board.[6]

PHYLLIS T. KAYLOR,
Secretary.

[FR Doc. 77-35434 Filed 12-12-77; 8:45 am]

[4] The form of authority (e.g., the inclusion of all points on a single segment, or the award of separate segments) will await the development of the record.

[5] Tampa and Miami, for these purposes, includes Tampa-St. Petersburg-Clearwater, and Miami-Ft. Lauderdale.

[6] All members concurred.

[6320-01]

[Docket 30332; Agreement CAB 27000; Order 77-12-17]

INTERNATIONAL AIR TRANSPORT ASSOCIATION

Specific Commodity Rates; Order

Issued under delegated authority December 1, 1977.

An agreement has been filed with the Board pursuant to section 412(a) of the Federal Aviation Act of 1958 (the Act) and part 261 of the Board's Economic Regulations between various air carriers, foreign air carriers, and other carriers embodied in the resolutions of the Joint Traffic Conferences of the International Air Transport Association (IATA). The agreement, adopted by mail vote, has been assigned the above CAB agreement number.

The agreement amends the guidelines for item No. 4209 in areas TC1 and TC3 to clarify that the term "self-propelled agricultural machinery" as used in the above description applies to devices used in agricultural activities when pushed or pulled by self-propelled agricultural machines.

Pursuant to authority duly delegated by the Board in the Board's Regulations, 14 CFR 385.14, it is not found that Resolution 100, 300(Mail 186)590, incorporated in Agreement CAB 27000, is adverse to the public interest or in violation of the Act.

Accordingly, *It is ordered*, That:

Agreement CAB 27000 is approved, provided that approval shall not constitute approval of the specific commodity description contained therein for purposes of tariff publications.

Persons entitled to petition the Board for review of this order, pursuant to the Board's Regulations 14 CFR 385.50, may file such petitions within ten days after the date of service of this order.

This order shall be effective and become the action of the Civil Aeronautics Board unless within such period a petition for review is filed or the Board gives notice that it will review this order on its own motion.

This order will be published in the FEDERAL REGISTER.

PHYLLIS T. KAYLOR,
Secretary.

[FR Doc. 77-35433 Filed 12-12-77; 8:45 am]

[6320-01]

[Docket 31564; Order 77-12-34]

K.L.M. ROYAL DUTCH AIRLINES, ET AL.

Transatlantic Super-APEX Fares Proposed; Order Vacating Suspension

Adopted by the Civil Aeronautics Board at its office in Washington, D.C., on the 29th day of November 1977.

By Order 77-10-139, October 25, 1977, the Board suspended, pending investigation, super-APEX (advance purchase excursion) fares proposed by K.L.M. Royal Dutch Airlines (KLM), Swissair, Swiss Air Transport Co., Ltd. (Swissair), British Airways, and Transportes Aereos Portugueses, S.A.R.L. (TAP) for use between the United States and various points in Europe. The Board stated that it was suspending the fares because the United States had been unable to secure the necessary ad hoc agreements with the various governments involved which would permit us to suspend the fares after they became effective, and, in these circumstances, failure to suspend the fares before they became effective might foreclose any future action by this Government with regard to them.

The United States has since secured the necessary ad hoc agreements with the Governments of Spain, Switzerland, and the Netherlands, confirming the right of the United States to take action against the super-APEX fares after they become effective. There-

fore, there is no reason for fares filed by KLM, Swissair, British Airways, and TAP for use between the United States, on one hand, and points in Greece, Portugal, the Soviet Union, Spain, and Switzerland, on the other hand, to remain under suspension, and this order will vacate the suspension.

Accordingly, pursuant to sections 102, 204(a), 403, 801, and 1002(j) of the Federal Aviation Act of 1958.

It is ordered, That: 1. Order 77-10-139 is hereby vacated insofar as it suspends and investigates advance-purchase excursion fares as follows:

A. Passenger Fares Tariff No. PF-4, CAB No. 44, issued by Air Tariffs Corporation, agent.—Fares and provisions in Tables 23, 104, and 143: to/from Greece—applicable to K.L.M. and Swissair; to/from Netherlands—applicable to Sabena; to/from Portugal—applicable to K.L.M. and Swissair; to/from Spain—applicable to K.L.M. and Swissair; to/from U.S.S.R.—applicable to K.L.M. and Swissair; to/from Switzerland—applicable to T.A.P.

B. International Passenger Fares Tariff No. 4, CAB No. 22, issued by John M. Sampson, agent.—Fares and provisions in Section 40: to/from Greece and U.S.S.R. applicable to British Airways.

2. This order shall be submitted to the President[1] and shall be effective on December 6, 1977; and

3. Copies of this order shall be filed in the above tariffs and served upon Pan American World Airways, Inc., Trans World Airlines, Inc., K.L.M. Royal Dutch Airlines, Societe Anonyme Belge d' Exploitation de la Navigation Aerienne (Sabena), Swissair, Swiss Air Transport Co. Ltd., Transportes Aereos Portugueses, S.A.R.L. and British Airways Board carrying on business under the firm name and style of British Airways.

This order shall be published in the FEDERAL REGISTER.

By the Civil Aeronautics Board.[2]

PHYLLIS T. KAYLOR,
Secretary.

[FR Doc. 77-35435 Filed 12-12-77; 8:45 am]

[6320-01]

[Docket No. 30706; Order 77-12-41]

NORTHWARD AIRLINES LTD.

Statement of Tentative Findings and Conclusions and Order To Show Cause

In the matter of an application of Northward Airlines Limited for a foreign air carrier permit pursuant to section 402 of the Federal Aviation Act of 1958.

By application filed April 8, 1977,[1] Northward Airlines Ltd. (Northward), requests a foreign air carrier permit to engage in charter foreign air transportation of persons and their accompanying baggage, and planeload charter foreign air transportation of property, between any point or points in Canada and any point or points in the United States, with both large and small aircraft,[2] under the Nonscheduled Air Service Agreement executed on May 8, 1974, by the Governments of the United States and Canada.

FITNESS OF THE APPLICANT FOR A FOREIGN AIR CARRIER PERMIT

Northward was incorporated on August 6, 1965,[3] under the Canada Corporations Act. The Air Transport Committee of the Canadian Transport Commission has issued Northward two class 9-4 licenses authorizing international charter commercial air services: (1) License No. A.T.C. 368/65 (CF), dated February 11, 1977, authorizes operations from a base at Inuvik, Northwest Territories and restricts the holder to the use of Groups A and C aircraft;[4] and (2) license No. A.T.C. 553/76 (CF), dated October 15, 1976, authorizes operations from a base at Whitehorse, Yukon Territory and restricts the holder to the use of Fairchild F-27 type aircraft in Group E.[5] The Canadian Department of Transport, Civil Aviation Branch, has issued Northward Operating Certificate No. 2415 which certifies that the carrier is adequately equipped and able to conduct a safe operation.

The applicant's balance sheet as of December 31, 1976, shows current assets of $751,122 and current liabilities of $1,111,405. The company shows total assets of $1,755,778. The company's long-term debt equals $846,377. The applicant's statement of income and deficit for the year ended December 31, 1976, shows operating revenues of $2,940,535 and operating expenses of $3,022,643 resulting in an operating loss for the period of $82,108. However, due largely to $411,982 of income derived from the disposal of assets, the company realized a net income for the year of $85,659. The company ended the period with a deficit of $768,049. The applicant states that since its inception it has never been unable to meet current financial obligations and has never defaulted on any commitments to provide transportation.

In its application, the carrier lists the following aircraft available to operate charters to the United States: two De Havilland DHC-6's, seating capacity of 20 and maximum authorized take-off weight of 12,500 pounds; and one Fairchild F-27, seating capacity of 44, and maximum authorized take-off weight of 45,000 pounds. Within the last five years, the applicant has had no safety or tariff violations or any accidents involving deaths or injuries.

"PUBLIC INTEREST" IN AWARD OF THE AUTHORITY SOUGHT

The applicant relies on the Nonscheduled Air Service Agreement signed by the Governments of Canada and the United States of America on May 8, 1974, as the basis for the grant of the requested authority. By diplomatic note No. 150, dated March 31, 1977, the Government of Canada designated the applicant under the Agreement to perform charter services with both large and small aircraft.[6]

OWNERSHIP AND CONTROL OF THE APPLICANT

The officers of the corporation are E. J. Miller, President; A. N. Edgington, Vice President and Treasurer; C. D. Moir, Vice President and General Manager; and N. A. Cleland, Secretary. The corporation has nine directors: D. L. Campbell, Dr. E. A. Johnson, W. R. Harris, A. H. Alfsen, S. R. L. Harding, and the four officers of the company. All of the officers and directors are Canadian citizens. The applicant lists 33 shareholders. Over 95 percent of the issued shares of the applicant are owned by Canadian citizens. The applicant lists the following as all persons or institutions holding more that 5 percent of the debt of the corporation: The Bank of Nova Scotia ($313,000), and Sproule Associates Ltd.

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[1] This order was submitted to the President on November 30, 1977.

[2] All members concurred.

[1] A revised application was filed September 6, 1977. Copies of the application and revised application have been transmitted to the President of the United States in accordance with the requirements of section 801 of the Act.

[2] "Large aircraft" are defined by the Nonscheduled Air Service Agreement as aircraft having both (a) a maximum passenger capacity of more than 30 seats or a maximum payload capacity of more than 7,500 pounds, and (b) a maximum authorized takeoff weight on wheels greater than 35,000 pounds. "Small aircraft" are defined as aircraft which are not "large aircraft."

[3] The company was originally incorporated under the name Northward Aviation Ltd. On May 19, 1972, the name was changed to Northward Airlines Ltd.

[4] Under Canadian Air Transport Committee regulations, Group A consists of aircraft having a maximum authorized take-off weight on wheels not greater than 4,300 pounds; Group C consists of aircraft having an authorized take-off weight over 7,000 pounds, but not greater than 18,000 pounds.

[5] Group E consists of aircraft having a maximum authorized take-off weight on wheels greater than 35,000 pounds but not greater than 75,000 pounds.

[6] See Docket 26473. Northward was initially designated for operations with "small aircraft only" by diplomatic note No. ECT-850, dated May 9, 1974. By diplomatic note No. 150, dated March 31, 1977, the designation was amended to include both large and small aircraft.

($296,539). Both companies were incorporated in Canada.

The application states that neither the applicant nor any of its officers, directors, or shareholders own any shares or any other interest in any U.S. carrier, any other Canadian carrier or other foreign carrier, any person engaged in a phase of aeronautics, any common carrier, or in any person whose principal business is the holding of stock in or control of any such entities.

In view of the foregoing and all the facts of record, the Board tentatively finds and concludes:

1. That Northward Airlines Ltd. is substantially owned and effectively controlled by nationals of Canada;

2. That it is in the public interest to issue a foreign air carrier permit to Northward Airlines Ltd. authorizing it to engage in charter foreign air transportation of persons and their accompanied baggage and planeload charters of property between any point or points in Canada and the United States without restriction as to aircraft size;

3. That the public interest requires that the exercise of the privileges granted by said permit shall be subject to the terms, conditions, and limitations contained in the specimen form of permit attached to this order, and to such other reasonable terms, conditions, and limitations required by the public interest as may from time to time be prescribed by the Board;

4. That Northward Airlines Ltd., is fit, willing, and able properly to perform the above-described foreign air transportation and to conform to the provisions of the Act and the rules, regulations, and requirements of the Board thereunder;

5. That except to the extent granted here, the application of Northward Airlines Ltd., in Docket 30706 should be denied; and

6. That an evidentiary hearing is not required in the public interest.

Accordingly, *it is ordered*, That: 1. All interested persons be directed to show cause why the Board should not make final the tentative findings and conclusions set forth here, and why a foreign air carrier permit in the form of the specimen permit attached to this order should not, subject to the approval of the President pursuant to section 801 of the Act, be issued to Northward Airlines Ltd.;

2. Any interested person having objection to the issuance of an order making final the tentative findings and conclusions here and issuing said permit shall, within 21 days after the adoption of this order, file with the Board and serve upon the persons named in paragraph 5, a statement of objections specifying the part or parts of the tentative findings and conclusions objected to, together with a summary of testimony, statistical data and such evidence expected to be relied upon in support of the statement of objections. If an evidentiary hearing is requested, the objector should state in detail why such hearing is considered necessary and what relevant and material facts he would expect to establish through such hearing which cannot be established in written pleadings;

3. If timely and properly supported objections are filed, further consideration will be accorded the matters and issues raised by the objections before further action is taken by the Board; *Provided however*, That the Board may proceed to enter an order in accordance with the tentative findings and conclusions here if it determined that there are no factual issues present that warrant the holding of an evidentiary hearing;[7]

4. In the event no objections are filed, all further procedural steps will be deemed to have been waived, and the Board may proceed to enter an order in accordance with the tentative findings and conclusions set forth here; and

5. This order shall be served upon Northward Airlines Ltd. and the Ambassador of Canada in Washington, D.C.

This order will be published in the FEDERAL REGISTER and will be transmitted to the President.

By the Civil Aeronautics Board.[8]

PHYLLIS T. KAYLOR,
Secretary.

SPECIMEN PERMIT

PERMIT TO FOREIGN AIR CARRIER

Northward Airlines Limited is hereby authorized, subject to the provisions hereinafter set forth, the provisions of the Federal Aviation Act of 1958 and the orders, rules, and regulations issued thereunder, to engage in charter foreign air transportation as follows:

Charter flights of persons and their accompained baggage, and planeload charter flights of property, between any point or points in Canada and any point or points in the United States.

The holder shall be authorized to perform those types of charters originating in Canada and in the United States, as are now, or may hereafter be, prescribed in Annex B of the Nonscheduled Air Service Agreement between the United States and Canada, signed May 8, 1974, including any amendments, supplements, reservations, or supersessions to that Agreement.[1]

This permit shall be subject to the following terms, conditions, and limitations:

(1) The authority of the holder to perform United States-originating large aircraft charter flights shall be subject to the provisions of Part 214 of the Board's Economic Regulations and Part 378 of the Board's Special Regulations. The authority of the holder to perform United States-originating small aircraft charter flights shall be limited to commercial air transportation of passengers and their accompanied baggage, and property, on a time, mileage or trip basis, where the entire planeload capacity of one or more aircraft has been engaged by a person for his own use or by a person for the transportation of a group of persons and/or their property, as agent or representative of such group. The authority of the holder to perform Canadian-originating charter flights shall be subject to the Air Carrier Regulations of the Canadian Transport Commission. The holder shall, nevertheless, not be authorized to provide charters of a type other than as authorized by Annex B of the Nonscheduled Air Service Agreement between the United States and Canada, signed May 8, 1974, including any amendments, supplements, reservations or supersessions to that Agreement.

(2) The holder shall not engage in foreign air transportation between the United States and any point or points, other than a point or points in Canada, or transport any property or persons whose journey includes a prior, subsequent, or intervening movement by air (except for the movement of passengers independently of any group) to or from a point not in the United States or Canada: *Provided*, That the Board may, upon application by the holder, or by regulation, authorize the performance of charters where such movements are involved.

(3) The holder shall not perform United States-originating charter flights which at the end of any calendar quarter would result in the aggregate number of all United States-originating charter flights performed by the holder on or after May 8, 1974 exceeding by more than one-third the aggregate number of all Canadian-originating charter flights performed by the holder on or after May 8, 1974: *Provided*, That the Board may authorize the performance of charters not meeting the requirements set forth. For the purpose of making such computation the following shall apply:

(a) A charter shall be considered to originate in the United States (or Canada) if the passengers or property are first taken on board in that country, and shall be considered as one flight whether the charter be one-way, round-trip, circle tour, or open jaw, even if a separate contract is entered into for a return portion of the charter trip from Canada (or the United States).

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[7] Since provision is made for the filing of objections to this order, petitions for reconsideration will not be entertained.

[8] All members concurred.

[1] Annex B(II)(B) and (III)(B) presently authorize the following types of large and small aircraft charters originating in Canada: Single Entity Passenger, Single Entity Property, Pro Rata Common Purpose, Advance Booking, and Inclusive Tour; and split passenger charters of the types set forth, subject to Canadian Transport Commission Regulations which presently do not permit Advance Booking Charters for small aircraft. Annex B(II)(A) presently authorizes the following types of large aircraft charters originating in the United States: Single Entity Passenger, Single Entity Property, Pro Rata Affinity, Mixed (Entity/Pro Rata), Inclusive Tour, Study Groups, Overseas Military Personnel, and Travel Group; and split passenger charters of the types set forth. United States-originating small aircraft charters are governed by the definition set forth in condition (1). (Annex B, (III)(A), (I)(C).)

(b) The computation shall be made separately for (i) "large aircraft" flights of persons; (ii) "large aircraft" flights of property; (iii) "small aircraft" flights of persons; and (iv) "small aircraft" flights of property.[3]

(c) In the case of a lease of aircraft with crew for the performance of a charter flight on behalf and under the authority of another carrier, the flight shall be included in the computation if the holder is the lessee, and shall not be included in the holder is the lessor.

(d) There shall be excluded from the computation:

(i) flights utilizing aircraft having a maximum authorized takeoff weight on wheels (as determined by Canadian Transport Commission Regulations) not greater than 18,000 pounds; and

(ii) flights originating at a United States-terminal point of a route authorized pursuant to the Air Transport Services Agreement between the United States and Canada, signed January 17, 1966, as amended, or any agreement which may supersede it, or any supplementary agreement thereto which establishes obligations or privileges thereunder (if, pursuant to any such agreement, the holder also holds a foreign air carrier permit authorizing individually ticketed or individually waybilled service over such route, and provides some scheduled service on any route pursuant to any such agreement), when such flights serve either (a) a Canadian terminal point on such route, or (b) any Canadian intermediate point authorized for service on such route by such foreign air carrier permit.

(4) The holder may grant stopover privileges at any point or points in the United States only to passengers and their accompanied baggage moving (a) on a Canadian-originating large aircraft flight operating under a contract for charter transportation to be provided solely by the holder (even if a different aircraft is used), or (b) on a Canadian-originating small aircraft flight operating under a contract for round-trip charter transportation to be provided solely by the holder and as to which the same aircraft stays with the passengers throughout the journey. *Provided*, That the Board may authorize the performance of charters not meeting the requirements set forth.

(5) The Board, by order or regulation and without hearing, may require advance approval of individual charter trips conducted by the holder pursuant to the authority granted by this permit, if it finds such action to be required in the public interest.

(6) The holder shall conform to the airworthiness and airman competency requirements prescribed by the Government of Canada for Canadian international air service.

(7) This permit shall be subject to all applicable provisions of any treaty, convention, or agreement affecting international air transportation now in effect, or that may become effective during the period this permit remains in effect, to which the United States and Canada shall be parties.

(8) This permit shall be subject to the condition that the holder shall keep on deposit with the Board a signed counterpart of CAB Agreement 18900, an agreement relating to liability limitations of the Warsaw Convention and the Hague Protocol approved by Board Order E-23680, May 13, 1966, and a signed counterpart of any amendment or amendments to such agreement which may be approved by the Board and to which the holder becomes a party.

(9) The holder (1) shall not provide foreign air transportation under this permit unless there is in effect third-party liability insurance in the amount of $1 million or more to meet potential liability claims which may arise in connection with its operations under this permit, and unless there is on file with the Docket Section of the Board a statement showing the name and address of the insurance carrier and the amounts and liability limits of the third-party liability insurance provided, and (2) shall not provide foreign air transportation of persons unless there is in effect liability insurance sufficient to cover the obligations assumed in CAB Agreement 18900, and unless there is on file with the Docket Section of the Board a statement showing the name and address of the insurance carrier and the amounts and liability limits of the passenger liability insurance provided. Upon request, the Board may authorize the holder to supply the name and address of an insurance syndicate in lieu of the name and address of the member insurers.

(10) By accepting this permit, the holder waives any right it may possess to assert any defense of sovereign immunity from suit in any action or proceding instituted against the holder in any court or other tribunal in the United States (or its territories or possessions) based upon any claim arising out of operations by the holder under this permit.

The exercise of the privileges granted by this permit shall be subject to such other reasonable terms, conditions, and limitations required by the public interest as may from time to time be prescribed by the Board.

This permit shall become effective on ————. Unless otherwise terminated at an earlier date pursuant to the terms of any applicable treaty, convention, or agreement, this permit shall terminate: (1) upon the effective date of any treaty, convention, or agreement, or amendment thereto, which shall have the effect of eliminating the charter foreign air transportation here authorized from the transportation which may be operated by carriers designated by the Government of Canada (or in the event of the elimination of part of the charter foreign air transportation here authorized, the authority granted here shall be terminated to the extent of such elimination), or (2) upon the effective date of any permit granted by the Board to any other carrier Designated by the Government of Canada in Lieu of the holder hereof, or (3) upon the termination or expiration of the Nonscheduled Air Service Agreement, between the United States and Canada, signed May 8, 1974: *Provided, however*, That clause (3) of this paragraph shall not apply if, prior to the occurrence of the event specified in clause (3), the operation of the foreign air transportation here authorized becomes the subject of any treaty, convention, or agreement to which the United States and Canada are or shall become parties.

IN WITNESS WHEREOF, the Civil Aeronautics Board has caused this permit to be executed by the Secretary of the Board, and the seal of the Board to be affixed on the ————.

————, ————.
Secretary.

Issuance of this permit to the holder approved by the President of the United States on ———— in Order ————.

[FR Doc. 77-35564 Filed 12-12-77; 8:45 am]

[3] Annex A(I)(A) of the Nonscheduled Air Service Agreement between the United States and Canada, signed May 8, 1974, defines a "large aircraft" as an aircraft having both: (1) a maximum passenger capacity (as determined by CAB Regulations) of more than 30 seats or a maximum payload capacity (as determined by CAB Regulations) of more than 7,500 pounds; and (2) a maximum authorized takeoff weight on wheels (as determined by Canadian Transport Commission Regulations) greater than 35,000 pounds. A "small aircraft" is defined as an aircraft which is not a "large aircraft."

[6325-01]

CIVIL SERVICE COMMISSION

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Revocation of Authority To Make a Noncareer Executive Assignment

Und er authority of § 9.20 of Civil Service Rule IX (5 CFR 9.20), the Civil Service Commission revokes the authority of the Department of Health, Education, and Welfare to fill by noncareer executive assignment in the excepted service the position of Commissioner, Assistance Payments Administration, Social and Rehabilitation Service.

For the United States Civil Service Commission.

JAMES C. SPRY,
Executive Assistant to the Commissioners.

[FR Doc. 77-35572 Filed 12-12-77; 8:45 am]

[6325-01]

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Grant of Authority To Make a Noncareer Executive Assignment

Under autho rity of § 9.20 of Civil Service Rule IX (5 CFR 9.20), the Civil Service Commission authorizes the Department of Health, Education, and Welfare to fill by noncareer executive assignment in the excepted service the position of Associate Commissioner for Family Assistance, Office of Family Assistance, Social Security Administration.

For the United States Civil Service Commission.

JAMES C. SPRY,
Executive Assistant to the Commissioners.

[FR Doc. 77-35573 Filed 12-12-77; 8:45 am]

[6325-01]

DEPARTMENT OF JUSTICE

Revocation of Authority To Make a Noncareer Executive Assignment

Under authority of § 9.20 of Civil Service Rule IX (5 CFR 9.20), the Civil Service Commission revokes the authority of the Department of Justice to fill by noncareer executive assignment in the excepted service the position of Executive Assistant to the Associate Attorney General, Office of the Associate Attorney General.

For the United States Civil Service Commission.

JAMES C. SPRY,
Executive Assistant to the Commissioners.

[FR Doc. 77-35574 Filed 12-12-77; 8:45 am]

[3510-25]

DEPARTMENT OF COMMERCE

Domestic and International Business Administration

UNIVERSITY OF VERMONT

Applications for Duty-Free Entry of Scientific Articles

The following are notices of the receipt of applications for duty-free entry of scientific articles pursuant to section 6(c) of the Educational, Scientific, and Cultural Materials Importation Act of 1966 (Pub. L. 89-651; 80 Stat. 897). Interested persons may present their views with respect to the question of whether an instrument or apparatus of equivalent scientific value for the purposes for which the article is intended to be used is being manufactured in the United States. Such comments must be filed in triplicate with the Director, Special Import Programs Division, Office of Import Programs, Washington, D.C. 20230, on or before January 3, 1978.

Amended regulations issued under cited Act (15 CFR Part 301) prescribe the requirements applicable to comments.

A copy of each application is on file, and may be examined during ordinary Commerce Department business hours at the Special Import Programs Division, Department of Commerce, Washington, D.C. 20230.

Docket Number: 78-00037. Applicant: The University of Vermont, 223 Waterman Building, Burlington, Vt. 05401. Article: Isolated Kidney Perfusion Cabinet and Accessories. Manufacturer: Radcliffe Infirmary, United Kingdom. Intended use of article: The article is intended to be used in the perfusion of isolated rat kidneys in the study of the regulation of potassium and acid excretion by the kidney. Application received by Commissioner of Customs: November 21, 1977.

Docket Number 78-00061. Applicant: University of Kentucky, School of Biological Sciences, 101 T. H. Morgan Building, Lexington, Ky. 40506. Article: Electron Microscope, Model H-500. Manufacturer: Hitachi, Japan. Intended use of article: The article is intended to be used for electron microscopic studies of the interaction of the interaction of *bdellovibrio bacteriovorus* with its prey. The experiments to be conducted will include the following:

(1) Seeing where the *bdellovibrios* attach,

(2) Isolating various fractions of the prey outer layers and testing for the ability of the fractions to inhibit attachment of *bdellovibrios*,

(3) Isolating various fractions of the *bdellovibrio* outer layers and studying their ability to inhibit attachment by *bdellovibrios*,

(4) Looking for a change in *bdellovibrios* comparable to eclipse in bacteriophage: Determining when loss of the flagellum and sensitivity to bacteriophage occur; looking for retraction of pili,

(5) Seeing if infected prey are still susceptible to *bdellovibrios* in the area in which the cell wall remains in close association with the cytoplasmic membrane,

(6) Investigating the role of pili in the attachment by *bdellovibrios*, and

(7) Characterizing attachment mutants of *bdellovibrio*,

(8) Examination of ultrathin sections of specimens from attachment mixtures which have been subjected to conditions that prevent penetration by *bdellovibrios*,

(9) Characterizing penetration mutants of *bdellovibrio*,

(10) Study of the fine structure of penetration in attachment pairs in which the prey cell has been altered, and

(11) Study of the detailed ultrastructure and morphology of penetration in systems in which the symptoms of infection are markedly altered.

The article will also be used to train students in the techniques of electron microscopy in the following courses:

BIO 395—Independent Undergraduate Research in Biology.
BIO 795—Research in Zoology.
BIO 796—Research in Botany.
BIO 797-798—Research in Bacteriology.

Application received by Commissioner of Customs: November 21, 1977.

Docket Number: 78-00062. Applicant: U.S. Department of Energy, Idaho Operations Office, 550 Second Street, Idaho Falls, Idaho 83401. Article: Spark Source Mass Spectrometer, Model JMS-01BM-2ED and Accessories. Manufacturer: JEOL Ltd., Japan. Intended use of article: The article is intended to be used for studies of materials from the ERDA Nuclear Fuel Cycle program which include but are not limited to:

Reactor Fuel materials for impurities, especially certain fission products or high neutron absorbers.
Nuclear Fuel reprocessing wastes for presence of actinide elements.
Irradiated experimental reactor fuels for fission product element yields including isotopic data.
Certain ore materials for presence of fission products for study of OKLO Phenomenon.
Chemicals for impurities that may affect experiments.
Environmental samples for presence of and/or migration of fission products or chemicals used in nuclear fuel cycle.

Experiments will involve chemical analysis down to the part per billion level to support research, development and production in the nuclear fuel cycle. Application received by Commissioner of Customs: November 21, 1977.

Docket Number: 78-00063. Applicant: National Bureau of Standards, Washington, D.C. 20234. Article: Scanning Electron Microscope, Model HB50A and accessories. Manufacturer: Vacuum Generators, United Kingdom. Intended use of article: The article is intended to be used for high accuracy length calibrations as part of a micromeasurement program. Objects such as fine lines on photomasks, particles, fibers, and electron microscope calibration standards, etc., where the dimension of interest is below 10 micrometers, will be calibrated and measured to accuracies of 0.01 μm using a specially designed interferometer microscope stage. Application received by Commissioner of Customs: November 22, 1977.

Docket Number: 78-00064. Applicant: Department of Energy, P.O. Box 550, Richland, Wash. 99352. Article: 3 (Three) Radiation Calorimeters. Manufacturer: Whiteshell Nuclear Research Establishment, Canada. Intended use of article: The article is intended to be used for measurements of the radiation heating rate due to gamma rays and neutrons in the Fast Flux Text Facility Nuclear Reactor using signals from wires included with the calorimeter over approximately a year's duration. The experiments will be conducted to characterize the radiation environment within the Fast Test Reactor using a variety of supplementary methods. Application received by Commissioner of Customs: November 22, 1977.

Docket Number: 78-00065. Applicant: Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, Mass. 02139. Article: JNM/FX-60Q High Resolution Fourier Transformation Multi-Nuclear Magnetic Resonance Spectrometer System and Accessories. Manufacturer: JEOL Ltd., Japan. Intended use of article: The article is intended to be used for studies of organic compounds, either synthesized in these laboratories, or obtained from natural sources.

The C and proton nmr spectra of the above materials will be obtained for the purposes of elucidating their structures and/or chemical properties. Specific projects include the following:

Isolation, Structure Elucidation and Synthesis of Food Borne Mycotoxins.
Synthesis of Natural Products of Interest to Medicine.
Investigations on Azo Dioxide-Nitrosolkane Equilibria.
Investigations of Azoxy Compounds.
Synthesis of the Antitumor Antibiotic, Bleomycin.
Synthesis of Molecular Cages.
Studies of Organocobalt Complexes and Transition Metal-Stabilized Carbonium Ions.
Synthesis of Unsymmetrically Substituted Allyl Anions.
Synthesis of Suicide Substrate for Target Enzymes.
Studies of Enzyme Stereochemistry.
Studies of Applied Enzymology.
Synthesis of Unusual Transition-Metal Organometallic Compounds.
Reductive Chemistry of Carbon Monoxide.
Synthesis of Non-Nucleophilic Anions.

The article will also be used in the course Chemistry 5.56, Special Topics in Organic Chemistry: Interpretation of Carbon-13 NMR Spectra to teach the application of various nmr techniques for the determination of molecular structure and for the identification of unknown organic compounds.

(Catalog of Federal Domestic Assistance Program No. 11.105, Importation of Duty-Free Educational and Scientific Materials.)

RICHARD M. SEPPA,
Director, Special Import Programs Division.

[FR Doc. 77-35458 Filed 12-12-77; 8:45 am]

[3510-10]

National Oceanic and Atmospheric Administration

DEEP OCEAN MINING

Preliminary Environmental Guidelines

(1) *Purpose.* These guidelines are based on preliminary results of NOAA's Deep Ocean Mining Environmental Study (DOMES I). They provide an early indication to affected and concerned interests of key areas of environmental concern in the commercial development of deep ocean mining for manganese nodules. They should serve as a guide in the design of industrial equipment and minimize the need for expensive retrofits; they should also highlight areas in need of further research. They do not have the force of law.

(2) *Background.* Technological advances in deep ocean mining will permit commercial mining for nodules within five to seven years, if an appropriate legal and environmental framework can be established. Development of this resource will reduce U.S. dependence on imported nickel, cobalt and manganese, and will increase copper supplies.

Congress appropriated funds for DOMES I in order to enable initial studies of the environmental effects of deep ocean mining to begin in FY 1976. The objectives of DOMES I, the first phase of a two-phase study, were to conduct baseline studies, to begin development of prediction models, and to provide information for the formulation of preliminary environmental guidelines. The next phase (DOMES II), which began in FY 1977, will monitor industry's prototype mining operations, will verify and, as required, modify the environmental prediction models, and will provide information for refining the guidelines based on DOMES I research. Actual monitoring of prototype mining tests will begin in early 1978.

The primary motivation for DOMES was the perceived need for environmental impact statements under Sec. 102(2)(c) of the National Environmental Policy Act of 1969 (NEPA) arising from the implementation of legislation under either a domestic or international regime, and the need to gain information as a basis for future environmental protection regulations.

The mining industry, public groups, and Federal agencies such as the Department of State and the Council on Environmental Quality urged the initiation of the DOMES Project. These groups, along with representatives of academia, have assisted in the development of program objectives and plans and the monitoring of progress.

The formulation of preliminary environmental guidelines is supported by subsection 102(2) of NEPA, which directs that all agencies of the Federal government shall:

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by Title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;
(E) recognize the worldwide and long-range character of environmental problems and where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;
(G) initiate and utilize ecological information in planning and development of resource-oriented projects.

Other NOAA responsibilities which indirectly support this action include ocean programs stemming from the Fish and Wildlife Coordination Act of 1958, the National Environmental Policy Act of 1969, the Marine Protection, Research and Sanctuaries Act of 1972, the Marine Mammal Protection Act of 1972, and the Endangered Species Act of 1973.

The development of environmental guidelines for an entirely new industry operating in an environment heretofore untouched except for fishing is clearly an iterative process. Thus, as the industry and related environmental research evolve, so to must environmental guidelines. Because of the overall schedule which has been discussed by industry, it was decided to develop preliminary environmental guidelines as soon as DOMES I research results permitted and then to revise the guidelines as additional information permits. Through the periodic publications of evolving guidelines it is hoped that valuable public views and reactions will lead to improvement of the guidelines.

These guidelines are based primarily on the results found in the DOMES I Progress Report developed in mid-1976. An internal NOAA Preliminary Environmental guidelines Task Force was formed to integrate these results with other available information and to prepare the first version.

DOMES I field operations have since been completed and the DOMES I Final Report is scheduled for completion during January 1978.

A complementary project to DOMES was initiated at congressional urging during fiscal year 1976 in order to assess the potential environmental and socioeconomic impacts of deep ocean mining related marine transportation, marine terminal, onshore transportation, processing, and waste disposal systems. The first phase, which provides technical descriptions of these systems in a manner suitable for use in subsequent impact studies, has been completed. This work showed that complete at-sea processing systems are unlikely in the first generation; however, partial at-sea processing may be feasible.

Bills which would establish deepsea mining regulatory regimes are presently being considered by Congress. If legislation is passed, these guidelines would be a basis on which the government agency designated for environmental regulation would build such a regulatory system.

The guidelines are being prepared at this time so that the deepsea mining industry will be fully aware, at a time when it is developing technology and techniques, of environmental concern which may require control.

(3) *Description of the Potential Industry.* Several U.S.-led multinational consortia are actively engaged in premining research and development activities, and have expended considerable sums of money on nodule exploration and on mining and metallurgical research. The testing of prototype mining systems, requiring even larger expenditures, has already begun.

The main focus of present industrial interest is within a 13 million square kilometer area of the North Pacific (5°-20° north latitude and 110°-180° west longitude). Water depths range from 3700 to 5500 meters.

Two main types of mining systems are being developed: hydraulic (either towed or self-propelled) and mechanical. The towed hydraulic system is better known in the American industry and is the primary mode being considered in DOMES. This system involves pumping water and nodules through a pipeline to a surface ship. Both two-phase flow (liquid-solid flow involving nodules and water) and three-phase flow (using injections of compressed air into the pipeline at various depths to create lift) are under development.

In either case, a collector traversing the ocean floor at the end of a vertical pipe from the mining vessel will pick up nodules. The collector will also pick up bottom sediment, water, and sea-bottom biota. Most of the nonnodule solid material will be separated from the nodules close to the sea floor and released. This material is expected to form a "benthic plume." The nodules arriving aboard the mining vessel will be separated from the bottom sediment, abraded nodule fragments, macerated benthic biota, and sea water. The latter materials will be discharged at the ocean surface, unless restrictions are imposed.

Full commercial production will involve a number of mining ships, each capable of recovering from 5,000 to 10,000 metric tons (dry weight) of nodules per day, and operating 24 hours a day for about 300 days per year. Although nickel, copper, cobalt, and in some cases manganese will be recovered and marketed, it is likely that the growth of the industry will parallel the increasing world demand for nickel. NOAA foresees perhaps four to six mining operations, yielding a total of about 20,000 to 30,000 metric tons of nodules per day, in operation by 1985, and perhaps 10 to 20 operations yielding a total of about 100,000 to 200,000 metric tons per day by the year 2000.

The nodules will most likely be transported to shore by ore (or bulk-ore) transports for recovery of copper, nickel, cobalt, and in some instances, manganese. The nodules will be unloaded at a specialized marine terminal and temporarily stored awaiting shipment to a processing plant. This plant would not necessarily have to be located directly on the coast. After processing there will be unused constituents of nodules and other wastes requiring disposal.

(4) *Preliminary Environmental Guidelines.*—A. *Scope.* The currently proposed guidelines apply only to at-sea mining operations, and such other activities (including at-sea nodule crushing, but exclusive of any other at-sea processing steps), as may be conducted in or near mine sites within the area being studies by the DOMES Project. Such other activities can include: prospecting, the search for nodule deposits; exploration, the delineation of all commercially important characteristics of mine site targets; and equipment development, the design, fabrication, and testing of mining equipment tailored to specific sites. The guidelines also apply to surrounding downcurrent areas which could be affected by at-sea activities. It was purposefully decided to restrict the current guidelines to those activities as indicated above because of the existing body of laws and regulations which could be applied to the other activities. As the results of the processing studies and additional research permit, it is planned to consider potential effects of at-sea processing.

B. *Definitions.*—1. A "preliminary environmental guideline" is a statement of action which may be required on the part of government and industry, to avoid or minimize potential adverse environmental impacts of deep ocean manganese nodule mining. They do not have the force of law.

2. "Adverse environmental impacts" exhibit actual or reasonably possible harmful effects, either short or long-term, upon biota, habitats, and uses of the high seas.

C. *Background and Preliminary Environmental Guidelines.*—1. *Surface Discharge.—Background.* Surface discharge plumes will consist of indigenous bottom sediments, abraded nodule fragments, macerated benthic biota, and interstitial and bottom waters. Until the extent and speed of dilution and the rapidity with which surface discharge sediments and nodule fragments sink can be determined it is not possible to accurately predict environmental effects. Consequently such discharges should not be discouraged during prototype testing, for observations will be essential in determining the effects of these discharges. Monitoring should determine these effects on primary productivitiy in the epipelagic zone (surface to 200 meters of depth) and the associated impact on the biological community; the physical effects of increased turbidity on higher level organisms and their behavior; the extent to which trace metals are concentrated through bio-accumulation; and the effect of discharges settling through the oxygen minimum zone.

Guideline. If future evidence indicates that significant adverse impacts may result from commercial mining discharges at the surface, then an alternative discharge method should be implemented or the design characteristics of the mining system components changed to avoid or minimize environmental impacts.

2. *Impats on Benthos.—Background.* Deep ocean mining of manganese nodules is certain to result in damage to and dislocation of abyssal benthic fauna. However, the extent and seriousness of the impact cannot be determined until a benthic plume is monitored during DOMES II. In addition, there are virtually no data or information which relate this fauna to biological productivity in surface waters. Nevertheless, the lack of information does not mean that protection of abyssal forms is unimportant. Therefore, it is desirable to design mining systems and operations to minimize damage and dislocation of this biota and also reduce the secondary effects of sedimentation on them.

It may be possible to minimize potential damage by designing collector heads so that, insofar as possible, they (1) redeposit rejected sediments into the pathway immediately behind the collector; and (2) hold sediment intake to an absolute minimum. Both approaches would reduce the dimensions of the bottom turbidity plume, along with associated smothering of organisms on either side of the collector.

Finally, it may also be possible to develop collectors and mining strategies which will reduce direct benthic fatalities and which will facilitate recolonization of benthic habitat. Such equipments and strategies should be attempted during DOMES II and evaluated and refined during the early operational phases of mining. Factors to consider in such a strategy include mining site size, shape, spacing and buffer zone dimensions.

Guideline. Mining activities should be conducted in a manner which will allow preservation of the benthic communities and habitat to the maximum extent possible and promote reasonably rapid recolonization. This should include design of mining systems to reduce the dispersion of the benthic suspended matter plume and the development of a mining strategy concerned with site size, shape, spacing and buffer zone requirements

3. *Harmful Materials.—Background.* There are two types of toxic or deleterious materials which may cause adverse environmental impacts.

The first type is exogenous materials that might be brought to the mining area and used to increase the efficiency of the mining, transportation, or processing operations. The potential effects of any exogenous materials should be evaluated prior to their use.

The second type of material is indigenous, naturally-occurring materials, which could become harmful when modified during at-sea operations. An example of such material would be additional small particles containing trace metals from nodule crushing at

the mining site. If nodules are crushed either at the sea floor or on arrival at the mining vessel, the amount of abraded nodule materials released into the environment could become important because of bio-accumulation of trace metals.

Guideline. Exogenous materials proposed for use in the mining processes and indigenous materials modified by mining processes, which by their nature or concentration are identified as toxic or deleterious, should be eliminated or modified so as to minimize or avoid adverse impacts on the biota and environment.

4. *Site Acceptability.—Background.* The biologic and oceanographic environment varies across the DOMES area. Site selection is an important step, since injudicious selection might result in major adverse impacts.

One of the obvious aspects of concern in site consideration is the downcurrent flow of mining discharges. Discharged materials from poorly selected mine sites could accumulate on coral reefs associated with islands found within the DOMES area (e.g., Island of Hawaii, Johnston I., Palmyra I., Kingman Reef, and Fanning I) and adversely affect them. Deleterious effects on coral reefs would result in biological imbalances, especially if disruption of reef-associated fish communities were to occur.

With the exception of those areas which might receive reef-associated impacts, the geographical areas of major oceanographic or biological significance in the DOMES area cannot now be identified with precision.

This difficulty will ease as additional knowledge is gained in the cause-and-effect relationships between different types of deep ocean mining operations and the biota, as well as the temporal and spatial limits of these interactions. Depending on the magnitude of mining operations, impacts on these areas could range from minor localized effects to ones having far-reaching consequence. Impacts of far-reaching consequence could be the disruption of the migratory pathways of fishes of commercial or recreational importance or adverse effects upon their life cycle, e.g., changing the environment of the spawning grounds.

In certain situations, rather than rejecting a proposed application outright, special requirements may be imposed on the mining system to meet standards dictated by the site.

Guideline. Acceptability of a mining site or special conditions imposed on operations should be based on criteria which address potential mining impacts on human use areas, biota and habitats occurring both within and in the vicinity of the mine site.

5. *Environmental Impact Studies.—Background.* Our knowledge of expected environmental impacts due to deep ocean mining is at a preliminary stage. It is necessary to build a body of scientific knowledge, both before and after initiation of commercial mining operations, which will permit development of environmentally-sound licensing criteria and operating regulations. This scientific knowledge will also form the basis for development of impact assessments, proposals for statutory changes, and environmental and regulatory plans.

Guideline. Environmental studies necessary for decisionmaking should be conducted at each proposed mining site. Such studies should be conducted, as necessary, before, during, and after mining operations in order to establish baseline information, forecast potential impacts, monitor actual impacts, and observe modes and rates of ecosystem recovery following cessation of activities. Where critical environmental information is lacking, appropriate further studies should be undertaken.

6. *Information Development and Exchange Programs.—Background.* This guideline recognizes the need to establish a partnership between industry and government for the acquisition and effective application of environmental impact information as early in the mining cycle as possible. Such cooperation will be an important element in the development of an environmentally-sound marine mining capability.

Initially the objective would be to supply the necessary facts needed to evaluate the potential environmental impacts to be expected from the specific mining plan for a mine site proposed for licensing. Then, as the mining cycle proceeds, evolving environmental data would flow into a data center, such as NOAA's Environmental Data Service, for inspection by concerned parties. These steps should reduce the chance of unforeseen environmental consequences and increase public understanding and awareness of mining matters.

All phases of at-sea operations following prospecting are involved. At the time application is made for an exploration license at a potential mine site, selected industry data may be needed to assist Government in the review process, e.g., certain prospecting bottom photos for inspection by benthic biologists. During exploration, industry and Government should work cooperatively to acquire information needed to establish the mine site baseline characteristics. At the time of mining license and/or permit application, the Government will need industrial information on the proposed mining plan and operations for use by Government in evaluating environmental impacts and site acceptability. During mining operations environmental monitoring should be conducted. Some aspects of monitoring may be more efficiently performed by industry (e.g., measurements of discharge flow rate and character and continuous records of mining ship and seafloor collector locations) while other aspects of monitoring should be carried out by Government (e.g., periodic sampling of the surface discharge plumes at distances from mining ships).

Guideline. Based on cooperation between Government and industry, environmental information programs should occur throughout all phases of mining. Environmental studies and information development should involve participation by industry in baseline and monitoring studies as well as by provision of selected data in conjunction with license/permit applications and during commercial operations.

(5) *Request for Comments.* Since the preliminary environmental guidelines are being used in the planning process for the monitoring of industry's at-sea tests, NOAA is interested in obtaining the public's comments on the preliminary environmental guidelines. Comments should be forwarded to the following address not later than December 31, 1977: Marine Minerals Division, National Oceanic and Atmospheric Administration, 6010 Executive Boulevard, Rockville, Md. 20852, 301-443-8323.

Dated: December 8, 1977.

WILMOT N. HESS,
Acting Administrator.

[FR Doc. 77-35497 Filed 12-12-77; 8:45 am]

[3910-01]

DEPARTMENT OF DEFENSE

Department of the Air Force

USAF SCIENTIFIC ADVISORY BOARD

Meeting

DECEMBER 5, 1977.

The USAF Scientific Advisory Board Division Advisory Group, Aeronautical Systems Division, will hold meetings on January 19, 1978, from 8:30 a.m. to 5 p.m., and January 20, 1978, from 8:30 a.m. to 5 p.m., at Wright-Patterson Air Force Base, Ohio, in Room 222, Building 14, Area B.

The Group will receive classified briefings and hold classified discussions on selected programs and projects relating to the mission of the Aeronautical Systems Division.

The meetings concern matters listed in Section 552(b) of Title 5, United States Code, specifically subparagraph (1) thereof, and that accordingly the meetings will be closed to the public.

For further information contact the Scientific Advisory Board Secretariat at 202-697-8845.

FRANKIE S. ESTEP,
Air Force Federal Register Liaison Officer, Directorate of Administration.

[FR Doc. 77-35543 Filed 12-12-77; 8:45 am]

[3910-01]

USAF SCIENTIFIC ADVISORY BOARD

Meeting

DECEMBER 5, 1977.

The USAF Scientific Advisory Board ad hoc Committee on Imaging Infrared Guidance will hold a meeting on January 5-6, 1978, at the Pentagon, Washington, D.C., from 8:30 a.m. to 5 p.m. each day.

The Committee will receive classified briefings and hold classified discussions concerning imaging infrared guidance technologies to support the MAVERICK program.

The meeting concerns matters listed in Section 552b(c) of Title 5, United States Code, specifically subparagraph (1) thereof, and accordingly, will be closed to the public.

For further information contact the Scientific Advisory Board Secretariat at 202-697-8404.

FRANKIE S. ESTEP,
Air Force Federal Register Liaison Officer, Directorate of Administration.

[FR Doc. 77-35542 Filed 12-12-77; 8:45 am]

[3710-08]

Department of the Army

COMMAND AND GENERAL STAFF COLLEGE ADVISORY COMMITTEE

Open Meeting

In accordance with section 10(a)(2) of the Federal Advisory Committee Act (Pub. L. 92-463), announcement is made of the following committee meeting:

Name: Command and General Staff College (CGSC), Advisory Committee.

Date: January 11-13, 1978.

Place: Command Conference Room, Bell Hall, Fort Leavenworth, Kans. 66027.

Time: 2000-2200, January 11, 1978; 0900-1630, January 12, 1978; 0900-1130, January 13, 1978.

Proposed Agenda

2000-2200, January 11, 1978: Review of CGSC educational program.
0900-1630, January 12, 1978: Continuation of review.
0900-1000, January 13, 1978: Continuation of review.
1000-1130, January 13, 1978: Executive Session.

The purpose of the meeting is for the Advisory Committee to examine the entire range of College operations and, where appropriate, to provide advice and recommendations to the College Commandant and Faculty.

The meeting will be open to the public to the extent that space limitations of the meeting space permit. Because of these limitations, interested parties are requested to reserve space by contacting Ivan J. Birrer, Executive Secretary, CGSC Advisory Committee, Bell Hall, Fort Leavenworth, Kans. 66027, 913-684-2701.

ROME D. SMYTH,
Colonel, United States Army, Director, Administrative Management, TAGCEN.

[FR Doc. 77-35544 Filed 12-12-77; 8:45 am]

[3128-01]

DEPARTMENT OF ENERGY

Economic Regulatory Administration

CASES FILED WITH THE OFFICE OF ADMINISTRATIVE REVIEW

Week of November 18 Through November 25, 1977

Notice is hereby given that during the week of November 18 through November 25, 1977, the appeals and applications for exception or other relief listed in the Appendix to this Notice were filed with the Office of Administrative Review of the Economic Regulatory Administration of the Department of Energy.

Under the DOE's procedural regulations, 10 CFR Part 205, any person who will be aggrieved by the DOE action sought in such cases may file with the DOE written comments on the application within ten days of service of notice, as prescribed in the procedural regulations. For purposes of those regulations, the date of service of notice shall be deemed to be December 13, 1977, or the date of receipt of an aggrieved person of actual notice, whichever occurs first. All such comments shall be filed with the Office of Administrative Review, Economic Regulatory Administration, Department of Energy, Washington, D.C. 20461.

MARVIN GOLDSTEIN,
Acting Director, Office of Administrative Review.

NOVEMBER 30, 1977.

LIST OF CASES RECEIVED BY THE OFFICE OF ADMINISTRATIVE REVIEW
NOVEMBER 18 THROUGH NOVEMBER 25, 1977

Date	Name and location of applicant	Case No.	Type of submission
11/18/77	Cotten, Day & Doyle, Washington, D.C. (If granted: The DOE's Oct. 5, 1977 information request denial would be modified and Cotten, Day & Doyle would receive access to the complete response made by Guam Oil & Refining Co. to a request for additional information regarding Case No. FEE-4105).	DFA-0038.....	Appeal of DOE's information request denial dated Oct. 5, 1977.
11/21/77	Arizona Fuels Corp., Salt Lake City, Utah. (If granted: The Arizona Fuels Corp. would receive an extension of the exception relief granted in the FEA's July 12, 1977 decision and order which would reduce its entitlement purchase obligations during the period Jan. 1, 1978 through June 30, 1978).	DXE-0224.....	Extension of exception relief granted in Arizona Fuels Corp., 6 FEA par. 83,033 (July 12, 1977).
11/21/77	Belridge Oil Co., Los Angeles, Calif. (If granted: The Belridge Oil Co. would receive an extension of the exception relief granted in the FEA's June 30, 1977 decision and order which would permit it to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products).	DXE-0242.....	Extension of exception relief granted in Belridge Oil Co., Case No. FXE-4298 (decided June 30, 1977) (unreported decision).
11/21/77	Coastal States Gas Corp., Houston, Tex. (If granted: The Coastal States Gas Corp. would receive an extension of the exception relief granted in the FEA's May 13, 1977 decision and order which would permit it to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products produced at the Albany, Almeda, Bay City, Corpus Christi, Freer, Hildalgo, Mission, and San Antonio plants).	DXE-0243—.. DXE-0250..	Extension of exception relief granted in Coastal States Gas Corp., Case Nos. FEE-3978 through FEE-3984 and FEE-4045 (decided May 13, 1977) (unreported decision).
11/21/77	Gas Marketing, Inc., Stafford, Kans. (If granted: Crude oil produced and sold from Gas Marketing's Heyen No. 1 well located in Stafford County, Kans., would be sold at market prices).	DEE-0204.....	Price exception (sec. 212.73).
11/21/77	Getty Oil Co., Los Angeles, Calif. (If granted: The Getty Oil Co. would receive an extension of the exception relief granted in the DOE's Nov. 10, 1977 and FEA's June 23, 1977 decisions and orders which would permit it to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products produced at the following plants: Bay Springs, Buena Vista, Cameron, Cymric, Dollarhide, Kermit, Kettleman Hills, Marlow, New Hope, Normanna, Old Ocean, Piaacios, South Pecan Lake, Stevens-Calidon, Ventura, and West Bernard).	DXE-0208—.. DXE-0223..	Extension of exception relief granted in Getty Oil Co., Case Nos. FEE-4419, FEE-4420, FEE-4424 (decided Nov. 10, 1977) (unreported decision); Getty Oil Co., Case Nos. FXE-4185, FXE-4187, FXE-4190 through FXE-4199 (decided June 23, 1977) (unreported decision).

LIST OF CASES RECEIVED BY THE OFFICE OF ADMINISTRATIVE REVIEW—Continued

Date	Name and location of applicant	Case No.	Type of submission
11/21/77	Gulf Oil Corp., Tulsa, Okla. (If granted: The Gulf Oil Corp. would receive an extension of the exception relief granted in the FEA's July 8, 1977 decision and order which would permit it to sell crude oil produced from the Northwest Graylin "D" sand unit located in Logan County, Colo., at upper tier ceiling prices).	DXE-0251	Extension of exception relief granted in Gulf Oil Corp., 6 FEA par. 83,028 (July 8, 1977).
11/21/77	Lincoln Rock Corp., Northfield, Ill. (If granted: Lincoln Rock Corp.'s Fedler No. 1 lease located in Garvin County, Okla., would be classified as a stripper well property).	DEE-0234.....	Price exception (sec. 212.73).
11/21/77	Edward W. McCrary III, Baton Rouge, La. (If granted: The FEA's information request denial would be rescinded and Edward W. McCrary III would receive access to the FEA Forms P120-M-1 (Refiner's Monthly Report) filed by Inger Oil Corp., Inc. for the 4th quarter 1976 and the 1st and 2d quarters of 1977).	DFA-0039.....	Appeal of FEA's information request denial.
11/21/77	Mobil Oil Corp., New York, N.Y. (If granted: The Mobil Oil Corp., would be permitted to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products produced at the Dewey County complex and Old Ocean plants).	DEE-0260..... DEE-0261 ..	Price exception (sec. 212.165).
11/21/77	Mobil Oil Corp., New York, N.Y. (If granted: The Mobil Oil Corp. would receive an extension of the exception relief granted in the FEA's June 30, 1977 and June 17, 1977 decisions and orders which would permit it to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products produced at the following plants: Adena, Bryans Mill, Cotton Valley, Cow Island, Elwood, Greeley, Hagist, Heyser, Knox, Postle, Hough, Putnam, Oswego, R. M. Stephens, Vanderbilt, and Wilcox).	DXE-0264—.. DXE-0277..	Extension of exception relief granted in Mobil Oil Corp., Case Nos. FXE-4243, FXE-4245, FXE-4246 (decided June 30, 1977) (unreported decision), Mobil Oil Corp., Case Nos. FEE-4214 through FEE-4219 (decided June 17, 1977) (unreported decision).
11/21/77	Pasco Liquidating Trust, Washington, D.C. (If granted: The FEA's Nov. 5, 1976 and Mar. 25, 1977 decisions and orders would be modified so that Pasco's entitlement exception relief would be determined through a comparison of the company's actual financial operating results for the 9-mo period beginning Jan. 1, 1975 and ending Sept. 30, 1975 with its historical return).	DMR-0007	Request for modification.
11/21/77	Phillips Petroleum Co., Bartlesville, Okla. (If granted: The Phillips Petroleum Co., would receive an extension of the exception relief granted in the FEA's June 17, 1977 and May 27, 1977 decisions and orders which would permit it to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products produced at the Cimmaron, Goldsmith, Lusk, Puckett, and Sooner plants).	DXE-0254—.. DEX-0258..	Extension of exception relief granted in Phillips Petroleum Co., Nos. FXE-4149 through FXE-4151 (decided June 17, 1977) (unreported decision); Phillips Petroleum Co., Case Nos. FEE-4025 and FEE-4026 (decided May 27, 1977) (unreported decision).
11/21/77	Ruthven, Inc., Russell, Kans. (If granted: The DOE's Nov. 2, 1977 remedial order would be rescinded and Ruthven, Inc. would not be required to refund overcharges made on sales of crude oil from the Ben Rein lease located in Russell County, Kans.).	DRA-0040 ..... DRS-0040 ..	Appeal of DOE region VII's Nov. 2, 1977 remedial order. Stay requested.
11/21/77	Standard Oil Co. (Indiana), Chicago, Ill. (If granted: The Standard Oil Co. (Indiana) would be permitted to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products produced at the Bairoil, Elmood, and Hitchcock plants).	DEE-0252..... DEE-0253 .. DEE-0259 ..	Price exception (sec. 212.165).

LIST OF CASES RECEIVED BY THE OFFICE OF ADMINISTRATIVE REVIEW—Continued

Date	Name and location of applicant	Case No.	Type of submission
11/21/77	Standard Oil Co. (Indiana), Chicago, Ill. (If granted: The Standard Oil Co. (Indiana) would receive an extension of the exception relief granted in the FEA's July 25, 1977 and June 20, 1977 decisions and orders which would permit it to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products produced at the Prentice, Third Creek, and White Flat plants).	DXE-0205—.. DXE-0207..	Extension of exception relief granted in Standard Oil Co. (Indiana), Case Nos. FEE-4305, FEE-4306 (decided July 25, 1977) (unreported decision); Standard Oil Co. (Indiana) Case No. FXE-4307 (decided June 20, 1977) (unreported decision).
11/21/77	Standard Systems, Inc., Grand River, Ohio. (If granted: The DOE's Nov. 7, 1977 remedial order would be rescinded and Standard Systems, Inc. would not be required to refund overcharges made on sales of heating oil).	DRA-0041 ..... DRS-0041 ..	Appeal of DOE region V's Nov. 7, 1977 remedial order. Stay requested.
11/21/77	Texas Pacific Oil Co., Inc., Dallas, Tex. (If granted: Texas Pacific Oil Co., Inc. would receive an extension of the exception relief granted in the FEA's Apr. 29, 1977 decisions and order which would permit crude oil produced and sold from the O. L. Wilson lease located in Adams County, Miss., to be sold at upper tier ceiling prices).	DXE-0235	Extension of exception relief granted in Texas Pacific Oil Co., Inc., 5 FEA par. 83,145 (Apr. 29, 1977).
11/21/77	Union Oil Co. of California, Los Angeles, Calif. (If granted: The Union Oil Co. of California would be permitted to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products produced at the Coyanosa, Indian Basin, Laverne, and O'Keene plants).	DEE-0238— .. DEE-0241 ..	Price exception (sec. 212.165).
11/22/77	Bright & Schiff, Dallas, Tex. (If granted: Bright & Schiff would receive an extension of the exception relief granted in the FEA's June 8, 1977 decision and order which would permit crude oil produced from the O. S. Petty Well No. 1 located in Hardin County, Tex., to be sold at upper tier ceiling prices).	DXE-0237	Extension of exception relief granted in Bright & Schiff, 5 FEA par. 83,172 (June 8, 1977).
11/22/77	Cities Service Co., Tulsa, Okla. (If granted: The Cities Service Co. would receive an extension of the exception relief granted in the FEA's June 30, 1977 and June 8, 1977 decisions and orders which would permit it to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products produced at the following plants: Adair, Bluitt, Cheney, Citronell, Garrett, Kimball, May, Midway, Moncrief, Myrtle Springs, Panola, Red Fish Bay, Rio Grande, Robstown, St. Amelia, Seiling, and West World).	DXE-0278—.. DXE-0294..	Extension of exception relief granted in Cities Service Co., Case Nos. FXE-4247 through FXE-4258, FXE-4260 (decided June 30, 1977) (unreported decision); Cities Service Co., Case Nos. FEE-4031 through FEE-4035 (decided June 8, 1977) (unreported decision).
11/22/77	Cleary Petroleum Corp., Oklahoma City, Okla. (If granted: The Cleary Petroleum Corp. would be permitted to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products produced at the Spring Valley plant).	DEE-0262.....	Price exception (sec. 212.165).
11/22/77	Getty Oil Co., Los Angles, Calif. (If granted: The Getty Oil Co. would be permitted to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products produced at the following plants: Calumet, Camrick, Coalinga Nose, Cocodrie, Elmwood, Fashing, Grand Chenier, Headlee, Hitchcock, Hulldale, Katy, Levelland, Medicine Lodge, North Cowden, Red Fish Bay, South Cole Levee, and Yscloskey).	DEE-0295— .. DEE-0311 ..	Price exception (sec. 212.165).

LIST OF CASES RECEIVED BY THE OFFICE OF ADMINISTRATIVE REVIEW—Continued

Date	Name and location of applicant	Case No.	Type of submission
11/22/77	Gulf Oil Corp., Tulsa, Okla. (If granted: The Gulf Oil Corp. would receive an extension of the exception relief granted in the FEA's June 17, 1977 decision and order which would permit it to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products produced at the Azalea, Milfay, and Sand Hills plants).	DXE-0312 ..... DXE-0313.. DXE-0314..	Extension of exception relief granted in Gulf Oil Corp., Case Nos. FXE-4131 through FXE-4133 (decided June 17, 1977) (unreported decision).
11/22/77	Suburban Propane, Morristown, N.J. (If granted: Suburban Propane would be permitted to calculate its costs of product in inventory on a separate inventory basis).	DEE-0236.....	Exception to separate inventories amendment (sec. 212.92).
11/22/77	Sun Co., Inc., Dallas, Tex. (If granted: Sun Company, Inc. would receive an extension of the exception relief granted in the FEA's Aug. 3, 1977 decision and order which would permit it to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products produced at the Steedman plant).	DXE-0263	Extension of exception relief granted in Sun Co., Inc., Case No. FEE-4373 (decided Aug. 3, 1977) (unreported decision).
11/23/77	Locust Ridge Gas Processing Co., Washington, D.C. (If granted: The Locust Ridge Gas Processing Co. would receive an extension of the exception relief granted in the in the FEA's May 23, 1977 decision and order which would permit it to increase its prices to reflect nonproduct cost increases in excess of $0.005/gal for natural gas liquid products).	DXE-0315	Extension of exception relief granted in Locust Ridge Gas Processing Co., Case No. FEE-4039 (decided May 23, 1977) (unreported decision).

NOTICES OF OBJECTION RECEIVED

WEEK OF NOVEMBER 18 THROUGH NOVEMBER 25, 1977

Date, Name and Location of Applicant, and Case Nos.

11-21-77—El Paso Natural Gas Co., FEE-4466.
El Paso, Tex., FEE-4468.
Standard Oil Co (Indiana) (Elmwood), Chicago, Ill., FXE-4813.

11-22-77—Age Investment Co., Inc., Everett, Wash., DRC-0006.

Osage Oil & Transportation, Inc., Tulsa, Okla., FEE-4771.

Sun Co., Inc., Dallas, Tex., FEE-4817 thru FEE-4822; and DEE-0038 thru DEE-0040.

[FR Doc. 35316 Filed 12-12-77; 8:45 am]

[6740-02]

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. CP76-85]

ALGONQUIN GAS TRANSMISSION CO. AND TEXAS EASTERN TRANSMISSION CORP.

Petition to Amend

DECEMBER 5, 1977.

On October 1, 1977, pursuant to the provisions of the Department of Energy Organization Act (DOE Act), Pub. L. 95-91, 91 Stat. 565 (August 4, 1977), and Executive Order No. 12009, 42 FR 46267 (September 15, 1977), the Federal Power Commission ceased to exist and its functions and regulatory responsibilities were transferred to the Secretary of Energy and the Federal Energy Regulatory Commission (FERC), which, as an independent commission within the Department of Energy, was activated on October 1, 1977.

The "savings provisions" of section 705(b) of the DOE Act provided that proceedings pending before the FPC on the date the DOE Act takes effect shall not be affected and that orders shall be issued in such proceedings as if the DOE Act had not been enacted. All such proceedings shall be continued and further actions shall be taken by the appropriate component of DOE now responsible for the function under the DOE Act and regulations promulgated thereunder. The functions which are the subject of this proceeding were specifically transferred to the FERC by section 402(a)(1) of the DOE Act.

The joint regulation adopted on October 1, 1977, by the Secretary and the FERC entitled "Transfer of Proceedings to the Secretary of Energy and the FERC," 10 CFR ——, provided that this proceeding would be continued before the FERC. The FERC takes action in this proceeding in accordance with the above mentioned authorities.

Take notice that on November 15, 1977, Algonquin gas Transmission Co. (Algonquin Gas), 1284 Soldiers Field Road, Boston, Mass. 02135, Texas Eastern Transmission Corp. (Texas Eastern), P.O. Box 2521, Houston, Tex. 77001, and Boston Gas Co. (Boston Gas), One Beacon Street, Boston, Mass. 10801 (Petitioners), filed in Docket No. CP76-85 a petition to amend the order of July 30, 1976 (56 FPC ——), issued by the Federal Power Commission (FPC), in the instant docket pursuant to section 7(c) of the Natural Gas Act so as to provide for the continuation of the exchange, transportation, and delivery of certain quantities of gas by Petitioners to The Brooklyn Union Gas Co. (Brooklyn Union), through June 30, 1978, all as more fully set forth in the petition to amend on file with the Commission and open to public inspection.

It is stated that on September 12, 1975, Algonquin Gas and Texas Eastern filed their application in the instant docket requesting authorization to transport and exchange natural gas for the benefit of Brooklyn Union during a term commencing November 1, 1975, and ending April 30, 1976, and that pursuant to the FPC order of November 10, 1975, Algonquin Gas and Texas Eastern were granted such temporary authorization. It is further stated that pursuant to the FPC order of December 12, 1975, Brooklyn Union and Boston Gas were granted temporary authorization to perform the acts necessary to permit the exchange and transportation of gas authorized by the FPC letter order of November 10, 1975. It is indicated that pursuant to the FPC order of July 30, 1976, Algonquin and Texas Eastern were granted authorization to transport gas for Brooklyn Union through October 31, 1976, and that pursuant to the FPC order of November 26, 1976, Algonquin Gas and Texas Eastern were granted temporary authorization to continue the transportation through December 31, 1977. It is further indicated that following the filing of a motion by Boston Gas and Brooklyn Union for clarification of the November 26, 1976, order, the FPC, by order issued December 13, 1976, authorized Boston Gas and Brooklyn Union to continue their exchange through December 31, 1977.

The petition states that Brooklyn Union has requested that Petitioners extend their service currently being provided through June 30, 1978. Consequently, Petitioners request that the Commission amend its existing authorization to permit the continuation of service through the extended period.

Petitioners state that an extension agreement has been undertaken by the parties to permit receipt of quantities of gas to be made available for Brooklyn Union by Distrigas of Massachusetts Corporation (DOMAC), pursuant to authority granted to DOMAC by the FPC order issued June 14, 1977, in Docket No. CP73-135 and authority sought by DOMAC in its pending application in Docket No. CP77-216. It is asserted that the gas to be transported and delivered under the extension agreement is required by Brooklyn Union to assure its ability to meet the requirements of its high priority markets pending completion of Commission authorization of long term transportation arrangements for gas made available by DOMAC.

Deliveries under the extension agreement are not anticipated to exceed 40,000 million Btu's per day and total deliveries during the period January 1 through June 30, 1978, are estimated at approximately 6,815 million Btu's it is said.

Any person desiring to be heard or to make any protest with reference to said petition to amend should on or before December 21, 1977, file with the Federal Energy Regulatory Commission, Washington, D.C. 20426, a petition to intervene or a protest in accordance with the requirements of the Commission's rules of practice and procedure (18 CFR 1.8 or 1.10), and the regulations under the Natural Gas Act (18 CFR 157.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party to a proceeding or to participate as a party in any hearing therein must file a petition to intervene in accordance with the Commission's rules.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35506 Filed 12-12-77; 8:45 pm]

[6740-02]

[Docket No. RP72-142 (PGA78-2)]

CITIES SERVICE GAS CO.

Proposed Changes in FPC Gas Tariff

DECEMBER 5, 1977.

Take notice that Cities Service Gas Co. (Cities Service), on November 9, 1977, tendered for filing proposed changes in its FPC Gas Tariff, Second Revised Volume No. 1. Cities Service states that it has filed its Twenty-Third Revised Sheet PGA-1 to be effective December 23, 1977, to track tariff changes made by one of its pipeline suppliers, Arkansas Louisiana Gas Co. (Arkla).

Arkla has filed its Thirteenth Revised Sheet No. 185 to its FPC Gas Tariff, Original Volume No. 3 to track increases in its purchased gas costs and a surcharge adjustment to clear the balance in its Gas Cost Adjustment Account to be effective November 1, 1977. This filing also includes the rates suspended until November 1, 1977, in Docket No. RP77-54. The Commission has not yet approved such increase for Arkla and Cities Service has no information as to when such action will be taken.

Cities Service states that copies of its filing were served on all jurisdictional customers, interested state commissions and all parties to the proceeding in Docket Nos. RP72-142 and RP76-135.

Any person desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, Union Center Plaza Building, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with sections 1.8 and 1.10 of the Commission's rules of practice and procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 19, 1977. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this filing are on file with the Commission and available for public inspection.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35507 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. CP77-655]

COLORADO INTERSTATE GAS CO.

Amendment to Application

DECEMBER 5, 1977.

On October 1, 1977, pursuant to the provisions of the Department of Energy Organization Act (DOE Act), Pub. L. 95-91, 91 Stat. 565 (August 4, 1977), and Executive Order No. 12009, 42 FR 46267 (September 15, 1977), the Federal Power Commission ceased to exist and its functions and regulatory responsibilities were transferred to the Secretary of Energy and the Federal Energy Regulatory Commission (FERC), which, as an independent commission within the Department of Energy, was activated on October 1, 1977.

Take notice that on November 16, 1977, Colorado Interstate Gas Co. (Applicant), P.O. Box 1087, Colo. 80944, filed in Docket No. CP77-655 an amendment to its application filed with the Federal Power Commission (FPC), in the instant docket pursuant to Section 7(c) of the Natural Gas Act so as to authorize Applicant to purchase, rather than lease certain gas compression facilities, all as more fully set forth in the amendment on file with the FERC and open to public inspection.

Applicant indicates that in its original application filed with the FPC on September 30, 1977, in the instant docket, it requested authorization to construct and operate approximately 110.1 miles of 24-inch pipeline loop and 5.2 miles of 30-inch pipeline loop and to install and operate certain mainline gas compression facilities. Applicant states that in its original application it expressed its intention to lease the proposed compression facilities. The estimated cost of the facilities which Applicant intended to purchase was $21,730,805, it is said.

By this amendment, Applicant proposes to amend its application to reflect its intention to purchase all of the proposed facilities in said application, including the proposed gas compression facilities. Applicant states that the total estimated cost of facilities, as amended, is $38,490,160, which cost Applicant proposes to finance by long term notes, it is said. Applicant states that the original application filed in the instant docket is essentially unchanged by this amendment except as regards the ownership of the proposed gas compression facilities and the associated revisions in facility costs and cost of service.

Any person desiring to be heard or to make any protest with reference to said amendment should, on or before December 27, 1977, file with the Federal Energy Regulatory Commission, Washington, D.C. 20426, a petition to intervene or a protest in accordance with the requirements of the Commission's rules of practice and procedure (18 CFR 1.8 or 1.10) and the regulations under the Natural Gas Act (18 CFR 157.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to

make the protestants parties to the proceeding. Any person wishing to become a party to a proceeding or to participate as a party in any hearing therein must file a petition to intervene in accordance with the Commission's rules. All persons who have heretofore filed need not file again.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35508 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. RI78-6]

JAMES M. FORGOTSON, OPERATOR, GULF COAST VENTURE

Petition for Special Relief

DECEMBER 2, 1977.

Take notice that on November 3, 1977, James M. Forgotson, Operator Gulf Coast Venture (Forgotson), 409 Beck Building, Shreveport, La. filed a Petition for Special Relief pursuant to Section 2.56(b)(h) of the Commission's regulations. Forgotson states that his petition is also filed pursuant to Commission Orders of June 23, 1977, and August 12, 1977, in Docket No. CI74-319.

Forgotson seeks authorization to charge $1.91 per Mcf for the sale of whatever gas may be found and produced from his well in Jim Wells County, Tex. Forgotson states that his well presently is not producing any natural gas and that no gas can be produced from any formation penetrated by the well without risking additional capital investment. Forgotson estimates that there may be approximately 330,000 Mcf of remaining recoverable reserves in the well; however, Forgotson states that such gas, if any exists at all, can be found and produced only if there is an expenditure of substantial sums of capital. Forgotson states that the applicable Commission ceiling rate of 52 cents per Mcf is insufficient to justify this investment.

Any person desiring to be heard or to make any protest with reference to said petition should on or before December 23, 1977, file with the Federal Energy Regulatory Commission, Washington, D.C. 20426, a petition to intervene or a protest in accordance with the requirements of the Commission's rules of practice and procedure (18 C.F.R. 1.8 or 1.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to make the protestant a party to the proceeding. Any party wishing to become a party to the proceeding, or to participate as a party in any hearing therein, must file a petition to intervene in accordance with the Commission's rules.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35502 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. RP73-17 (PGA78-1)]

GRANITE STATE GAS TRANSMISSION, INC.

Proposed change in Rates Pursuant to Purchased Gas Adjustment Provision

DECEMBER 5, 1977.

Take notice that Granite State Gas Transmission, Inc. (Granite State), 66 Market Street, P.O. Box 508, Portsmouth, N.H. 03801, on November 22, 1977, tendered for filing Twenty-First Revised Sheet No. 3A in its FERC Gas Tariff, Original Volume No. 1, containing a proposed change in rates for effectiveness on December 1, 1977.

According to Granite State, the instant filing tracks changes in its cost of gas purchased from Tennessee Gas Pipeline Co., a Division of Tenneco, Inc. (Tennessee), which Tennessee has proposed to make effective December 1, 1977, in Docket No. RP73-114. Granite State further avers that Tennessee proposes to eliminate from its rates as of December 1, 1977, a surcharge which it has been collecting to recover certain unrecovered purchase gas costs attributable to Opinion Nos. 770 and 770-A, and pursuant to its purchase gas cost adjustment provision, approved on December 14, 1972, in Docket No. RP73-17, Granite State proposes to reflect the reduction in its cost of purchases from Tennessee through the instant filing.

Granite State further states that its revised purchased gas cost change is applicable to its sale to Northern Utilities, Inc. (Northern), which is Granite State's sole jurisdictional customer. According to Granite State, the annual effect of the proposed rate contained on Twenty-First Revised Sheet No. 3A on Northern's purchases from Granite State is a decrease of $218,615, based on purchases from Tennessee and sales to Northern for the twelve months ended September 30, 1977.

According to Granite State, copies of the filing were served upon Northern and the regulatory commissions of the States of maine and New Hampshire.

Any person desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D,C, 20426, in accordance with sections 1.8 and 1.10 of the Commission's rules of practice and procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 19, 1977. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this filing are on file with the Commission and are available for public inspection.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35509 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. RP78-13]

LAWRENCEBURG GAS TRANSMISSION CORP.

Supplemental Filing of Gas Tariff Sheets for Transportation Rate Schedule

DECEMBER 5, 1977.

Take notice that on November 14, 1977, Lawrenceburg Gas Transmission Corp. (Lawrenceburg), submitted a supplemental filing to an original filing made on November 1, 1977. This supplemental filing incorporates the filing of seven (7) additional tariff sheets proposed to become effective on November 1, 1977, and identified as follows:

First Revised Sheet No. 1
Original Sheet No. 12-B
Original Sheet No. 12-C
Original Sheet No. 12-D
Original Sheet No. 15-A
Original Sheet No. 15-B
Original Sheet No. 15-C

Lawrenceburg states that the purpose of this filing, pursuant to Federal Energy Regulatory Commission's (FERC) Administrative Orders Nos. 164 and 164-A, is to file tariff sheets omitted in the original filing, to revise Schedule A to the original filing and to provide additional support statements.

In view of the need for expedition, Lawrenceburg has requested waiver of the Commission's regulations to the extent necessary so as to permit the tariff sheets to become effective on November 1, 1977.

Lawrenceburg states that copies of the filing have been mailed to each of its jurisdictional customers and interested state commissions.

Any persons desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with sections 1.8 and 1.10 of the Commission's rules of practice and procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 19, 1977. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding.

Any person wishing to become a party must file a petition to intervene. Copies of this filing are on file with the Commission and are available for public inspections.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35510 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. CP78-88]

MICHIGAN WISCONSIN PIPE LINE CO.

Application

DECEMBER 2, 1977.

Take notice that on November 15, 1977, Michigan Wisconsin Pipe Line Co. (Applicant), One Woodward Avenue, Detroit, Mich. 48226, filed in Docket No. CP78-88 an application pursuant to section 7(c) of the Natural Gas Act and section 2.79 of the Commission's General Policy and Interpretations (18 CFR 2.79) for a certificate of public convenience and necessity authorizing the transportation of natural gas for General Motors Corp. (General Motors), all as more fully set forth in the application on file with the Commission and open to public inspection.

The application states that pursuant to a gas sales and purchase agreement dated January 24, 1977, between Magic Circle Gas Corp. (Magic Circle) and General Motors, Magic Circle has agreed to sell to General Motors up to 6,000 Mcf of natural gas per day for a price of $1.35 per Mcf plus reimbursement for Federal and State taxes, and an additional $0.50 per Mcf to cover Magic Circle's cost for compression and gathering. The application further states that the quantities purchased by General Motors would be delivered for its account to the pipeline system of Panhandle Eastern Pipe Line Co. (Panhandle) at a number of specified locations in Woods County, Okla. The subject gas is not available to the interstate market, it is said.

It is indicated that in order to effectuate the receipt of the gas supplies which General Motors has contracted to purchase from Magic Circle, and to obtain transportation and redelivery of such supplies, General Motors and Panhandle entered into a transportation contract dated February 10, 1977, which contract provides for the receipt, transportation, and redelivery of 3,600 Mcf of natural gas on a firm basis and an additional 2,400 Mcf of a best efforts basis. It is further indicated that pursuant to the Federal Power Commission (FPC) order of February 20, 1977, in Docket No. CP77-244, Panhandle was granted a temporary certificate authorizing the transportation service, and that pursuant to the FPC order of July 19, 1977, Panhandle was granted permanent certificate authorization. It is stated the transportation service authorized by the FPC was not commenced because of short-term improvements in the gas supply available to General Motors for its suppliers.

Applicant indicates that pursuant to a transportation contract dated September 23, 1977, between General Motors and Panhandle, the original transportation contract dated February 10, 1977, was superseded to provide, among other things, for an additional point of delivery to accommodate redeliveries to Applicant of the gas supplies transported by Panhandle for General Motors' account destined for the Janesville plant. The additional point of delivery is at a proposed interconnection which would subsequently be established between the pipeline systems of Panhandle and Applicant located in Defiance County, Ohio, it is indicated.

It is indicated that pursuant to a letter agreement dated September 28, 1977, among Applicant, General Motors, and Wisconsin Power & Light Co. (Wisconsin Power), a resale customer of Applicant, Applicant proposes to take receipt of up to 5,500 Mcf of natural gas at the proposed interconnection with Panhandle in Defiance County, Ohio, and transport and redeliver equivalent volumes on a best efforts basis for the account of General Motors to Wisconsin Power at Applicant's existing Janesville and/or South Janesville measuring stations, both located in Rock County, Wis. It is further indicated that pursuant to an agreement dated August 26, 1977, between General Motors and Wisconsin Power, Wisconsin Power would receive, transport, and deliver to the Janesville plant the gas supplies delivered to it be Applicant for General Motors' account.

Applicant states that it would charge General Motors 7.5 percent per Mcf for all volumes of gas redelivered to Wisconsin Power for General Motors' account. Applicant further states that the gas proposed to be transported hereunder would be used for Priority 2 uses at General Motors' Janesville plant when such service is interrupted by Wisconsin Power. The term of the agreement dated September 28, 1977, among Applicant, General Motors, and Wisconsin Power is for 1 year from the date of initial deliveries hereunder or until Applicant would have delivered 216,000 Mcf to Wisconsin Power for the account of General Motors, whichever is earlier, it is indicated.

Any person desiring to be heard or to make any protest with reference to said application should on or before December 23, 1977, file with the Federal Energy Regulatory Commission, Washington, D.C. 20426, a petition to intervene or a protest in accordance with the requirements of the Commission's rules of practice and procedure (18 CFR 1.8 or 1.10) and the regulations under the Natural Gas Act (18 CFR 157.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party to a proceeding or to participate as a party in any hearing therein must file a petition to intervene in accordance with the Commission's Rules.

Take further notice that, pursuant to the authority contained in and subject to the jurisdiction conferred upon the Federal Energy Regulatory Commission by sections 7 and 15 of the Natural Gas Act and the Commission's rules of practice and procedure, a hearing will be held without further notice before the Commission on this application if no petition to intervene is filed within the time required herein, if the Commission on its own review of the matter finds that a grant of the certificate is required by the public convenience and necessity. If a petition for leave to intervene is timely filed, or if the Commission on its own motion believes that a formal hearing is required, further notice of such hearing will be duly given.

Under the procedure herein provided for, unless otherwise advised, it will be unnecessary for Applicant to appear or be represented at the hearing.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35503 Filed 12-12-77; 8:45 asm]

[6740-02]

[Docket No. CP78-80]

MOUNTAIN FUEL RESOURCES, INC.

Application

DECEMBER 5, 1977.

Take notice that on November 14, 1977, Mountain Fuel Resources, Inc. (Applicant), 180 East First South Street, P.O. Box 11368, Salt Lake City, Utah 84139, filed in Docket No. CP78-80 an application pursuant to section 7(c) of the Natural Gas Act and section 157.7(b) of the Commission's regulations thereunder (18 CFR 157.7(b)) for a certificate of public convenience and necessity authorizing the construction during the 12-month period commencing on the date of issuance of the requested authorization herein and operation of facilities, to enable Applicant to take into its certificated main pipeline system natural gas which would be purchased from producers or other similar sellers thereof, all as more fully set forth in the application on file with the Commission and open to public inspection.

Applicant states that the purpose of this budget-type application is to augment its ability to act with reasonable dispatch in connecting to its pipeline system supplies of natural gas which may become available from various producing areas generally coextensive with its pipeline system or the system of other pipeline companies which may be authorized to transport gas for the account of or exchange gas with Applicant.

The application states that the total cost of the proposed facilities would not exceed $759,724, with the cost of a single project not to exceed $189,931. Applicant states that the total cost of the proposed construction would be financed out of funds on hand.

Any person desiring to be heard or to make any protest with reference to said application should on or before December 27, 1977, file with the Federal Energy Regulatory Commission, Washington, D.C. 20426, a petition to intervene or a protest in accordance with the requirements of the Commission's rules of practice and procedure (18 CFR 1.8 or 1.10) and the regulations under the Natural Gas Act (18 CFR 157.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party to a proceeding or to participate as a party in any hearing therein must file a petition to intervene in accordance with the Commission's rules.

Take further notice that, pursuant to the authority contained in and subject to the jurisdiction conferred upon the Federal Energy Regulatory Commission by sections 7 and 15 of the Natural Gas Act and the Commission's rules of practice and procedure, a hearing will be held without further notice before the Commission on this application if no petition to intervene is filed within the time required herein, if the Commission on its own review of the matter finds that a grant of the certificate is required by the public convenience and necessity. If a petition for leave to intervene is timely filed, or if the Commission on its own motion believes that a formal hearing is required, further notice of such hearing will be duly given.

Under the procedure herein provided for, unless otherwise advised, it will be unnecessary for Applicant to appear or be represented at the hearing.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35511 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. CP78-89]

NATURAL GAS PIPELINE CO. OF AMERICA

Notice of Application

DECEMBER 5, 1977.

Take notice that on November 16, 1977, Natural Gas Pipeline Co. of America (Applicant), 122 South Michigan Avenue, Chicago, Ill. 60603, filed in Docket No. CP78-89 an application pursuant to section 7(c) of the Natural Gas Act for a certificate of public convenience and necessity authorizing the transportation of up to 5,000 Mcf of natural gas per day for South Jersey Exploration Co. (South Jersey), acting for itself and as authorized agent for Piedmont Exploration Co. Inc., Eastern Shore Natural Gas Co., Tar Heel Energy Corp., Rockingham Exploration Co., U.C.G. Finance Corp., NCNG Exploration Corp., South Jersey Gas Co., and Delmarva Energy Co., all as more fully set forth in the application on file with the Commission and open to public inspection.

Applicant requests authorization to transport gas for South Jersey pursuant to a transportation and sale agreement dated September 30, 1977, between Applicant and South Jersey. It is indicated that South Jersey presently has available for delivery in Nacogdoches County, Tex., gas production which it desires to have transported by Applicant to Cameron Parish, La., for further transportation and ultimate distribution in the service areas of the parties, or their parent corporation, who have appointed South Jersey as their agent herein.

Applicant proposes to receive for South Jersey's account at a delivery point knwn as the Nacogdoches Delivery Point, located in the David Sanchez Grant, A-505, Nacogdoches County, Tex., up to 5,000 Mcf of natural gas per day, and to redeliver a thermally equivalent volume of gas to Transcontinental Gas Pipe Line Corp. (Transco), for the account of South Jersey, at a redelivery point known as the Cameron Redelivery Point, located at the outlet of the Mobil Oil Corp., Cameron Gas Processing plant in Cameron Parish, La. Applicant indicates that it would have the right to purchase from South Jersey 10 percent of the gas delivered by South Jersey to Applicant pursuant to the subject agreement.

It is indicated that Applicant would charge South Jersey for the proposed transportation service a rate which is the greater of 3.75 cents per Mcf for all gas transported during any month or a monthly charge of $1,500. Applicant proposes to construct measuring facilities at the Nacogdoches delivery point at an estimated cost of $23,000, which cost would be reimbursed to Applicant by South Jersey. The primary term for the proposed arrangement is 10 years, it is indicate.

Any person desiring to be heard or to make any protest with reference to said application should on or before December 27, 1977, file with the Federal Energy Regulatory Commission, Washington, D.C. 20426, a petition to intervene or a protest in accordance with the requirements of the Commission's rules of practice and procedure (18 CFR 1.8 or 1.10), and the regulations under the Natural Gas Act (18 CFR 157.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party to a proceeding or to participate as a party in any hearing therein must file a petition to intervene in accordance with the Commission's rules.

Take further notice that, pursuant to the authority contained in and subject to the jurisdiction conferred upon the Federal Energy Regulatory Commission by sections 7 and 15 of the Natural Gas Act and the Commission's rules of practice and procedure, a hearing will be held without further notice before the Commission on this application if no petition to intervene is filed within the time required herein, if the Commission on its own review of the matter finds that a grant of the certificate is required by the public convenience and necessity. If a petition for leave to intervene is timely filed, or if the Commission on its own motion believes that a formal hearing is required, further notice of such hearing will be duly given.

Under the procedure herein provided for, unless otherwise advised, it will be unnecessary for Applicant to appear or be represented at the hearing.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35512 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket Nos. RP71-107 and RP72-127]

NORTHERN NATURAL GAS CO.

Order Permitting Limited Continuation of Rate Base Treatment and Requiring Submittal of Information

DECEMBER 5, 1977.

On October 1, 1977, pursuant to the provisions of the Department of Energy Organization Act (DOE Act), Pub. L. 95-91, 91 Stat. 565 (August 4, 1977), and Executive Order No. 12009, 42 FR 46267 (September 15, 1977), the Federal Power Commission (FPC), ceased to exist and its functions and regulatory responsibilities were trans-

ferred to the Secretary and the Federal Energy Regulatory Commission (FERC), which, as an independent commission within the Department of Energy, was activated on October 1, 1977.

The "savings provisions" of section 705(b) of the DOE Act provide that proceedings pending before the FPC on the date the DOE Act takes effect shall not be affected and that orders shall be issued in such proceedings as if the DOE Act had not been enacted. All such proceedings shall be continued and further actions shall be taken by the appropriate component of DOE now responsible for the function under the DOE Act and regulations promulgated thereunder. The functions which are the subject of these proceedings were specifically transferred to the FERC by sections 402(a) (1) or (2) of the DOE Act.

The joint regulation adopted on October 1, 1977, by the Secretary and the FERC entitled "Transfer of Proceedings to the Secretary of Energy and the FERC," 10 CFR ——, provided that this proceeding would be continued before the FERC. The FERC takes action in this proceeding in accordance with the above mentioned authorities.

On April 28, 1977, Northern Natural Gas Co. (Northern), filed a petition requesting the continuation of rate base treatment for Alaskan advances made to BP Alaska, Inc. (BPA), beyond the five-year period after the date each advance was included in rate base. Northern requests rate base treatment continue until all advances are recouped fully. For the reasons discussed, the Commission shall permit rate base treatment to continue for sixty days, subject to refund, pending submittal of additional information as hereinafter ordered.

Northern and BPA entered into a Master Gas Agreement and a Joint Venture Agreement in 1972. These Agreements provide for the dedication of BPA's interest in proven Prudhoe Bay gas reserves to Northern and for the payment of advances by northern to fund a joint exploration program. By order issued January 4, 1974, in Docket Nos. RP71-107 (Phase II), and RP72-127, the FPC approved the agreements and permitted Northern to include the initial advance in its rate base. Subsequent advance payments have been permitted in Northern's rate base. Northern is to receive one-third of the total Prudhoe Bay gas reserves, but not to exceed 3.0Tcf. Northern states in its petition that the total Prudhoe Bay gas reserves "are in excess of five trillion cubic feet." Northern's total obligation to BPA under the Agreements is $50,000,000. Northern estimates its advances to BPA through October 1977, to be $25,792,208. The exploration portion of the Agreement provides for Northern to fund the exploration and development of prospects in the offshore Alaska and offshore Atlantic Coast areas.

The immediate relief which Northern seeks is continued rate base treatment for $823,672, the amount of the initial advance to BPA. This advance was permitted in rate base as of December 3, 1972. Unless approval is granted, this amount will be excluded from rate base on December 3, 1977. The larger relief which Northern seeks is continuation of rate base treatment for each advance beyond five years from the date each was placed in Northern's rate base. In support of its petition, Northern states that it anticipates "it would take approximately ten years from the date of the Agreements before gas would flow from BPA's reserves in the Prudhoe Bay field to the lower 48 states." Northern claims that no real possibility of earlier delivery existed because of "the enormous complexity and scope of the transportation project and because oil had to first flow." Northern claims that its customers benefit because they can "look forward to a very substantial gas supply from a domestic source, which will be available in the market area in the relatively near-term future." Northern states that the Agreements permit its customers to have first call on any gas found as a result of exploration under the Agreements. Northern alleges that advance payments in the lower 48 States are permitted to remain in rate base over ten years. Northern claims it would be "ironic and unfortunate" if a more restrictive standard is put on its Alaskan advances.

In the order issued January 4, 1974, in Docket Nos. RP71-107 and RP72-127, the FPC approved rate base treatment of Northern's advances to BPA subject to these conditions: removal from rate base if recovery did not commence within five years from the date of inclusion in rate base; removal from rate base and refund of carrying charges if gas flows to a buyer other than Northern; and removal from rate base of any portion of an advance not recovered within five years of the date deliveries commence or the date it is determined that recovery will be in economic consideration other than gas. All these conditions contemplated a five year time period for recovery of advances to begin. Northern made no attempt to change this period at that time. Northern's rate base treatment of advances was granted specifically upon these conditions. Northern's continued inclusion in rate base of advances to BPA assumed that the conditions would be fulfilled.

The FPC in its January 4, 1974, order stated that Northern would be permitted to petition for continued rate base treatment after five years by showing:

(1) Why recoupment of the advance has not commenced and (2) whether the project warrants continued rate base treatment for the advance within the attendant costs to Northern's customers within the lower 48 States.

Northern answered the first part of the test for continued rate base treatment by stating that the complexity of the project and the fact that oil would flow first are reasons why recoupment has not commenced. However on the present information submitted by Northern, the FERC is not convinced that continued rate base treatment is warranted for these advances. To assist us in evaluating the merits of this issue, Northern shall be required to submit information showing: (1) what benefits, if any, Northern's customers receive as a result of continued rate base treatment of these advances which they would not receive if the advances were removed from rate base; (2) what provisions, if any, can be made with BPA to provide for faster recoupment of these advances; (3) whether recoupment can be made in economic consideration other than gas; (4) what cost, if any, Northern will incur if rate base treatment is discontinued and what would be the economic impact on its jurisdictional operations. This information shall be submitted within thirty days of the issuance of this order. Pending receipt and evaluation of this information, Northern shall be permitted to continue rate base treatment of these advances for sixty days after December 3, 1977.

Notice of Northern's petition was issued on May 12, 1977, with comments, protests, or petitions to intervene on or before May 27, 1977. A notice of intervention was filed on June 10, 1977, by the Public Utilities Commission of the State of South Dakota (SDPUC).

The Commission finds: (1) Good cause exists to permit continuation of rate base treatment for sixty days beyond December 3, 1977, pending receipt and evaluation of the information hereinafter ordered to be submitted.

(2) Good cause exists to permit the intervention of the SDPUC in this proceeding because it has an interest which cannot be represented adequately by any other party.

The Commission orders: (A) Northern shall submit within thirty (30) days of the issuance of this order information showing the benefits and costs of continued rate base treatment of the instant advances in accordance with the requirements stated in this order.

(B) Northern is permitted to continue rate base treatment of the instant advances for sixty (60) days beyond

December 3, 1977, pending receipt and evaluation of the required submittal.

(C) SDPUC's notice of intervention is hereby granted subject to the rules and regulations of the Commission; *Provided, however,* That participation of such intervenor shall be limited to matters affecting asserted rights and interests as specifically set forth in its petition to intervene; and *Provided, further,* That the admission of such intervenor shall not be aggrieved because of any order or orders of the Commission entered in this proceeding.

(D) The Secretary shall cause prompt publication of this order to be made in the FEDERAL REGISTER.

By the Commission.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35514 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. RP77-56]

NORTHERN NATURAL GAS CO.

Order Denying Petition for Emergency Relief

DECEMBER 5, 1977.

On October 1, 1977, pursuant to the provisions of the Department of Energy Organization Act (DOE Act), Pub. L. 95-91, 91 Stat. 565 (August 4, 1977) and Executive Order No. 12009, 42 FR 46267 (September 15, 1977), the Federal Power Commission ceased to exist and its functions and regulatory responsibilities were transferred to the Secretary and the Federal Energy Regulatory Commission (FERC) which, as an independent commission within the Department of Energy, was activated on October 1, 1977.

The "savings provisions" of section 705(b) of the DOE Act provide that proceedings pending before the FPC on the date the DOE Act takes effect shall not be affected and that orders shall be issued in such proceedings as if the DOE Act had not been enacted. All such proceedings shall be continued and further actions shall be taken by the appropriate component of DOE now responsible for the function under the DOE Act and regulations promulgated thereunder. The functions which are the subject of these proceedings were specifically transferred to the FERC by section 402(a)(1) of the DOE Act.

The joint regulation adopted on October 1, 1977, by the Secretary and the FERC entitled "Transfer of Proceedings to the Secretary of Energy and the FERC," 10 CFR ——, provided that this proceeding would be continued before the FERC. The FERC takes action in this proceeding in accordance with the above mentioned authorities.

On September 30, 1977, Northern Natural Gas Company (Northern) filed a petition in the instant docket pursuant to 18 CFR 1.7 requesting authorization to (1) include the costs of an emergency storage arrangement with Northern-Illinois Gas Company (N-I Gas) in the cost of service underlying its pending section 4 rate proceeding or, (2) alternatively, recoup the costs of the emergency storage arrangement through a PGA rate filing scheduled to become effective December 27, 1977. For the reasons stated below, the Commission shall deny Northern's request for emergency relief without prejudice to Northern's right to file to recover reasonable and prudent emergency costs through a subsequent rate filing.

Northern's petition indicates that it has contracted with N-I Gas for emergency storage services to be rendered during a 60-day period commencing sometime in January 1978. The storage agreement with N-I Gas would make 12 Bcf of gas available to Northern over the 60-day emergency period at a daily withdrawal rate of up to 200,000 Mcf. Under the agreement, repayment of the withdrawn volumes will be made by Northern over any consecutive 60 days during the 1978 summer injection period. Northern also has agreed to pay N-I Gas $15,600,000 for the storage service.

Northern states that Natural Gas Pipeline Company of America has agreed to transport both storage withdrawal and payback volumes through its facilities for a transportation charge of 9 cents per Mcf.

Northern submits that its decision to enter into the storage arrangement was reasonable and prudent in light of the curtailment situation it will experience this winter and cites the Commission's investigation in Docket No. RP77-82 as supporting its contention. Northern requests alternate forms of rate relief: (1) authorization to reflect the costs of the emergency storage arrangement as part of a general rate increase request filed in the instant docket on April 21, 1977, or (2) authorization to recover such costs through operation of its pending PGA filing scheduled to become effective December 27, 1977.

The Commission finds that Northern's petition for emergency relief is, on matters of law, indistinguishable from the petition recently filed by Southern Natural Gas Co. (Southern). The order denying Southern's petition[1] determined that the request for advance approval was premature, inappropriate and inconsistent with the nature of emergency actions contemplated under Section 2.68. The Commission also finds that the emergency storage service proposed herein is comparable to that arranged by Southern. Accordingly, the Commission's findings on the Southern Petition apply equally to the instant petition. As was stated in Southern (mimeo, p. 3):

> Our review of Southern's petition reveals that it consists essentially of two requests for advisory rulings. Southern requests first that we find that its proposed transaction satisfies the provisions of Section 2.68. Secondly, Southern requests that we rule in advance that the terms of the transaction are reasonable and prudent, and consequently that Southern will be authorized to recoup its associated costs. With respect to the first request, the Commission finds that this type of storage transaction is, in general, consistent with the provisions of Section 2.68 of the Commission's Regulations. Furthermore, the Commission finds that the storage transaction proposed here does comply with the parameters of Section 2.68. However, with respect to the second request, we find that its anticipatory and premature nature is inconsistent with the object of Section 2.68 and prevents us from giving an advisory ruling of the reasonableness and prudence of the specific terms and conditions of the proposed transaction, and consequently on the qualifications for cost recovery through the PGA.

For the reasons stated above, the instant petition shall be denied. The Commission shall not rule on the reasonableness and prudence of emergency arrangements prior to the time emergency supplies are acquired.

On April 21, 1977, Northern filed a general rate increase application in the instant docket. The increased rates, which became effective with minor modification on October 27, 1977,[2] are predicted on a cost of service which includes costs associated with the N-I Gas emergency storage agreement and related transportation costs. The inclusion of these costs is inconsistent with the present order denying Northern's petition and must be eliminated. Northern shall therefore be required to file revised rates in Docket No. RP77-56 reflecting elimination of costs disallowed by this order, and to refund all amounts collected in excess of the revised rates. Northern shall also be directed to revise its PGA rates filed on October 26, 1977, to eliminate all costs associated with the N-I Gas transaction.

This order shall not affect Northern's right to file for and receive rate treatment for the emergency transaction with N-I Gas if such filing is properly made and supported nor shall this order be construed to contain any Commission expression on the issue of the reasonableness and prudence of the N-I Gas transaction.

Public notice of the petition was issued on October 18, 1977, providing for the filing of comments or petitions

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[1] Issued November 29, 1977, in Docket No. RP77-136-1.

[2] Letter order issued November 30, 1977, granting motion to place rates into effect after suspension period.

to intervene on or before October 28, 1977. A timely petition to intervene was filed by Wisconsin Gas Co. Untimely petitions to intervene were filed by Northern States Power Company (Minnesota), Northern States Power Company (Wisconsin), North Central Public Service Co. and North Central Public Service Corp. Comments on the petition for emergency relief were filed by the Northern Distributor Group and Wisconsin Power and Light Co.

None of petitions or comments requested that a hearing be held on the issues raised by the Northern petition. All of the petitioners to intervene have demonstrated an interest in the proceeding and their participation may be in the public interest. The petitions shall accordingly be granted.

The Commission orders: (A) Northern's petition for emergency relief is denied.

(B) Within 15 days of the date of this order Northern shall file revised rates to be effective October 27, 1977, which reflect elimination of all costs of the N-I Gas transaction. Northern shall also submit supplemental cost and revenue data showing the elimination of such costs from its cost of service.

(C) Within 15 days following Commission acceptance of the revised rates ordered by paragraph (B) above, Northern shall refund to its customers all amounts collected in excess of the revised rates together with interest at the rate of 9 percent per annum. Within 10 days thereafter, Northern shall file a report of such refunds and interest with the Commission.

(D) Within 15 days of the date of this order Northern shall revise its pending PGA rate filing, originally tendered October 26, 1977, to reflect elimination of the costs of the N-I Gas transaction.

(E) The above-named petitioners to intervene are permitted to intervene in this proceeding subject to the Commission's rules and regulations: Provided, however, that the participation of the interveners shall be limited to matters affecting asserted rights and interests specifically set forth in the petitions to intervene; and Provided, further, that the admission of such intervenors shall not be construed as recognition that they might be aggrieved by any order entered in this proceeding.

(F) The Secretary shall cause prompt publication of this order in the FEDERAL REGISTER.

By the Commission.

LOIS D. CASHELL,
Acting Secretary.

[FR Doc. 77-35513 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. RI78-8]

R. C. SLACK ET AL.

Petition for Special Relief

DECEMBER 2, 1977.

Take notice that on November 8, 1977, R. C. Slack (Petitioner), P.O. Drawer 820, Pecos, Tex. 79772, filed in Docket No. RI78-8, on behalf of himself and Clay Slack, a petition for special relief pursuant to section 2.76 of the Commission's Statements of General Policy and Interpretation.

Petitioner states that he operates eighteen wells on the Brown and Altman Leases, Winkler County, Tex., and is presently selling gas from these wells to West Texas Gathering Co. at a rate of $0.180040 cents per Mcf. Petitoner states that these wells are "old and almost depleted" and that additional investment and deeper drilling will be required to justify continued production. Petitioner proposes to clean out and deepen each well approximately 100 feet, at a cost of $240,300. Petitioner seeks Commission authorization to collect a rate of $1.70 from West Texas Gathering Co.

Any person desiring to be heard or to make any protest with reference to said petition should on or before December 23, 1977, file with the Federal Energy Regulatory Commission, Washington, D.C. 20426, a petition to intervene or a protest in accordance with the requirements of the Commission's Rules of Practice and Procedure (18 CFR 1.8 or 1.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to make the protestants parties to the proceeding. Any party wishing to become a party to a proceeding, or to participate as a party in any hearing therein, must file a petition to intervene in accordance with the Commission's Rules.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35505 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. RP73-77 (PGA78-2), (DCA78-1)]

Federal Energy Regulatory Commission

ALABAMA-TENNESSEE NATURAL GAS CO.

Proposed PGA Rate Adjustment

DECEMBER 6, 1977.

Take notice that on November 15, 1977, Alabama-Tennessee Natural Gas Co. (Alabama-Tennessee), P.O. Box 918, Florence, Ala. 35630, tendered for filing as part of its FPC Gas Tariff, Third Revised Volume No. 1, Twenty-Fourth Revised Sheet No. 3-A, superseding Twenty-Third Revised Sheet No. 3-A. This revised tariff sheet is proposed to become effective as of January 1, 1978.

Alabama-Tennessee states that the sole purpose of such revised tariff sheet is to adjust its rates pursuant to the PGA provisions of section 20 and section 22 of the General Terms and Conditions of its tariff to reflect changed rates proposed to become effective January 1, 1978, by its sole supplier, Tennessee Gas Pipeline Co., a division of Tenneco Inc.

The revised tariff sheet provides for the following rates:

Rate schedule	Rate
G-1:	
Demand	$1.81
Commodity	125.19¢
SG-1:	
Commodity	138.41¢
I-1:	
Commodity	131.14¢

Alabama-Tennessee states that copies of the filing have been mailed to all of its jurisdictional customers and affected State regulatory Commissions.

Any person desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with sections 1.8 and 1.10 of the Commission's Rules of Practice and Procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 19, 1977. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this filing are on file with the Commission and are available for public inspection.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35524 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. ID 1816]

A. JOSEPH DOWD

Supplemental Application

DECEMBER 6, 1977.

Take notice that A. Joseph Dowd on October 31, 1977 tendered for filing a Supplement Application Pursuant to section 305(b) of the Federal Power Act for authority to hold the following positions:

Name of corporation and position

Appalachian Power Co., vice president and director.
Indiana & Michigan Electric Co., vice president.

Kentucky Power Co., vice president.
Kingsport Power Co., vice president and director.
Michigan Power Co., vice president.
Ohio Power Co., vice president and director.
Wheeling Electric Co., vice president.

The Applicant indicates that he was elected to the above positions on September 22, 1977, effective October 1, 1977. The Applicant indicates that he presently holds the following positions:

Name of corporation and position

Cardinal Operating Co., secretary.
Central Appalachian Coal Co., director.
Franklin Real Estate Co., director.
Kentucky Power Co., director.
Michigan Electric Power Co., director and secretary.
Michigan Gas Exploration Co., vice president.
Southern Appalachian Coal Co., director.
West Virginia Power Co., director.
Windsor Power House Coal Co., director.

Any person desiring to be heard or to protest said application should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with sections 1.8 and 1.10 of the Commission's Rules of Practice and Procedure (18 CFR 1.8 and 1.10). All such petitions or protests should be filed on or before December 23, 1977. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this application are on file with the Commission and are available for public inspection.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35523 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket Nos. RP71-15 and RP75-28 (PGA78-2), (PGA78-1)]

EAST TENNESSEE NATURAL GAS CO.

Rate Filing Pursuant To Tariff Rate Adjustment Provisions

DECEMBER 6, 1977.

Take notice that on November 15, 1977, East Tennessee Natural Gas Co. (East Tennessee) tendered for filing Substitute Twenty-Fourth Revised Sheet No. 4 to Sixth Revised Volume No. 1 of its FERC Gas Tariff to be effective January 1, 1978.

East Tennessee states that the sole purpose of this revised tariff sheet is: (1) To adjust East Tennessee's rates pursuant to the PGA provision in section 22 of the General Terms and Conditions to reflect increased purchased gas costs resulting from a rate increase filed November 15, 1977, by its sole long-term supplier, Tennessee Gas Pipeline Co., a division of Tenneco Inc. (Tennessee); (2) to adjust East Tennessee's rates for a negative Commodity Surcharge and a positive Demand Surcharge for Amortizing the Unrecovered Purchased Gas Cost Account determined in accord with section 22.3 of the General Terms and Conditions; and (3) to adjust East Tennessee's rates pursuant to section 24.8 of the General Terms and Conditions to recover curtailment credits given its customers.

East Tennessee states that copies of the filing have been mailed to all of its jurisdictional customers and affected state regulatory commissions.

Any person desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with sections 1.8 and 1.10 of the Commission's Rules of Practice and Procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 19, 1977. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene; provided, however, that any person who has previously filed a petition to intervene in this proceeding is not required to file a further petition. Copies of this filing are on file with the Commission and are available for public inspection.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35525 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. ER77-522]

KANSAS CITY POWER & LIGHT CO.

Order Granting Intervention

DECEMBER 6, 1977.

On October 1, 1977, pursuant to the provisions of the Department of Energy Organization Act (DOE Act), Pub. L. 95-91, 91 Stat. 565 (August 4, 1977), and Executive Order No. 12009, 42 FR 46267 (September 15, 1977), the Federal Power Commission ceased to exist and its functions and regulatory responsibilities were transferred to the Secretary and the Federal Energy Regulatory Commission (FERC), which, as an independent commission within the Department of Energy, was activated on October 1, 1977.

The "savings provisions" of section 705(b) of the DOE Act provide that proceedings pending before the FPC on the date the DOE Act takes effect shall not be affected and that orders shall issued in such proceedings as if the DOE Act had not been enacted. All such proceedings shall be continued and further actions shall be taken by the appropriate component of DOE now responsible for the function under the DOE Act and regulations promulgated thereunder. The functions which are the subject of these proceedings were specifically transferred to the FERC by section 402(a)(1) of the DOE Act.

The joint regulation adopted on October 1, 1977, by the Secretary and the FERC entitled "Transfer of Proceedings to the Secretary of Energy and the FERC," 10 CFR ——, provided that this proceeding would be continued before the FERC. The FERC takes action in this proceeding in accordance with the above mentioned authorities.

On October 21, 1977, the State Corporation Commission of the State of Kansas (Petitioner), filed a Petition to Intervene in the above-captioned proceeding now set for formal hearing. Public notice of the original filing in this proceeding was given on August 10, 1977, with protests or petitions to intervene to be filed on or before August 17, 1977.

Petitioner states that, in order to properly discharge its duties with reference to the generation, conservation, transmission, distribution, use and prevention of waste of electricity in the State of Kansas, it should be made a party to this proceeding. Petitioner also states that the Applicant is basing its proposed rate increase on a projected test year, which Petitioner states is a "novel method of determining rates."

On August 1, 1977, the Federal Power Commission issued an order accepting for filing and suspending proposed increased rates in this proceeding until January 31, 1978, when they shall become effective subject to refund. On September 19, 1977, the Federal Power Commission issued an order granting interventions, denying the Intervenors' Motion for Summary Judgment, and scheduling an initial conference for January 17, 1978.

The Commission finds: (1) Participation by the State Corporation Commission of the State of Kansas in this proceeding is in the public interest.

(2) Good cause exists to grant the untimely filed petition to intervene in this proceeding.

The Commission orders: (A) The State Corporation Commission of the State of Kansas is hereby permitted to intervene in these proceedings subject to the rules and regulations of the Commission; *Provided, however,* That participation by the State Corporation Commission shall be limited to matters affecting certain rights and interests concerning the filing which is involved in this above-docketed proceed-

ing; and *Provided, further,* that the admission of the State Corporation Commission shall not be construed as recognition by the Commission that the intervenor might be aggrieved because of any order or orders of the Commission entered in this proceeding.

(B) The late intervention granted herein shall not be the basis for delaying or deferring any procedural schedules heretofore established for the orderly and expeditious disposition of these proceedings.

(C) The Secretary shall cause prompt publication of this order to be made in the FEDERAL REGISTER.

By the Commission.

LOIS D. CASHELL,
Acting Secretary.

[FR Doc. 77-35521 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. CP77-424]

MIDWEST NATURAL GAS CORP. AND TEXAS GAS TRANSMISSION CORP.

Order Directing Physical Connection of Facilities and Delivery of Natural Gas

DECEMBER 6, 1977.

On October 1, 1977, pursuant to the provisions of the Department of Energy Organization Act (DOE Act), Pub. L. 95-91, 91 Stat. 565 (August 4, 1977), and Executive Order No. 12009, 42 FR 46267 (September 15, 1977), the Federal Power Commission ceased to exist and its functions and regulatory responsibilities were transferred to the Secretary and the Federal Energy Regulatory Commission (FERC), which, as an independent commission within the Department of Energy, was activated on October 1, 1977.

The "savings provision" of section 705(b) of the DOE Act provide that proceedings pending before the FPC on the date the DOE Act takes effect shall not be affected and that orders shall be issued in such proceedings as if the DOE Act had not been enacted. All such proceedings shall be continued and further actions shall be taken by the appropriate component of DOE now responsible for the function under the DOE Act and regulations promulgated thereunder. The functions which are the subject of these proceedings were specifically transferred to the FERC by sections 402(a) (1) or (2) of the DOE Act.

The joint regulation adopted on October 1, 1977, by the Secretary and the FERC entitled "Transfer of Proceedings to the Secretary of Energy and the FERC," 10 CFR ——, provided that this proceeding would be continued before the FERC. The FERC takes action in this proceeding in accordance with the above-mentioned authorities.

On June 11, 1977, Midwest Natural Gas Corp. (Applicant), filed in Docket No. CP77-424 an application pursuant to section 7(a) of the Natural Gas Act for an order of the Federal Power Commission directing Texas Gas Transmission Corp. (Respondent), to establish physical connection of its natural gas transmission facilities with the proposed facilities of Applicant at a point near Edwardsport, Ind., and to use the interconncetion as an additional delivery point for previously authorized contract volumes of natural gas, all as more fully set forth in the application in this proceeding.

Applicant presently distributes natural gas purchased from Respondent in the communities of Salem, Scottsburg, Austin, and Crothersville, Ind. (hereinafter referred to as the Salem service area), which communities have total annual requirements of 1,063,980 Mcf, and peak day requirements of 8,575 Mcf. To serve these requirements, Applicant has a peak day entitlement from Respondent of 8,562 Mcf, a summer season entitlement of 449,832 Mcf, and a winter season entitlement of 808,882 Mcf. In addition, Applicant owns and operates a peak shaving plant in Scottsburg with peak day capacity of 2,000 to 2,400 Mcf/d.

Applicant also owns and operates distribution facilities in the communities of Plainville, Odon, Elnora, and Newberry, Ind. (hereinafter referred to as the Plainville service area), which communities have total annual requirements of 187,350 Mcf and peak day requirements of 1,216 Mcf. At present, the Plainville service area is served exclusively with natural gas produced from local wells; however, Applicant indicates that the wells are becoming depleted and that new sources of supply are needed to meet the area's requirements.

In ord er to avoid cutoffs of service in the Plainville area due to the depletion of local gas wells, Applicant seeks to divert to the area volumes of entitlement gas presently being delivered to the Salem service area. It is indicated that the volumes to be diverted are not needed in the Salem service area due to the operation of Applicant's peak shaving plant. In order to receive deliveries of entitlement gas in the Plainville area, Applicant proposes to construct approximately 8.25 miles of 3-inch transmission line to connect its distribution facilities in the Plainville area to Respondent's transmission facilities. Applicant requests that the Commission issue an order directing Respondent to establish a physical interconnection of its natural gas transportation system with the proposed facilities of Applicant, and to use the interconnection as an additional delivery point for previously authorized contract volumes of natural gas.

Applicant states that it will pay for the construction and installation of all facilities required to effectuate the operation of the proposed additional delivery point. The total estimated cost of Applicant's proposed facilities is $232,000, which cost will be financed from funds on hand.

Applicant requests no increase in its summer and winter season entitlements from Respondent, nor any increae in its peak day allocation. In addition, Applicant states that new customers will not be added in the Plainville service area, and that only high priority uses will be served.

Respondent's answer of August 1, 1977, advises that it does not oppose the grant of the instant application. After due notice of the application by publication in the FEDERAL REGISTER on June 30, 1977 (42 FR 33371), no petition to intervene, notice of intervention, or protest to the granting of the application has been filed.

We find that Respondent should establish a physical interconnection of its natural gas transportation system with the proposed facilities of Applicant and should use the interconnection for the delivery of previously authorized contract volumes of natural gas to the Plainville service area. By diverting surplus entitlement gas from the Salem service area to the Plainville service area, Applicant can prevent loss of service to high priority customers in the Plainville area due to depletion of the local gas wells. In addition, low priority interruptible gas can be diverted to high priority uses under the Applicant is permitted to serve only high priority uses under this transaction.

In view of the fact that Applicant is not requesting an increase in its current entitlement from Respondent, establishment of the proposed additional delivery point will not place an undue burden upon Respondent, nor impair its ability to render adequate service to its existing customers. Nevertheless, Applicant should be required to pay for the construction and installation of all facilities required to effectuate the operation of the proposed additional delivery point.

Due to the minor nature of the proposed facilities, granting of the subject application by the Commission does not constitute a major Federal action significantly affecting the quality of the human environment.

The Commission finds: (1) Respondent, Texas Gas Transmission Corp., a Delaware corporation having its principal place of business in Owensboro, Ky., is a "natural-gas company" within the meaning of the Natural Gas Act as heretofore found by the Commission in its order of April 2, 1948, in Docket No. G-855 (7 FPC 223).

(2) Applicant, Midwest Natural Gas Corp., is legally authorized to engage in the local distribution of natural gas to the public within the meaning of section 7(a) of the Natural Gas Act.

(3) It is necessary and desirable in the public interest to direct Respondent to establish physical connection of its transmission facilities with the facilities proposed to be constructed and operated by Applicant and to use the interconnection as an additional delivery point for previously authorized contract volumes of natural gas.

(4) The requirement that Respondent serve Applicant, as requested, will not place an undue burden upon it nor impair its ability to render adequate service to its existing customers.

The Commission orders: (A) Respondent, Texas Gas Transmission Corp., is directed to establish physical connection of its natural gas transmission facilities with the facilities to be constructed by Applicant and to use the interconnection as an additional delivery point for previously authorized contract volumes of natural gas, as hereinbefore described and as more fully described in the application in this proceeding.

(B) Respondent shall report to the Commission in writing the date of commencement of deliveries to Applicant within 10 days thereof and shall comply with all applicable Commission regulations under the Natural Gas Act and particularly the general terms and conditions set forth in Part 154.

(C) Applicant, Midwest Natural Gas Corp., shall be prepared to receive natural gas from Respondent for distribution in the Plainville service area within 6 months from the date of issuance of this order.

(D) The order issued in paragraph (A) above is conditioned further as follows:

(1) Applicant shall serve only high priority uses with the authorized gas.

(2) Applicant shall pay for the construction and installation of all required connecting facilities.

(3) Applicant shall notify the Commission upon receipt of all necessary State and local authorizations to render its proposed natural gas service within thirty (30) days thereafter.

By the Commission.

LOIS D. CASHELL,
Acting Secretary.

[FR Doc. 77-35522 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket Nos. CP75-140, CP75-83-2]

PACIFIC ALASKA LNG CO. AND WESTERN LNG TERMINAL ASSOCIATES

Petition for a Declaratory Order

DECEMBER 5, 1977.

On October 1, 1977, pursuant to the provisions of the Department of Energy Organization Act (DOE Act), Pub. L. 95-91, 91 Stat. 565 (August 4, 1977), and Executive Order No. 12009, 42 FR 46267 (September 15, 1977), the Federal Power Commission (FPC) ceased to exist and its functions and regulatory responsibilities were transferred to the Secretary of Energy and the Federal Energy Regulatory Commission (FERC) which, as an independent commission within the Department of Energy, was activated on October 1, 1977.

Take notice that on November 11, 1977, the Hollister Ranch Owners' Association (Hollister) and the Santa Barbara Citizens for Environmental Defense (Santa Barbara Citizens) filed with the FERC in Docket Nos. CP75-140 and CP75-83-2 a petition,[1] pursuant to section 1.7 of the FERC's rules of practice and procedure (18 CFR 1.7) for an order declaring that:

(1) The combined terminal facility which the Applicants in the instant dockets now plan to construct at Point Conception, Calif., to receive both the LNG proposed for delivery from southern Alaska in this proceeding and the LNG proposed for importation from the Republic of Indonesia in the *Pacific Indonesia* case now pending before the Economic Regulatory Administration, requires certification by the FERC pursuant to section 7 of the Natural Gas Act; and

(2) All transportation and sales for resale of the resulting commingled Alaskan/Indonesian gas stream must be regulated by the FERC pursuant to sections 4 and 7 of the Natural Gas Act.

It is asserted that prompt issuance of the requested order is required by the public interest in order to resolve present uncertainty as to the extent of the FERC's jurisdiction vis-a-vis that of the Secretary of Energy over the instant case and the related Pacific Indonesia proceeding. Petitioners' proposals are more fully set forth in the subject petition which is on file with the FERC and open to public inspection.

Petitioners assert that Applicants in these dockets seek certificate authorization under Section 7 of the Natural Gas Act (1) to construct and operate a natural gas liquefaction facility on the southern coast of Alaska; (2) to transport the resulting liquefied natural gas (LNG) in interstate commerce from Alaska to California; (3) to construct and operate terminal, storage, regasification, and related behind-the-plant facilities to receive the LNG on the California coast; and (4) to sell the resulting natural gas for resale in California and that the applications originally filed in said dockets propose that separate terminal and related facilities be constructed for this project alone at Los Angeles Harbor. It is further asserted that in addition to this project, the same Applicants are currently sponsoring another proposal, known as the Pacific Indonesia LNG project, to deliver LNG from Indonesia to California and that said Applicants originally proposed that a separate terminal facility be constructed at Oxnard, Calif., to receive the Indonesian LNG.

Petitioners state that in the Pacific Indonesia project in FPC Docket No. CP74-160, et al., the Presiding Administrative Law Judge approved the import, the proposed Oxnard terminal facilities and the subsequent sales within California and that the sole basis of FPC jurisdiction over the import and the related stateside facilities and sales was section 3 of the Natural Gas Act. It is further stated that the Judge found that no aspect of the project required certification under section 7 of the Natural Gas Act. Petitioners assert that subsequent to the Judge's decision, the California State legislature passed a bill regarding LNG terminal siting and that the bill requires siting in "remote" locations and, on that basis, purports to exclude Oxnard as a site. It is further asserted that as a result of this legislation, Applicants in the PacIndonesia proceeding requested the FPC approve Point Conception, as well as Oxnard, as a terminal location for that project.

Petitioners state that on October 1, 1977, prior to any FPC action in the PacIndonesia proceeding, the Department of Energy Organization Act went into effect and, among other things, the FPC's jurisdiction under sections 4 and 7 were transferred to the FERC and authority to regulate imports and exports of natural gas under section 3 of the Natural Gas Act was transferred to the Secretary of Energy. Petitioners indicate that by transferring to the Secretary of Energy the authority to administer section 3, it appeared that the Secretary, rather than the FERC, had thereby been invested with jurisdiction over the entire PacIndonesia proceeding.

Petitioners allege that it has become apparent that as a result of California's LNG terminal siting legislation, the Applicants in the subject dockets have completely abandoned their original plans to construct separate terminals for their Alaskan and Indonesia LNG projects and that, instead, they now propose to construct a joint PacAlaska/PacIndonesia terminal at Point Conception to receive both the Alaskan and the Indonesian LNG.[2]

Petitioners allege that the transportation of LNG from Alaska to California, as proposed, obviously constitutes the transportation of natural gas in in-

[1] Said petition was filed by counsel, McHenry & Staffier, 1140 Connecticut Avenue NW., Washington, D.C. 20036.

[2] On November 15, 1977, Western LNG Terminal Associates filed an amendment to its applications in Docket Nos. CP75-83 and CP75-83-2 for such a proposal.

terstate commerce for purposes of the Natural Gas Act and that it follows that the Alaskan liquefaction plant and the California terminal and related facilities for this project are facilities which would be used in the transportation of natural gas in interstate commerce and which, therefore, must be certificated under section 7 of the Natural Gas Act. It is further alleged that the transportation of the LNG and the subsequent sales for resale of the resulting natural gas would require section 7 certification and that these certification requirements are mandatory under the Natural Gas Act and cannot be waived by the FERC.

Petitioners assert that the jurisdictional posture of the PacIndonesia project, as originaly proposed, was quite different from that now proposed and that because a separate terminal was planned and all of the imported LNG was intended for consumption within the state of importation, neither the transportation nor the subsequent sales were within interstate commerce for purposes of the Natural Gas Act. It is aserted, therefore, as the Judge found, that no aspect of that project required certification under section 7 and that the FPC jurisdiction to regulate the proposed stateside terminal facilities and sales stemmed solely from its power to condition PacIndonesia's import authorization under section 3 of the Natural Gas Act.

Petitioners state that the new proposal to construct a joint PacAlaska/PacIndonesia terminal at Point Conception has substantially altered this jurisdictional framework. It is asserted that interstate jurisdictional gas from Alaska and noninterstate nonjurisdictional gas from Indonesia would obviously be commingled at the inlet flange, prior to entry into the combined facility. It is alleged, therefore, that under a long line of FPC and judicial decisions concerning the commingling of interstate and non-interstate gas (1) the entire joint facility requires certification under section 7 of the Natural Gas Act and (2) all transportation and sales for resale of the commingled gas stream must be regulated under sections 4 and 7 of the Act. It is asserted that as a result of the Applicants' abandonment of their original plan to construct separate terminals for these two LNG projects, the facility which would receive the Indonesian LNG must be certificated under section 7 and all stateside transportation and sales of the Indonesian gas must be directly regulated under sales of the Indonesian gas must be directly regulated under sections 4 and 7 of the Natural Gas Act. Petitioners allege that this means that jurisdiction over these same matters cannot be attached through section 3 as a condition to PacIndonesia's import authorization because section 3 authorizations can only be so conditioned if the facilities needed to receive imported LNG and the transportation and sale of the resulting natural gas would not otherwise be subject to direct regulation under Sections 4 and 7 of the Natural Gas Act. Petitioners assert that it follows that the FERC, the agency which has the authority to administer sections 4 and 7, has exclusive jurisdiction over the joint terminal and subsequent transportation and sales and that the Economic Regulatory Administration has no jurisdiction over these matters because its authority is limited to the administration of section 3.

Petitioners assert that in *FPC* v. *Louisiana Power and Light Company*, 406 U.S. 621 (1972), the Supreme Court held that the FPC had primary jurisdiction to determine its own jurisdiction and must, therefore, have "the first word" in any jurisdictional dispute arising under the Natural Gas Act. Since the question presented herein concerns the scope of section 7 of the Natural Gas Act and since the FERC has the exclusive authority to administer section 7, it follows that the FERC, and not the Secretary of Energy or the Administrator of the Economic Regulatory Administration, must resolve the question in the first instance, it is asserted.

Accordingly, Petitioners request that the FERC issue an order declaring that the joint PacAlaska/PacIndonesia terminal facility now proposed by the Applicants for construction at Point Conception, Calif., and all transportation and sales for resale of the resulting commingled Alaskan/Indonesian gas stream, must be regulated by the FERC under sections 4 and 7 of the Natural Gas Act.

Any person desiring to be heard or to make any protest with reference to said petition should on or before December 27, 1977, file with the Federal Energy Regulatory Commission, Washington, D.C. 20426, a petition to intervene or a protest in accordance with the requirements of the Commission's rules of practice and procedure (18 CFR 1.8 or 1.10) and the regulations under the Natural Gas Act (18 CFR 157.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken, but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party to a proceeding or to participate as a party in any hearing therein must file a petition to intervene in accordance with the Commission's rules. Persons having heretofore filed in these dockets need not do so again.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35515 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. RP73-48 (PGA78-1)]

PEOPLES NATURAL GAS DIVISION OF NORTHERN NATURAL GAS CO.

Rate Change Pursuant To Purchased Gas Cost Adjustment Provision

DECEMBER 5, 1977.

Take notice that Peoples Natural Gas Division of Northern Natural Gas Co. on November 14, 1977, tendered for filing Eighteenth Revised Sheet No. 3a of its FERC Gas Tariff, Original Volume No. 4. The proposed change to become effective December 1, 1977, would decrease the rate per Mcf to jurisdictional customers by $.59 cents per Mcf. This decrease reflects a decrease in rates by Colorado Interstate Gas Co., resulting from a Purchased Gas Adjustment filed by CIG in accordance with the provisions of its FERC Gas Tariff. Colorado Interstate is the pipeline supplier to Peoples for sales made under Volume No. 4.

Copies of the filing were served upon the Gas Utility Customers and Interstate Commissions.

Any person desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with sections 1.8 and 1.10 of the Commission's rules of practice and procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 13, 1977. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this filing are on file with the Commission and are available for public inspection.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35516 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. RP73-89 (PGA78-1)]

SEA ROBIN PIPELINE CO.

Filing of Revised Tariff Sheet

DECEMBER 6, 1977.

Take notice that on November 16, 1977, Sea Robin Pipeline Co. tendered for filing Fifteenth Revised Sheet No. 4 to its FPC Gas Tariff, Original Volume No. 1. This tariff sheet and supporting information are being filed 30 days before the effective date of January 1, 1978, pursuant to the Purchased Gas Costs Adjustment provisions set out in section 1 of Sea Robin's tariff.

Copies of the revised tariff sheet and supporting data are being mailed to Sea Robin's jurisdictional customers and interested state commission.

Any person desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with sections 1.8 and 1.10 of the Commission's rules of practice and procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 19, 1977. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this filing are on file with the Commission and are available for public inspection.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35526 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. ER78-43]

SOUTHERN CALIFORNIA EDISON CO.

Proposed Recision of Filing

DECEMBER 5, 1977

Take notice that on November 3, 1977, Southern California Edison Co. (Edison) tendered for filing a Notice of Cancellation of rate schedule FPC No. 87 (Edison-Pacific Interruptible Transmission Service Agreement), between Edison and Pacific Gas & Electric Co., which was assigned the above-noted docket number.

On November 14, 1977, Edison tendered for filing a letter dated November 10, 1977, requesting a recision of said Notice of Cancellation. Edison indicates that an amendment to the aforementioned agreement is now being negotiated, and that such amendment will extend the term of the agreement.

Edison indicates that copies of the letter filed November 14, 1977, have been sent to Pacific Gas & Electric Co. and the Public Utilities Commission of the State of California.

Any person desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with sections 1.8 and 1.10 of the Commission's rules of practice and procedure (18 CFR 1.8 and 1.10). All such petitions or protests should be filed on or before December 19, 1977. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this filing are on file with the Commission and are available for public inspection.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35517 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. RP73-64 (PGA78-1) (DCA78-1)]

SOUTHERN NATURAL GAS CO.

Proposed Changes in FPC Gas Tariff

DECEMBER 6, 1977.

Take notice that Southern Natural Gas Company (Southern), on November 16, 1977, tendered for filing proposed changes in its FPC Gas Tariff, Sixth Revised Volume No. 1, to become effective January 1, 1978. Such filing is pursuant to Section 17 (Purchased Gas Adjustment) of the General Terms and Conditions of Southern's FPC Gas Tariff, Sixth Revised Volume No. 1. The proposed changes would increase Southern's rates as a result of the following items:

(1) A Current Adjustment, pursuant to Section 17.3 of the General Terms and Conditions of Southern's FPC Gas Tariff, for an increase in cost of purchased gas to jurisdictional customers of $54,937,314,or 11.601¢ per Mcf. The increased cost of purchased gas is due primarily to increases from two pipeline suppliers.

(2) A Surcharge Adjustment for Purchased Gas Costs, pursuant to Section 17.4 of the General Terms and Conditions of Southern's FPC Gas Tariff, for Unrecovered Purchased Gas Costs of 10.344¢ per Mcf, which is a net increase of 3.642¢ per Mcf above the present Surcharge Adjustment. The total of Unrecovered Purchased Gas costs to be recovered is $25,314,793 and will be collected over the estimated sales for the six-month period commencing January 1, 1978.

(3) A Surcharge Adjustment for estimated Demand Charge Credits pursuant to Section 9.6(3) of the General Terms and Conditions of Southern's FPC Gas Tariff of 2.251¢ per Mcf.

The Surcharge Adjustment of 10.344¢ per Mcf reflects the elimination of the Opinion No. 770-A special surcharge rate of 3.165¢ per Mcf on the effective date proposed herein. Any overrecovery or underrecovery, as a result of the Opinion No. 770-A special surcharge rate, will be charged against the balance in Southern's Account No. 191, Unrecovered Purchased Gas Costs, and recovered over a subsequent six-month rate period.

The cost of gas supply also includes production from four new company-owned wells which qualify for Opinion No. 770-A rate treatment.

Copies of the filing are being served upon the company's jurisdictional customers and interested state commissions.

Any person desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with Sections 1.8 and 1.10 of the Commission's Rules of Practice and Procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 19, 1977. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this filing are on file with the Commission and are available for public inspection.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35527 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket Nos. RP73-114, RP74-24, and RP74-73 (PGA78-2), (DCA78-1), (R&D78-1)]

TENNESSEE GAS PIPELINE CO.

Proposed Rate Change Under Tariff Rate Adjustment Provisions

DECEMBER 6, 1977.

Take notice that on November 15, 1977, Tennessee Gas Pipeline Co., a Division of Tenneco Inc. (Tennessee), tendered for filing Twentieth Revised Sheet Nos. 12A and 12B to Ninth Revised Volume No. 1 of its FERC Gas Tariff to be effective on January 1, 1978.

Tennessee states that the purpose of the revised tariff sheets is to adjust Tennessee's rates pursuant to Articles XXIII, XXIV, and XXV of the General Terms and Conditions of its FERC Gas Tariff, consisting of a PGA rate adjustment, a rate adjustment to reflect curtailment demand charge credits and an R&D rate adjustment.

Tennessee states that copies of the filing have been mailed to all its jurisdictional customers and affected state regulatory commissions.

Any person desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with sections 1.8 and 1.10 of the Commission's rules of practice and procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 19, 1977. Protests

will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene; *Provided, however,* That any person who has previously filed a petition to intervene in this proceeding is not required to file a further petition. Copies of this filing are on file with the Commission and are available for public inspection.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35530 Filed 12-12-77; 8:45 am]

[6740-02]

Federal Energy Regulatory Commission

[Docket No. RP78-14]

TENNESSEE GAS PIPELINE CO.

Order Dismissing Petition for Advance Approval of Recovery of Costs of Emergency Purchase

DECEMBER 6, 1977.

Tennessee Gas Pipeline Co. (Tennessee), on November 8, 1977, petitioned for advance approval to flow-through its purchased gas adjustment (PGA), provision the costs of a 60-day purchase from IMC Exploration Co. (IMC), at an adjusted price of $2.18 per Mcf. Under a letter agreement dated October 25, 1977, Tennessee states that IMC will make available approximately 6,000 Mcf to 14,000 Mcf per day at Vermilion Parish, La. The price is $2 per Mcf adjusted from a base of 1,000 Btu's and to reimburse IMC for all production taxes. Expeditious action is requested so that IMC can commence construction of a gathering line to permit deliveries during this winter heating season. This request is being made because the sales price exceeds the national rates set by Opinion Nos. 770 and 770-A and thus Tennessee states that it must be assured that it will be able to recover these costs.

Tennessee states that it is currently experiencing a supply shortage as shown by its testimony in Docket No. RP77-86 on curtailment forecasts. Tennessee estimates that it will curtail 46 percent of Priority 2 over the winter heating season under normal weather. It is further submitted that the proposed price of $2 per Mcf or $2.18 per Mcf as adjusted is "reasonable and appropriate to permit advance approval". Tennessee notes that the Federal Power Commission's intrastate price surveys for the first and second quarter of 1977 show a maximum price in Louisiana of $2.1943 per Mcf, and states that this gas will not be available to the intrastate market at a lower price.

This petition should be dismissed as premature and inappropriate. This transaction appears to be within the general provisions of section 2.68 of the Commission's regulations which permits pipelines to respond to emergency conditions by making immediate 60-day purchases from nonjurisdictional pipelines or distributors without certificate authorization or prior notification to the Commission. Section 2.68 grants a very limited exemption from the prior certificate requirements of section 7 of the Natural Gas Act. Under this statement of policy the purchasing pipeline has the initial responsibility to determine whether an emergency exists and whether a transaction in response is prudent. This Commission will then review those determinations after termination of the short-term emergency transaction when the purchasing pipeline makes a rate filing to recoup its costs.

In fulfilling its obligations as a public utility Tennessee is free to use all of this Commission's emergency regulations including section 2.68. We encourage it to do so. Tennessee may make emergency purchases under terms that it deems prudent in the circumstances and then make the necessary reports after the fact. However, there is no provision for this petition for advance approval. It is inconsistent with the intent and purposes of section 2.68 and of section 7 of the Natural Gas Act. In dismissing this petition we are not expressing any views on the disposition of a rate filing by Tennessee to recover the costs of emergency purchases or on the prudency of this proposed transaction.

The Commission orders: (A) The petition filed by Tennessee in this docket on November 8, 1977, is hereby dismissed without prejudice.

(B) The Secretary shall cause prompt publication of this order in the FEDERAL REGISTER.

By the Commission.

LOIS D. CASHELL,
Acting Secretary.

[FR Doc. 77-35529 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. RP78-15]

TENNESSEE GAS PIPELINE CO.

Order Dismissing Petition for Advance Approval of Recovery of Costs of Emergency Purchase

DECEMBER 6, 1977.

On November 9, 1977, Tennessee Gas Pipeline Co. (Tennessee), petitioned for advance approval to flow through the purchased gas adjustment (PGA), provision in its tariff the costs of a sixty-day emergency purchase from Intrastate Gas Gathering Corp. (Intrastate), at $2.244 per MMBTU. Tennessee states that under a letter agreement dated November 8, 1977, 15,000 Mcf to 20,000 Mcf per day will be made available at Starr County, Tex., for a sixty-day period commencing upon receipt of "appropriate authorization" from the Commission, and that a contract has been executed providing for a limited-term sale of 35,000 Mcf to 40,000 Mcf per day from the termination of the sixty-day sale through December 31, 1978. Action by November 23, 1977, is requested because the letter agreement will terminate by its own terms if this petition for advance approval is not granted by that date.

Advance approval is being sought, according to Tennessee, because the price of $2.244 per MMBTU exceeds the national rate prescribed by Opinion Nos. 770 and 770-A and therefore, assurance of recovery of these costs is necessary. In support of the petition Tennessee points to its current supply shortage and to its testimony submitted in Docket No. RP77-86 that, in the event of normal weather, fifty-four percent of Priority 2 will be served over the winter heating season. Tennessee also submits that the proposed price is "reasonable and appropriate to permit advance approval" pointing to the Federal Power Commission's intrastate gas price surveys that showed maximum prices for Texas sales of $2.39 per Mcf and $2.24 per Mcf in the first and second quarters of 1977, respectively. It states that these volumes will not be available to the interstate market at lower prices.

This petition should be dismissed as premature and inappropriate. This transaction appears to be within the general provisions of section 2.68 of the Commission's regulations which permits pipelines to respond to emergency conditions by making immediate sixty-day purchases from non-jurisdictional pipelines or distributors without certificate authorization or prior notification to the Commission. Section 2.68 grants a very limited exemption from the prior certificate requirements of section 7 of the Natural Gas Act. Under this statement of policy the purchasing pipeline has the initial responsibility to determine whether an emergency exists and whether a transaction in response is prudent. This Commission will then review those determinations after termination of the short term emergency transaction when the purchasing pipeline makes a rate filing to recoup its costs.

In fulfilling its obligations as a public utility Tennessee is free to use all of this Commission's emergency regulations including section 2.68. We encourage it to do so. Tennessee may make emergency purchases under terms that it deems prudent in the circumstances and then make the necessary reports after the fact. However,

there is no provision for this petition for advance approval. It is inconsistent with the intent and purposes of section 2.68 and of section 7 of the Natural Gas Act. In dismissing this petition we are not expressing any views on the disposition of a rate filing by Tennessee to recover the costs of emergency purchases or on the prudency of this proposed transaction.

The Commission orders: (A) The petition filed by Tennessee in this docket on November 9, 1977, is hereby dismissed without prejudice.

(B) The Secretary shall cause prompt publication of this order in the FEDERAL REGISTER.

By the Commission.

LOIS D. CASHELL,
Acting Secretary.

[FR Doc. 77-35528 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. CP77-127]

TENNESSEE GAS PIPELINE CO. AND EAST TENNESSEE NATURAL GAS CO.

Petition To Amend

DECEMBER 5, 1977.

On October 1, 1977, pursuant to the provisions of the Department of Energy Organization Act (DOE Act), Pub. L. 95-91, 91 Stat. 565 (August 4, 1977), and Executive Order No. 12009, 42 FR 46267 (September 15, 1977), the Federal Power Commission ceased to exist and its functions and regulatory responsibilities were transferred to the Secretary of Energy and the Federal Energy Regulatory Commission (FERC), which, as an independent commission within the Department of Energy, was activated on October 1, 1977.

The "savings provisions" of section 705(b) of the DOE Act provided that proceedings pending before the FPC on the date the DOE Act takes effect shall not be affected and that orders shall be issued in such proceedings as if the DOE Act has not been enacted. All such proceedings shall be continued and further actions shall be taken by the appropriate component of DOE now responsible for the function under the DOE Act and regulations promulgated thereunder. The functions which are the subject of this proceeding were specifically transferred to the FERC by section 402(a)(1) of the DOE Act.

The joint regulation adopted on October 1, 1977, by the Secretary and the FERC entitled "Transfer of Proceedings to the Secretary of Energy and the FERC," 10 CFR ——, provided that this proceeding would be continued before the FERC. The FERC takes action in this proceeding in accordance with the above mentioned authorities.

Take notice that on November 25, 1977, Tennessee Gas Pipeline Co., a Division of Tenneco Inc. (Tennessee), P.O. Box 2511, Houston, Tex. 77001, and East Tennessee Natural Gas Co. (East Tennessee), P.O. Box 10245, Knoxville, Tenn. 37919, (Petitioners), filed in Docket No. CP77-127 a petition to amend the order of February 12, 1977, (57 FPC ——), issued by the Federal Power Commission (FPC), in the instant docket pursuant to section 7(c) of the Natural Gas Act and section 2.79 of the FERC's General Policy and Interpretations (18 CFR 2.79), so as to provide for the transportation of up to 750 Mcf of natural gas per day for Briggs, a Division of the Celotex Corp. (Briggs), which gas is to be produced by Texas General Petroleum Corp. and Bill Forney, Inc. (General, et al.), from the Tomball Field, Harris County, Tex., all as more fully set forth in the petition to amend on file with FERC and open to public inspection.

It is indicated that pursuant to the FPC order of February 12, 1977, in the instant docket Petitioners were granted authorization to transport up to 850 Mcf of natural gas per day for Briggs pursuant to a transportation contract dated November 15, 1976, among Petitioners and Briggs, which transportation contract is on file in Tennessee's FERC Gas Tariff, Sixth Revised Volume No. 2 as Rate Schedule T-38. It is further indicated that the subject gas was produced by ENERCO Exploration and Management Co. (ENERCO), from wells located in North Louisiana.

It is stated that the production from the ENERCO wells has declined to a rate of between 250 and 300 Mcf per day, and that as a result of this declining production and the fact that Briggs has been curtailed from 80 percent to 100 percent since December 1974 by Knoxville Utilities Board (KUB), Briggs has arranged to purchase gas, for the remainder of the term for which authorization herein has been granted, from General, et al.

By this petition, Petitioners request that the Commission amend the FPC order in the instant docket to provide for the receipt of gas from General, et al. It is stated that Petitioners and Briggs have entered into a transportation contract dated November 21, 1977, which contract supercedes the November 15, 1976, contract and provides for a different receipt point. It is indicated that pursuant to such contract Tennessee would receive gas for the account of Briggs at the interconnection of the facilities of Tennessee and those of General, et al. at Tennessee's Side Valve 21A-231 located in Harris County, Tex., and that Tennessee would redeliver such volumes to East Tennessee for the account of Briggs at Tennessee's existing Greenbrier Sales No. 2 Delivery Point to East Tennessee located in Robertson County, Tenn., pursuant to the certificate issued in the instant docket on February 12, 1977. It is stated that East Tennessee would further transport the gas so delivered to it by Tennessee and would deliver volumes to KUB for the account of Briggs, all in accordance with said authorization.

Tennessee requests FERC permission and approval to abandon the receipt of gas from ENERCO for the account of Briggs and requests that such abandonment authorization be made effective as of the date of which a currently existing operation imbalance is satisfied, pursuant to section 5 of the November 15, 1976, transportation contract, the magnitude of said imbalance is currently approximately 11,000 Mcf, it is indicate.

The application states that the initial price which Briggs would pay to General, et al., is $1.90 per million Btu's. The application further states that the subject gas is not available for resale in the interstate market.

It is stated that Briggs would pay Tennessee each month for transportation service: (1) A demand charge to be determined by multiplying $1.78 by the maximum daily quantity, less any demand charge credit provided therein, if applicable; and (2) a volume charge equal to 22.72 cents per Mcf multiplied by (a) the total of the volumes delivered during such month or the number of days in said month multiplied by 66⅔ percent of the maximum daily quantity, whichever is greater, less any applicable annual minimum bill credit as provided therein. Tennessee would retain, for fuel and use requirements, a volume of gas equal to 4.3 percent of the scheduled daily volume each day, it is indicate.

Any person desiring to be heard or to make any protest with reference to said petition to amend should on or before December 19, 1977, file with the Federal Energy Regulatory Commission, Washington, D.C. 20426, a petition to intervene or a protest in accordance with the requirements of the Commission's rules of practice and procedure (18 CFR 1.8 or 1.10), and the regulations under the Natural Gas Act (18 CFR 157.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party to a proceeding or to participate as a party in any hearing therein must file a petition to intervene in accordance with the Commission's rules.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35518 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. RP74-41 (PGA78-2), (DCA78-1)]

TEXAS EASTERN TRANSMISSION CORP.

Proposed changes in FPC Gas Tariff

DECEMBER 6, 1977.

Take notice that Texas Eastern Transmission Corp. on November 17, 1977, tendered for filing proposed changes in its FPC Gas Tariff, Fourth revised Volume No. 1, the following tariff sheets:

Thirty-sixth Revised Sheet No. 14
Thirty-sixth Revised Sheet No. 14A
Thirty-sixth Revised Sheet No. 14B
Thirty-sixth Revised Sheet No. 14C
Thirty-sixth Revised Sheet No. 14D
Alternate Thirty-sixth Revised Sheet No. 14
Alternate Thirty-sixth Revised Sheet No. 14A
Alternate Thirty-sixth Revised Sheet No. 14B
Alternate Thirty-sixth Revised Sheet No. 14C
Alternate Thirty-sixth Revised Sheet No. 14D.

These sheets are being issued pursuant to the Demand Charge Adjustment Commodity Surcharge provision and Purchased Gas Cost Adjustment provision contained in sections 12.4 and 23, respectively, of the General Terms and Conditions of Texas Eastern's FPC Gas Tariff, Fourth Revised Volume No. 1. The change in rates proposed reflects a cost of gas Adjustment, a Surcharge Adjustment, and a Demand Charge Adjustment Commodity Surcharge. The proposed effective date of the above tariff sheets is January 1, 1978.

In the Thirty-sixth Revised series of tariff sheets Texas Eastern proposes to recover through the PGA Surcharge Adjustment certain transportation costs that were incurred during the period August 31, 1977 through October 29, 1977. Such transportation charges were paid to Transcontinental Gas Pipe Line Corp. and Florida Gas Transmission Co. for the transportation of emergency gas purchased from Houston Pipe Line Co. during a period of severe curtailment of offshore supplies due to adverse weather conditions in the Gulf of Mexico.

In the event the Commission disallows such treatment of transportation costs, Texas Eastern is submitting an Alternate Thirty-sixth Revised series of tariff sheets which excludes those transportation costs.

Copies of the filing were served upon the company's jurisdictional customers and interested State commissions.

Any person desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with §§ 1.8 and 1.10 of the Commission's rules of practice and procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 19, 1977. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this filing are on file with the Commission and are available for public inspection.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35531 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. CP78-91]

TEXAS GAS TRANSMISSION CORP.

Application

DECEMBER 5, 1977.

Take notice that on November 16, 1977, Texas Gas Transmission Corp. (Applicant), P.O. Box 1160, Owensboro, Ky. 42301, filed in Docket No. CP78-91 an application pursuant to section 7(c) of the Natural Gas Act for a certificate of public convenience and necessity authorizing the continuation of existing transportation service for Louisiana Power & Light Co. (Louisiana Power), all as more fully set forth in the application on file with the Commission and open to public inspection.

Applicant indicates that it is obligated to transport, on an interruptible basis, up to 12,500 Mcf of natural gas per day for Louisiana Power pursuant to a transportation agreement dated September 15, 1969, between the two parties. It is indicated that Applicant would receive the volumes of gas at the tailgate of the Claiborne Gasoline plant and deliver the subject gas to Louisiana Power at the outlet of an existing meter station located near Sterlington, in Ouachita Parish, La. It is not anticipated that the volumes of natural gas to be transported by Applicant for Louisiana Power would exceed 2,000 Mcf per day in the future, it is stated.

Applicant states that the service for which it is seeking authorization herein is already being rendered, and that historically, it has treated the above-described transportation service as intrastate in nature and, therefore, not subject to the jurisdiction of the Commission. It is indicated that Applicant has undertaken a review of its activities in Louisiana which it has heretofore considered to be transactions in intrastate commerce for a determination as to whether or not such activities were, at this time, subject to the jurisdiction of the Commission, and that such review has not been completed. However, Applicant has concluded that the transportation service being rendered for Louisiana Power within the State of Louisiana may be subject to the jurisdiction of the Commission, it is said.

The application states that Louisiana Power would pay Applicant for the transportation service hereunder 2.25 cents per Mcf for each Mcf delivered by Applicant to Louisiana Power at the point of delivery.

Any person desiring to be heard or to make any protest with reference to said application should on or before December 27, 1977, file with the Federal Energy Regulatory Commission, Washington, D.C. 20426, a petition to intervene or a protest in accordance with the requirements of the Commission's rules of practice and procedure (18 CFR 1.8 or 1.10), and the Regulations under the Natural Gas Act (18 CFR 1.8 or 1.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party to a proceeding or to participate as a party in any hearing therein must file a petition to intervene in accordance with the Commission's rules.

Take further notice that, pursuant to the authority contained in and subject to the jurisdiction conferred upon the Federal Energy Regulatory Commission by sections 7 and 15 of the Natural Gas Act and the Commission's rules of practice and procedure, a hearing will be held without further notice before the Commission on this application if no petition to intervene is filed within the time required herein, if the Commission on its own review of the matter finds that a grant of the certificate is required by the public convenience and necessity. If a petition for leave to intervene is timely filed, or if the Commission on its own motion believes that a formal hearing is required, further notice of such hearing will be duly given.

Under the procedure herein provided for, unless otherwise advised, it will be unnecessary for Applicant to appear or be represented at the hearing.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35519 Filed 12-12-77; 8:45 am]

[6740-02]

[FERC Docket No. OR78-1]

TRANS ALASKA PIPELINE SYSTEM

Investigation and Suspension; Petition to Hold Concurrent Proceedings

DECEMBER 6, 1977.

Take notice that on November 16, 1977, the State of Alaska (Alaska)

filed a petition in Docket No. OR78-1 requesting the Federal Energy Regulatory Commission (FERC) to authorize that evidentiary hearings scheduled in the captioned proceeding be held concurrently with a related proceeding now before the Alaska Pipeline Commission (APC). The Petition is on file with the FERC and open to public inspection.

Alaska indicates that the proceeding scheduled to be held before the APC. In the Matter of "Setting An Initial Tariff for the Intrastate Transportation of Petroleum Over the Trans Alaska Pipeline System By Exxon, Sohio, ARCO and Union Alaska Pipe Line Companies, APC Docket Nos. P-77-8, P-77-9, P-77-10, and P-77-11 and the FERC proceeding in Docket No. OR78-1 involve numerous common questions of law and fact. Alaska states that issues common both to the FERC and APC proceedings include:

(a) The propriety of using a valuation rate base, original cost less depreciation rate base, or some other type of rate base;

(b) The original cost of Trans Alaska Pipeline System (TAPS) which should be allowed as prudently-invested, including the amount of interest during construction that should be capitalized;

(c) The proper rate of return to be applied to the rate base;

(d) The proper amount of operating expenses;

(e) The treatment of income taxes;

(f) The service life of TAPS;

(g) The legality of tariff rules and regulations.

Alaska alleges that if concurrent proceedings are held the litigation burden of the parties would be reduced and expeditious resolution of the issues in both proceedings would be encouraged. Alaska indicates that it is a party to both the FERC and APC proceedings. The only significant difference between the FERC and the APC investigations, it is stated, is that the former proceeding will establish a just and reasonable rate for the interstate shipment of crude oil over the entire 800 mile distance of the Trans Alaska Pipeline System while the APC investigation will establish a rate for the intrastate shipment of crude over the 469 miles between Prudhoe Bay to North Pole, Alaska, or for the entire 800 mile distance from Prudhoe Bay to Valdez.

Alaska states that the APC proceeding has been divided into two phases: The first phase is to begin January 4, 1978, the second phase will occur only if the APC is unable to hear the case jointly with the FERC. The subject matter of the first phase is confined, it is stated, to narrow issues relevant solely to intrastate tariffs.

Alaska emphasizes that it is not seeking consolidation of the proceedings. Rather, Alaska only requests concurrent taking of evidence. It is suggested that under the concurrent hearing procedure each commission would designate a presiding officer or officers who would jointly preside over the proceedings. Each officer would be fully empowered to make rulings governing the record in his or her commission's proceeding. Alaska believes that a very high percentage of the record developed in such concurrent hearing would be common to both agencies. Divergent rulings during the hearing, however, would be carefully identified and defined and each agency would have a separate record upon which it can base its final decision.

Alaska states that a copy of the instant petition was simultaneously filed with the APC. Alaska also states that it has been advised that the APC is willing to accept the Presiding Administrative Law Judge's procedural schedule established by ruling issued October 13, 1977, in Docket No. OR78-1 and that APC is agreeable to holding a concurrent hearing at FERC headquarters.

Any person desiring to be heard with reference to Alaska's petition should, on or before December 19, 1977, file comments with the FERC, 825 North Capitol Street, Washington, D.C. 20426. All comments filed with the FERC will be considered by it in determining the appropriate action to be taken but will not serve to make any person a party to the proceeding.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35532 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket No. RP72-133 (PGA78-1)]

UNITED GAS PIPE LINE CO.

Filing of Revised Tariff Sheet

DECEMBER 6, 1977.

Take notice that on November 16, 1977, United Gas Pipe Line Co. (United) tendered for filing Thirty-Ninth Revised Sheet No. 4 to its FPC Gas Tariff, First Revised Volume No. 1. This tariff sheet and supporting information are being filed 45 days before the effective date of January 1, 1978, pursuant to the Purchased Gas Cost Adjustment provisions set out in Section 19 of United's tariff.

Copies of the revised sheet and supporting data are being mailed to United's jurisdictional customers and interested state commissions.

Any person desiring to be heard or to protest said filing should file a petition to intervene or protest with the Federal Energy Regulatory Commission, 825 North Capitol Street NE., Washington, D.C. 20426, in accordance with §§ 1.8 and 1.10 of the Commission's Rules of Practice and Procedure (18 CFR 1.8, 1.10). All such petitions or protests should be filed on or before December 19, 1977. Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a petition to intervene. Copies of this filing are on file with the Commission and are available for public inspection.

KENNETH F. PLUMB,
Secretary.

[FR Doc. 77-35533 Filed 12-12-77; 8:45 am]

[6740-02]

[Docket Nos. CP75-83 and CP75-83-2]

WESTERN LNG TERMINAL CO. AND WESTERN LNG TERMINAL ASSOCIATES

Amendment to Applications

DECEMBER 5, 1977.

On October 1, 1977, pursuant to the provisions of the Department of energy Organization Act (DOE Act), Public Law 95-91, 91 Stat. 565 (August 4, 1977), and Executive Order No. 12009, 42 FR 46267 (September 15, 1977), the Federal Power Commission (FPC) ceased to exist and its functions and regulatory responsibilities were transferred to the Secretary of Energy and the Federal Energy Regulatory Commission (FERC) which, as an independent commission within the Department of Energy, was activated on October 1, 1977.

Take notice that on November 15, 1977, Western LNG Terminal Associates (Terminal Associates), P.O. Box 60043, Terminal Annex, Los Angeles, Calif. 90060, filed with the FERC in Docket Nos. CP75-83 and CP75-83-2 an amendment to its applications for certificates of public convenience and necessity filed in said dockets pursuant to Section 7(c) of the Natural Gas Act authorizing the construction and operation of necessary additional facilities at Point Conception, Calif., to receive and vaporize liquefied natural gas (LNG), all as more fully set forth in the amendment which is on file with the FERC and open to public inspection.

It is indicated that on September 16, 1977, the Liquefield Natural Gas Terminal Act of 1977 (California Act) was signed by the Governor of California and which, among other things, establishes specific density criteria for the selection of a site for an LNG terminal. Terminal Associates states that in its opinion its Los Angeles Harbor site, for which authorization is applied for in the subject dockets for the Pacific Alaska LNG project does not meet the California Act's density criteria and,

therefore, is unavailable as an LNG terminal site. Because of this, Terminal Associates asserts that it is filing the subject amendment to request certificate authorization for facilities to handle the Alaskan LNG volumes at Point conception. Terminal Associates states that on November 11, 1977, it filed with the Economic Regulatory Administration (ERA) an amendment to its pending applications before ERA requesting the necessary authorizations to construct and operate facilities near Point Conception to receive and regasify LNG to be imported from the Republic of Indonesia.

It is stated that on September 17, 1974, Western LNG Terminal Co. (Terminal Co.) filed with the FPC in Docket No. CP75-83 an application for conditioned certificate authorization to construct and operate facilities at three proposed locations in southern California; namely, Los Angeles Harbor, Oxnard and Point Conception, to receive, unload, store, and vaporize LNG and to construct pipeline facilities for the transportation of such vaporized LNG in interstate commerce. Terminal Co. has stated that it would perform a service only and would not own any of the LNG or revaporized gas and would not sell gas for resale but would transport natural gas in interstate commerce. It is indicated that Terminal Co. would make supplemental filings at the time agreements were entered into to provide terminal service showing specific facilities required, cost estimates, tariff, financing, and other pertinent data. It is stated that the FPC rejected Terminal Co.'s conditioned certificate approach since it would not have sufficient record evidence at the completion of the contemplated hearings to issue a certificate no matter how extensively such a certificate might be conditioned.

The following procedural steps are outlined in the subject amendment:

On September 18, 1974, Terminal Co. signed a letter agreement with Pacific Alaska LNG Co. (PacAlaska) to provide terminal services for PacAlaska's South Alaska LNG project. On November 11, 1974, PacAlaska filed an application with the FPC for authorization for said project in Docket No. CP75-140. On February 26, 1975, Terminal Co. entered into a definitive agreement to provide terminal service to PacAlaska at the proposed Los Angeles site located in Los Angeles Harbor. On March 3, 1975, Terminal Co. filed a supplement to its application in Docket No. CP75-83, which supplement, designated as Docket No. CP75-83-2, requested FPC authorization to construct and operate facilities at the Los Angeles Harbor site to receive, unload, store, and vaporize LNG in two phases. Terminal Co. concurrently filed its motion to consolidate the supplement with Docket No. CP75-140. The hearings in the PacAlaska proceeding are now in recess pending the filing of the instant amendment.

On February 27, 1975, Terminal Co. entered into a definitive agreement to provide terminal service to El Paso Alaska Co. at the proposed Point Conception site. On March 3, 1975, Terminal Co. filed a supplement to its application in Docket No. CP75-83, which supplement, designated as Docket No. CP75-83-1, requested authorization to construct and operate facilities at the Point Conception site to receive, unload, store, and vaporize LNG and to construct pipeline facilities for the transportation of vaporized LNG from the Point Conception site to designated points of delivery. Terminal Co. filed concurrently its motion to consolidate the supplement with El Paso Alaska's application in Docket No. CP75-96, et al. El Paso Alaska Co. later announced that it was withdrawing its proposal after said project had been rejected by the FPC in its Recommendation to the President and by the President in his Decision and Report to Congress on the Alaska Natural Gas Transportation System.

On January 27, 1976, a memorandum of understanding between Pacific Gas & Electric Co. (PG and E) and Pacific Lighting Corp. and its appropriate subsidiaries, including Terminal Co., was entered into relative to the financial arrangements concerning equal participation by PG and E in Pacific Lighting Corp.'s LNG projects. The memorandum of understanding included specifically an equal sharing in Terminal Co.'s projects. Pursuant to said agreement, PG and E through its subsidiary, Pacific Gas LNG Terminal Co., became a co-sponsor of the project pending in Docket No. CP75-83-2. An amendment to Terminal Co.'s applications reflecting the restructured projects was filed with the FPC.

Terminal Associates proposes the following additional facilities required at Point Conception Terminal for the South Alaskan LNG project:

1. General.—The construction and operation of facilities at the Point Conception site to regasify liquefied natural gas in two phases: in Phase I, facilities designed to accommodate an average rate of 200,000 Mcf per day and in Phase II, additional facilities designed to accommodate an additional base rate of 200,000 Mcf per day.

2. The Site.—Terminal Associates propose to use its LNG receiving marine terminal and vaporization plant to be located three miles east of Point Conception, Calif., proposed for the Pacific Indonesia volumes. The then existing facilities would be expanded to provide for the additional Pacific Alaska volumes in 200,000 Mcf per day increments.

3. Facilities.—At the Point Conception site, Terminal Associates proposes to utilize the marine facility, LNG transfer system, and storage tanks and to construct and operate additional vaporization facilities to regasify the Pacific Alaska volumes. Terminal Associates would construct and operate two additional 100,000 Mcf per day seawater vaporizers and associated seawater pumps and secondary LNG pumps for each 200,000 Mcf per day increment. These additional vaporizes and pumps would be added to the seawater and LNG send-out systems handling the Pacific Indonesia volumes.

The amendment indicates that the total additional incremental cost of the proposed facilities is estimated to be $24,250,000.

Terminal Associates states that on February 26, 1975, a definitive agreement for terminal service was entered into with PacAlaska which provides that Terminal Associates would receive, unload, store, and vaporize in Phase I up to an annual agreed quantity of 74,018,000 million Btu's equivalent of LNG and in Phase II an additional annual agreed quantity of 74,891,000 million Btu's equivalent of LNG. Further, it is stated that Terminal Associates would deliver during each contract year the volumes requested and designated by PacAlaska and that the delivery point would be at the tailgate of the regasification plant.

Any person desiring to be heard or to make any protest with reference to said amendment should on or before December 27, 1977, file with the Federal Energy Regulatory Commission, Washington, D.C. 20426, a petition to intervene or a protest in accordance with the requirements of the Commission's Rules of Practice and Procedure (18 CFR 1.8 or 1.10) and the Regulations under the Natural Gas Act (18 CFR 157.10). All protests filed with the Commission will be considered by it in determining the appropriate action to be taken but will not serve to make the protestants parties to the proceeding. Any person wishing to become a party to a proceeding or to participate as a party in any hearing therein must file a petition to intervene in accordance with the Commission's Rules. Persons having heretofore filed in these dockets need not do so again.

Kenneth F. Plumb,
Secretary.

[FR Doc. 77-35520 Filed 12-12-77; 8:45 am]

FEDERAL COMMUNICATIONS COMMISSION

CANADIAN STANDARD BROADCAST STATIONS

Notification List

List of new stations, proposed changes in existing stations, deletions, and corrections in assignments of Canadian standard broadcast stations modifying the assignments of Canadian broadcast stations contained in the Appendix to the Recommendations of the North American Regional Broadcasting Agreement Engineering Meeting, January 30, 1941.

Canadian List No. 368

November 9, 1977.

Call letters	Location	Power, kW	Antenna	Schedule	Class	Antenna height (feet)	Ground system		Proposed date of commencement of operation
							Number of radials	Length (feet)	
		560 kHz							
CHCM [1]	Marystown, Nfld., N. 47°09'33", W. 55°14'37".	10D/*5N*	DA-N, ND-D-180.5.	U	III				E.I.O. Nov. 9, 1978
		560 kHz							
CFOS [2]	Owen Sound, Ontario, N. 44°32'40", W. 80°54'08".	*5D*/1N	DA-2	U	III				Do.
		570 kHz							
CHYM [4]	Kitchener, Ontario, N. 43°17'25", W. 80°21'10".	*10*	DA-1	U	III				Do.
		620 kHz							
(NEW) [4]	Sudbury, Ontario, N. 46°26'*15*", W. *81°10'45*".	*10*	DA-1	U	III				Do.
		630 kHz							
CHED [3]	Edmonton, Alberta, N. 53°23'58", W. 113°23'*46*".	50	DA-2	U	III				
		920 kHz							
CJCH [4]	Halifax, Nova Scotia, N. 44°38'10", W. 63°40'22".	25	DA-N, ND-D-185.	U	III				
		1060 kHz							
CFCN [7]	Calgary, Alberta, N. 50°54'12", W. 114°03'30".	50	DA-N, ND-D-236.	U	II				
		1400 kHz							
CKSJ [8]	St. Jovite, Quebec, N. 46°-07'48", W. 74°33'35".	*1D*/.25N	ND-192	U	IV	180	120	280	Do.

[1] Change of pattern from temporary operation notified List 361, notification in List 362 withdrawn.
[2] PO 1 kW, 2.5 kWD under construction.
[3] PO 1490 kHz, N. 43°23'06", W. 80°30'00", 10 D/5 N, DA-2, U, IV; 570 kHz 5 D/10 N under construction at new site.
[4] Change in site, night-time power, and radiation pattern.
[5] Correction to List 367, supplementary data from List 352 correct.
[6] In operation with increased power.
[7] In operation with non-directional day antenna system.
[8] PO 0.25 kW.

WALLACE E. JOHNSON,
Chief, Broadcast Bureau,
Federal Communications Commission.

[FR Doc. 77-35412 Filed 12-12-77; 8:45 am]

MEXICAN STANDARD BROADCAST STATIONS

Notification List

List of new stations, proposed changes in existing stations, deletions, and corrections in assignments of Mexican standard broadcast stations modifying the assignments of Mexican broadcast stations contained in the Appendix to the Recommendations of the North American Regional Broadcasting Agreement Engineering Meeting, January 30, 1941.

MEXICAN LIST NO. 280

APRIL 4, 1977

Call letters	Location	Power, kW	Antenna	Schedule	Class	Antenna height (feet)	Ground system		Proposed date of commencement of operation
							Number of radials	Length (feet)	
(New)	La Paz, BCS., N. 24°09'50", W. 110°18'56".	1100 kHz .250	ND-D-190.....	D	II	223	120	223	Aug. 30, 1977.
(New)	Ometepec, Gro., N. 16°40'01", W. 98°22'56".	1100 kHz 1.000	ND-D-190.....	D	II	223	120	223	Do.
(New	Monclova, Coah., N. 26°54'14", W. 101°25'08".	1110 kHz .250	ND-D-190.....	D	II	220	120	220	Do.
(New)	Tuxtepec, Oax., N. 18°05'24", W. 96°06'50".	1110 kHz .250	ND-D-190.....	D	II	221	120	221	Do.
XETOT	Tampico, Tam., N. 22°13'00", W. 97°51'19".	1190 kHz 5.000	ND-D-190.....	D	II	207	120	207	Do.
XEMTV	Minatitlan, Ver., N. 17°58'48", W. 94°31'15".	1260 kHz 1.000 D/ .250 N	ND-U-175.....	U	III	190	90	164	Immediately.
XENP (change to 1430 kHz)	Ocotlan, Jal., N. 20°21'23", W. 102°46'24".	1320 kHz .500 D/ .200 N	ND-U-175.....	U	III	197	120	177	Aug. 30, 1977.
XEMA	Fresnillo, Zac., N. 23°10'32", W. 102°53'34".	1340 kHz 1.000 D/ .250 N	ND-U-187.....	U	IV	*197*	120	184	Immediately.
XENP (PN 1320 kHz)	Ocotlan, Jal., N. 20°21'33", W. 102°46'24".	1430 kHz 1.000	ND-D-190.....	D	III	171	120	171	Aug. 30, 1977.
(New) (Assignment deleted)	Zapotlanejo, Jal., N. 20°37'24", W. 103°03'49".	1440 kHz 500 D/ .100 N	ND-U-190.....	U	III	171	120	171	
(New)	Aguascalientes, Ags., N. 21°52'43", W. 102°18'04".	1520 kHz 250	ND-D-190.....	D	II	161	120	161	Aug. 30, 1977.

NOTE.—Mexican Change List No. 280 was received on November 16, 1977.

WALLACE E. JOHNSON,
Chief, Broadcast Bureau,
Federal Communications Commission.

[FR Doc.77-35411 Filed 12-12-77; 8:45 am]

[6730-01]

FEDERAL MARITIME COMMISSION

Agreements Filed

The Federal Maritime Commission hereby gives notice that the following agreements have been filed with the Commission for approval pursuant to section 15 of the Shipping Act, 1916, as amended (39 Stat. 733, 75 Stat. 763, 46 U.S.C. 814).

Interested parties may inspect and obtain a copy of each of the agreements and the justifications offered therefor at the Washington Office of the Federal Maritime Commission, 1100 L Street NW., room 10126; or may inspect the agreements at the Field Offices located at New York, N.Y.; New Orleans, La.; San Francisco, Calif.; and San Juan, P.R. Interested parties may submit comments on each agreement, including requests for hearing, to the Secretary, Federal Maritime Commission, Washington, D.C. 20573, by January 3, 1978 in which this notice appears. Comments should include facts and arguments concerning the approval, modification, or disapproval of the proposed agreement. Comments shall discuss with particularity allegations that the agreement is unjustly discriminatory or unfair as between carriers, shippers, exporters, importers, or ports, or between exporters from the United States and their foreign competitors, or operates to the detriment of the commerce of the United States, or is contrary to the public interest, or is in violation of the Act.

A copy of any comments should also be forwarded to the party filing the agreements and the statement should indicate that this has been done.

AGREEMENT NO.: 2846-33.

FILING PARTY: Stanley O. Sher, Esq., Billig, Sher & Jones, P.C., 2033 K Street NW., Washington, D.C. 20006.

SUMMARY: Agreement No. 2846-33, among the member lines of the West

Coast of Italy, Sicilian, and Adriatic Ports/North Atlantic Range Conference, modifies the basic conference agreement by (1) increasing the amount of the financial guarantee specified in the agreement from $30,000 to $50,000; (2) providing that this new amount may be changed by four-fifths vote of the member lines entitled to vote; and (3) that any change agreed to shall be communicated to the Federal Maritime Commission for its information but not for its approval. This agreement represents a revision of the originally filed amendment which was published in the FEDERAL REGISTER on November 1, 1977, Volume 42, number 210 at page 57158.

AGREEMENT NO.: T-3548.

FILING PARTY: H. H. Wittren, Manager, Waterfront Real Estate, Port of Seattle, P.O. Box 1209, Seattle, Wash. 98111.

SUMMARY: Agreement No. T-3548, between Port of Seattle (Port) and Sea-Land Service, Inc. (Sea-Land) provides for the month-to-month lease to Sea-land of approximately 39,000 square feet of land area at Terminal 107, Seattle, Wash. As compensation, Sea-Land will pay Port $975 per month. In addition, Sea-Land agrees to pay all applicable Port tariff charges. The leased facilities will by used by Sea-Land for the storage of empty containers.

By Order of the Federal Maritime Commission.

Dated: December 7, 1977.

FRANCIS C. HURNEY,
Secretary.

[FR Doc. 77-35566 Filed 12-12-77; 8:45 am]

[6820-24]

GENERAL SERVICES ADMINISTRATION

[Intervention Notice 46; Formal Case No. 57602]

CALIFORNIA PUBLIC UTILITIES COMMISSION, SOUTHERN CALIFORNIA EDISON CO.

Proposed Intervention in Rate Increase Proceeding

The Administrator of General Services seeks to intervene in a proceeding before the California Public Utilities Commission concerning an application for an increase in its tariffed rates for intrastate electric services. The Administrator of General Services represents the interests of the executive agencies of the United States Government, as users of utility services.

Persons desiring to make inquiries concerning this case to GSA should submit them, in writing, to Mr. Spence W. Perry, Assistant General Counsel, Regulatory Law Division, General Services Administration, 18th and F Streets NW., Washington, D.C. 20405, telephone 202-566-0750, on or before January 12, 1978, and refer to this notice number.

Persons making inquiries are put on notice that the making of an inquiry shall not serve to make any persons parties of record in the proceeding.

(Sec. 210(a)(4), Federal Property and Administrative Services Act (40 U.S.C. 481(a)(4)).)

Dated: December 1, 1977.

JAY SOLOMON,
Administrator of General Services.

[FR Doc. 77-35546 Filed 12-12-77; 8:45 am]

[6820-23]

REPORT OF ENVIRONMENTAL ACTIONS

Pursuant to the provisions of the National Environmental Policy Act of 1969 (42 U.S.C. 4321, et seq.), and section 1500.6(e) of the Council on Environmental Quality Guidelines for the Preparation of Environmental Impact Statements (38 FR 20550), a list of administrative actions for which environmental assessments were completed with negative declarations by the General Services Administration (GSA) was published in the FEDERAL REGISTER on November 2, 1977 (42 FR 57348). An environmental reassessment of the proposed public sale or negotiated sale of two improved noncontiguous parcels of land consisting of the Cullen Village Housing Area with 261.77 acres and the Baker Drive Area with 23.07 acres at Forbes Air Force Base, Topeka, Kans., was incorrectly listed in this category. A final determination has not been made regarding the necessity for an Environmental Impact Statement or a negative declaration. When that determination is made final notice will be published in the FEDERAL REGISTER.

Dated: November 29, 1977.

JAMES B. SHEA, Jr.,
Commissioner, Public Buildings Service.

[FR Doc. 77-35545 Filed 12-12-77; 8:45 am]

[4110-89]

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Office of Education

ADVISORY COMMITTEE ON ACCREDITATION AND INSTITUTIONAL ELIGIBILITY

Meeting Postponed

Notice is hereby given that the December 13-16, 1977, meeting of the Advisory Committee on Accreditation and Institutional Eligibility, notice of which appeared in the FEDERAL REGISTER on November 21, 1977, 42 FR 59780-59781, has been postponed until January 17-20, 1978. The meeting will be conducted from 1 p.m. to 5 p.m., local time, January 17; from 9 a.m. to 5:45 p.m., January 18; from 9 a.m. to 5 p.m., January 19; and from 9 a.m. to 3 p.m., January 20. The location of the meeting has been changed to the Sheraton National Motor Hotel, Columbia Pike and Washington Boulevard, Arlington, Va. The agenda remains unchanged from that previously published in the FEDERAL REGISTER.

The meeting will be open to the public. Requests for oral presentations before the Committee should be submitted in writing to the Director, Division of Eligibility and Agency Evaluation, Office of Education, Room 3030, ROB 3, 400 Maryland Avenue SW., Washington, D.C. 20202. Requests should include the names of all persons seeking an appearance, the party or parties which they represent, and the purpose for which the presentation is requested. Requests must be received by the Division of Eligibility and Agency Evaluation on or before January 6, 1978. Requests which were received prior to the previous deadline of December 2, 1977, need not be resubmitted. Time constraints may limit oral presentation. However, all additional written material which a party wishes to file may be submitted at any time and will be considered by the Advisory Committee.

Signed at Washington, D.C., on December 7, 1977.

JOHN R. PROFFITT,
Director, Division of Eligibility and Agency Evaluation, Office of Education.

[FR Doc. 77-35454 Filed 12-12-77; 8:45 am]

[4110-03]

Food and Drug Administration

[Docket No. 77C-0384]

COLOR ADDITIVES

Denial of Petition For Listing of Ext. D&C Yellow No. 1 for Use in Externally Applied Drugs and Cosmetics

AGENCY: Food and Drug Administration.

ACTION: Notice.

SUMMARY: The Food and Drug Administration (FDA), is denying the petition to list "permanently" Ext. D&C Yellow No. 1 as a color additive for use in externally applied drugs and cosmetics. Published elsewhere in this issue of the FEDERAL REGISTER is a regulation terminating the provisional listing for Ext. D&C Yellow No. 1.

DATE: Objections by January 12, 1978.

FOR FURTHER INFORMATION CONTACT:

Gerad L. McCowin, Bureau of Foods (HFF-334), Food and Drug Administration, Department of Health, Education, and Welfare, 200 C Street SW., Washington, D.C. 20204, 202-472-5740.

SUPPLEMENTARY INFORMATION: A notice published in the FEDERAL REGISTER of August 6, 1973 (38 FR 21200), stated that a petition (CAP 7C0056), for the "permanent" listing of Ext. D&C Yellow No. 1 as a color additive for use in externally applied drugs and cosmetics had been filed by the Procter and Gamble Co., Toilet Goods Division, 6000 Center Hill Road, Cincinnati, Ohio 45224. The petition was filed pursuant to section 706 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 376).

The available data for Ext. D&C Yellow No. 1 establish that the color additive contains free 4-aminobiphenyl, a known carcinogen. Additionally, the color additive may contain a reaction product of 4-aminobiphenyl and diazotized metanilic acid, which can decompose to form benzidine, another carcinogen. These data are discussed in detail in the preamble to the regulation published elsewhere in this issue of the FEDERAL REGISTER that terminates the provisional listing of the color additive for use in externally applied drugs and cosmetics.

The Commissioner of Food and Drugs has considered the data submitted in support of the petition and other pertinent data related to the use of Ext. D&C Yellow No. 1 in externally applied drugs and cosmetics and, in view of its contamination with 4-aminobiphenyl, concludes that the data before him do not establish that such use of this color will be safe. Additionally, the chemistry data required as a condition of provisional listing have not been submitted. The petition seeking listing of the color additive for use in externally applied drugs and cosmetics is therefore denied.

Any person who will be adversely affected by the foregoing order may at any time on or before January 12, 1978, file with the Hearing Clerk (HFC-20), Food and Drug Administration, Rm. 4-65, 5600 Fishers Lane, Rockville, Md. 20857, written objections thereto. Objections shall be shown wherein the person filing will be adversely affected by the order, specify with particularity the provisions of the order deemed objectionable, and state the grounds for the objections. Objections shall be filed in accordance with the requirements of § 71.30 (21 CFR 71.30). If a hearing is requested, the objections shall state the issues for the hearing, shall be supported by grounds factually and legally sufficient to justify the relief sought, and shall include a detailed description and analysis of the factual information intended to be presented in support of the objections in the event that a hearing is held. Four copies of all documents shall be filed and should be identified with the Hearing Clerk docket number found in brackets in the heading of this notice. Received objections may be seen in the above-named office, between 9 a.m. and 4 p.m., Monday through Friday.

This notice is issued under provisions of the Federal Food, Drug, and Cosmetic Act (secs. 701, 706, 52 Stat. 1055-1056, 74 Stat. 399-403 (21 U.S.C. 371, 376), and under authority delegated to the Commissioner (21 CFR 5.1).

Dated: December 5, 1977.

WILLIAM F. RANDOLPH,
Acting Associate Commissioner for Compliance.

[FR Doc. 77-35309 Filed 12-7-77; 2:28 pm]

[4110-03]

[Docket No. 77C-0383]

COLOR ADDITIVES

Denial of Petition for Listing of D&C Blue No. 6 for Use in Drugs and Cosmetics

AGENCY: Food and Drug Administration.

ACTION: Notice.

SUMMARY: The Food and Drug Administration is denying the petition to list "permanently" D&C Blue No. 6 as a color additive for use in drugs and cosmetics. Published elsewhere in this issue of the FEDERAL REGISTER is a regulation terminating the provisional listing for D&C Blue No. 6.

DATE: Objections by January 12, 1978.

FOR FURTHER INFORMATION CONTACT:

Gerad L. McCowin, Bureau of Foods (HFF—334), Food and Drug Administration, Department of Health, Education, and Welfare, 200 C Street SW., Washington, D.C. 20204, 202-472-5740.

SUPPLEMENTARY INFORMATION: D&C Blue No. 6 is the subject of a petition (CAP 57), submitted by the Toilet Goods Association, Inc. (now the Cosmetic, Toiletry, and Fragrance Association, 1133 15th Street NW., Washington, D.C. 20005); the Pharmaceutical Manufacturers Association (1155 15th Street NW., Washington, D.C. 20005); and the Certified Color Industry Committee (now the Certified Color Manufacturers Association, 900 17th Street NW., Washington, D.C. 20006), c/o Hazleton Laboratories, Inc., Falls Church, Va. 22046. The petition was filed for coloring ingested drugs, surgical sutures, lipsticks, and externally applied drugs and cosmetics by a notice in the FEDERAL REGISTER of November 20, 1968 (33 FR 17205). The filing notice was amended by a notice published in the FEDERAL REGISTER of March 5, 1976 (41 FR 9584), to include use of the color additive in cosmetics intended for use in the area of the eye. The petition was filed under the provisions of section 706 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 376).

The petitioners were unable to resolve chemistry and analytical deficiencies involving D&C Blue No. 6 by the submission deadline of August 3, 1977. Insufficient data are available to permit drafting of adequate specifications for the certification of this color. These deficiencies are discussed in detail in the regulation published elsewhere in this issue of the FEDERAL REGISTER that terminates the provisional listing of the color additive for use in drugs and cosmetics. In addition, the petitioners have advised that they do not plan to conduct chronic feeding studies with the color as required by § 81.27(d) (21 CFR 81.27(d)), as a condition for the continued provisional listing.

Having considered the data submitted in the petition and other pertinent data related to the use of D&C Blue No. 6 in drugs and cosmetics and, in view of the fact that the petitioners for D&C Blue No. 6 have not successfully resolved all chemistry and analytical questions on D&C Blue No. 6, nor are they expected to do so in the near future, the Commissioner of Food and Drugs is denying that portion of the petition (CAP 57), seeking listing of the color additive for use in drugs and cosmetics. In addition, the petition is being denied following notification that the petitioners are not going to conduct chronic feeding studies with the color.

Any person who will be adversely affected by the foregoing order may at any time on or before January 12, 1978, file with the Hearing Clerk (HFC-20), Food and Drug Administration, Rm. 4-65, 5600 Fishers Lane, Rockville, Md. 20857, written objections thereto. Objections shall show wherein the person filing will be adversely affected by the order, specify with particularity the provisions of the order deemed objectionable, and state the grounds for the objections. Objections shall be filed in accordance with the requirements of § 71.30 (21 CFR 71.30). If a hearing is requested, the objections shall state the issues for the hearing, shall be supported by grounds factually and legally sufficient to justify the relief sought, and shall include a detailed description and analysis of the factual information intended to be presented in support of the objections in the event that a hearing is held. Four copies of all documents shall be filed and identified with the Hearing Clerk docket

number found in brackets in the heading of this order. Received objections may be seen in the Hearing Clerk's office, between 9 a.m. and 4 p.m., Monday through Friday.

This notice is issued under provisions of the Federal Food, Drug, and Cosmetic Act (secs. 701, 706, 52 Stat. 1055-1056, 74 Stat. 399-402 (21 U.S.C. 371, 376), and under authority delegated to the Commissioner (21 CFR 5.1).

Dated: December 5, 1977.

WILLIAM F. RANDOLPH,
Acting Associate Commissioner for Compliance.

[FR Doc. 77-35310 Filed 12-7-77; 2:28 pm]

[4110-03]

[Docket No. 77C-0382]

COSMETIC, TOILETRY AND FRAGRANCE ASSOCIATION

Withdrawal of Color Additive Petition

AGENCY: Food and Drug Administration.

ACTION: Notice.

SUMMARY: This document announces the withdrawal without prejudice of a color additive petition to list "permanently" D&C Red Nos. 10, 11, 12, and 13 for use as color additives in drugs and cosmetics. Published elsewhere in this issue of the FEDERAL REGISTER is a regulation terminating the provisional listing of these four colors for use as color additives in drugs and cosmetics.

FOR FURTHER INFORMATION CONTACT:

Gerad L. McCowin, Bureau of Foods (HFF-334), Food and Drug Administration, Department of Health, Education, and Welfare, 200 C Street SW., Washington, D.C. 20204, 202-472-5740.

SUPPLEMENTARY INFORMATION: A notice published in the FEDERAL REGISTER of August 6, 1973 (38 FR 21199), stated that a petition (CAP 5C0029), for the "permanent" listing of D&C Red No. 10, D&C Red No. 11, D&C Red No. 12, and D&C Red No. 13 had been filed by the Cosmetic, Toiletry, and Fragrance Association, Inc. (CTFA), 1133 15th Street, NW., Washington, D.C. 20005, c/o Hazelton Laboratories, Inc., P.O. Box 30, Falls Church, Va. 22046.

The petition was filed under section 706 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 376). On October 21, 1977, CTFA wrote to the Food and Drug Administration requesting that the color additive petition for the four colors be withdrawn without prejudice to future filing.

Therefore, in accordance with § 71.6(c) (21 CFR 71.6(c)), of the color additive regulations; under the Federal Food, Drug, and Cosmetic Act (sec. 706(d), 74 Stat. 402 (21 U.S.C. 376(d)); and under authority delegated to the Commissiioner of Food and Drugs (21 CFR 5.1), notice is given that color additive petition 5C0029 has been withdrawn without prejudice to future filing.

Dated: December 5, 1977.

WILLIAM F. RANDOLPH,
Acting Associate Commissioner for Compliance.

[FR Doc. 77-35311 Filed 12-12-77; 8:45 am]

[4110-03]

[Docket No. 77F-0369]

THE DEXTER CORP.

Withdrawal of Food Additive Petition

AGENCY: Food and Drug Administration.

ACTION: Notice.

SUMMARY: This document announces the withdrawal without prejudice of a petition proposing safe use of a polymer as a component of certain coatings intended to contact foods.

FOR FURTHER INFORMATION CONTACT:

John J. McAuliffe, Bureau of Foods (HFF-334), Food and Drug Administration, Department of Health, Education, and Welfare, 200 C Street SW., Washington, D.C. 20204 (202-472-5690).

SUPPLEMENTARY INFORMATION: In accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 409(c), 72 Stat. 1786 (21 U.S.C. 348 (c)), the following notice is issued:

In compliance with § 171.7 Withdrawal of petition without prejudice (21 CFR 171.7), The Dexter Corp., Midland Division, E. Water Street, Waukegan, Ill., has withdrawn its petition (FAP 6B3187), notice of which was published in the FEDERAL REGISTER of January 4, 1977 (42 FR 854), proposing that § 175.300 Resinous and polymeric coatings (21 CFR 175.300) be amended to provide for the safe use of a butyl acrylate/styrene/methacrylic acid/methyl methacrylate/*N*-(isobutoxy methyl) acrylamide polymer containing dimethylethanolamine as a component of coatings intended to contact all foods except those containing more than 8 percent alcohol.

Dated: December 5, 1977.

WILLIAM F. RANDOLPH,
Acting Associate Commissioner for Compliance.

[FR Doc. 77-35312 Filed 12-12-77; 8:45 am]

[4110-03]

[Docket No. 77P-0377]

PETITION FOR RECLASSIFICATION

Panel Recommendation

AGENCY: Food and Drug Administration.

ACTION: Notice.

SUMMARY: The agency is issuing for public comment the recommendation of the General and Plastic Surgery Device Classification Panel that dissolvable nasogastric feeding tube guides composed of U.S.P. gelatin be reclassified from class III (Premarket Approval) to class I (General Controls). This recommendation was made after review of a reclassification petition filed by the Hedeco Health development Corporation under section 513(f) of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 360c(f)). After reviewing the panel recommendation and the public comments received, the agency will approve or deny the reclassification by order in the form of a letter to the petitioner. If the device is reclassified, this will be announced in the FEDERAL REGISTER.

DATE: Comments by January 12, 1978.

ADDRESS: Comments to the Hearing Clerk (HFC-20), Food and Drug Administration, Room 14-65, 5600 Fishers Lane, Rockville, Md. 20857.

FOR FURTHER INFORMATION CONTACT:

Mark F. Parrish, Bureau of Medical Devices (HFK-410), Food and Drug Administration, Department of Health, Education, and Welfare, 8757 Georgia Avenue, Silver Spring, Md. 20910 (301-427-7238).

SUPPLEMENTARY INFORMATION: On January 10, 1977, the Hedeco Health Development Corporation submitted to the Food and Drug Administration (FDA) a premarket notification under section 510(k) of the act (21 U.S.C. 360(k)) stating that it intended to market a device called the Keofeed™ Tube Guide. After reviewing the information in the premarket notification, the Commissioner of Food and Drugs determined that the device was not substantially equivalent to any device that was in commercial distribution before May 28, 1976; nor was the device substantially equivalent to a device that has been placed in commercial distribution since that date and has been subsequently reclassified. Upon this determination, the device was automatically classified in class III under section 513(f)(1) of the act.

Under section 515(a)(2) of the act (21 U.S.C. 360e(a)(2)), before a device that is in class III under section 513(f)(1) of the act can be marketed, it

must either be reclassified under section 513(f)(2) of the act or have an approval of an application for premarket approval under section 515 of the act, unless there is in effect for the device an investigational device exemption under section 520(g) of the act (21 U.S.C. 360j).

On April 27, 1977, the Hedeco Health Department Corporation submitted to FDA a reclassification petition. On July 21, 1977, the General and Plastic Surgery Device Classification Panel reviewed the petition and recommended that the device be reclassified into class I.

In determining the proper classification of the device, the panel considered the criteria in section 513(a)(1) of the act. Also, in classifying the device, the panel assigned it the name "dissolvable nasogastric feeding tube guide" and described the device as a flexible rod of U.S.P. gelatin with a central nylon wick that is used to assist the placement of nasogastric feeding tubes. The guide is removed after tube placement or may be dissolved in situ during feeding. The panel recommended that all devices meeting this description, and those substantially equivalent, be classified into class I.

SUMMARY OF THE REASONS FOR THE RECOMMENDATION

The panel made the following determinations in support of its recommendation:

1. The device is not life sustaining or life supporting.

2. The device is not potentially hazardous to life or good health when properly used.

3. The device is not remote from the body, when it is used, because it is used to assist the placement of nasogastric feeding tubes.

4. The device is not powered by a nonmanual external or internal source.

5. The device uses material for contact with the body (U.S.P. gelatin, nylon wick) that is generally acceptable or has known and acceptable properties that can be provided with no additional control requirements.

6. The device does not have any known hazards, limitations, or shortcomings that would require regulation.

7. The device does not perform a measurement function.

8. The device does not have performance characteristics that require a standard to be maintained at a satisfactory level.

SUMMARY OF THE DATA ON WHICH THE RECOMMENDATION IS BASED

The safety and effectiveness of the device was determined on the basis of three clinical studies. In one study in which the device was used in conjunction with tubes measuring 14.6 Fr (French) and 18 Fr, the device was used on 22 patients and resulted in all receiving successful passages of the tube. There were no complications, and it took between 10 and 20 minutes to remove the tube.

In another study, the device was used in conjunction with a tube of 14.6 Fr and was tested on 10 patients. All had successful passages of the tube with no complications. It took 15 to 20 minutes to remove the tube.

In the third study, the device was used in conjunction with a tube of 9.6 Fr. Ten patients were tested and 8 successful passages resulted. There were no complications, and the average time for removal of the tube was 60 minutes.

ADDITIONAL FINDINGS

The panel found that there were no risks to health presented by the device.

The panel did not recommend that the device be exempted from any of the requirements of section 510 (Registration), section 519 (Records and Reports), or section 520(f) (Good Manufacturing Practices) of the act (21 U.S.C. 360, 360i, and 360j(f)).

Additional information is available in the petition and in the transcript of the panel meeting, both of which are on file with the Hearing Clerk.

Dated: December 6, 1977.

JOSEPH P. HILE,
Associate Commissioner for Compliance.

[FR Doc. 77-35313 Filed 12-12-77; 8:45 am]

[4110-03]

Food and Drug Administration

[Docket No. 77N-0417]

POLLEN COLLECTION AND PREPARATION

Public Meeting

AGENCY: Food and Drug Administration.

ACTION: Notice.

SUMMARY: This document announces a public meeting to be held on Thursday, January 12, 1978, to give all interested persons an opportunity to participate in a seminar on methods of collecting and preparing pollen for use in allergenic extracts.

DATES: Interested persons may, on or before January 12, 1977, submit written comments (preferably in four copies and identified with the Hearing Clerk docket number found in brackets in the heading of this document) regarding this seminar.

FOR FURTHER INFORMATION CONTACT:

Al Rothschild, Bureau of Biologics (HFB-620), Food and Drug Administration, Department of Health, Education, and Welfare, 8800 Rockville Pike, Bethesda, Md. 20014, 301-444-1920.

SUPPLEMENTARY INFORMATION: The purpose of the seminar is to identify and evaluate methods currently used for collecting and preparing pollen for the manufacture of allergenic extracts that are safe, pure, potent, and effective. The information obtained at the seminar may be used to revise current regulations and guidelines concerning the use of pollen as a source material for the manufacture of allergenic extract. The seminar will be held from 9 a.m. to 4:30 p.m., Thursday, January 12, 1978, in Room 115, Building 29, Bureau of Biologics, Bethesda, Md. 20014.

Dated: December 7, 1977.

JOSEPH P. HILE,
Associate Commissioner for Compliance.

[FR Doc. 77-35459 Filed 12-12-77; 8:45 am]

[4110-83]

HEALTH RESOURCES ADMINISTRATION

Nursing Research and Education Advisory Committee

Filing of Annual Report

Notice is hereby given that pursuant to section 13 of Pub. L. 92-463, the annual report for the following Health Resources Administration, Federal Advisory Committees has been filed with the Library of Congress:

Nursing Research and Education Advisory Committee

Copies are available to the public for inspection at the Library of Congress, Special Forms Reading Room, Main Building, or weekdays between 9:00 a.m. and 4:30 p.m. at the Department of Health, Education, and Welfare, Department Library, North Building, Room 1436, 330 Independence Avenue SW., Washington, D.C. 20201, telephone 202-245-6791. Copies may be obtained from the Committee Management Branch, Health Resources Administration, Room 9-41, 3700 East-West Highway, Hyattsville, Md. 20782, telephone 301-436-7183.

Dated: December 5, 1977.

JAMES A. WALSH,
Associate Administrator for Operations and Management.

[FR Doc. 77-35403 Filed 12-12-77; 8:45 am]

[4110-02]

Office of the Secretary

OFFICE OF EDUCATION

Statement of Organization, Functions, and Delegations of Authority

Part EE, Office of Education, section EE.10 of the Statement of Organization, Functions, and Delegations of Authority for the Department of Health, Education, and Welfare is amended to reflect a new organization for the Immediate Office of the Commissioner. As a result, all these prior statements for the Office of the Commissioner are deleted: 38 FR 32154 (11/21/73), 39 FR 5810 (2/15/74), 40 FR 4665 (1/31/75), and 40 FR 58678 (12/18/75). Also the title and statement for the Office of Legislation, Office of Planning, published at 38 FR 32154 (11/21/73), are deleted in their entirety.

The new statement for the Office of the Commissioner is as follows:

EE.10 *Organization and Functions.*—The Office of Education is the primary agency of the Federal Government responsible for the administration of programs of financial assistance to educational agencies, institutions, and organizations. It is one of the principal units of the Education Division headed by the Assistant Secretary for Education and operates within this recognized organizational structure.

OFFICE OF THE COMMISSIONER (EEA)

The Commissioner manages and directs the affairs of the Office of Education under the direction and supervision of the Secretary, with the aid of staff advisors and assistants, internal advisory groups, affirmative action staff, and equal employment opportunity staff. As one of the principal officers within the Education Division, the Commissioner shall carry out those responsibilities which relate directly to the Education Division under the direction and supervision of the Assistant Secretary for Education.

Executive Operations Staff (EEA-1).—Ensures that priority attention is given to the Commissioner's initiatives throughout the agency. Ensures compliance with the Commissioner's policies and directives through the review of OE operations. Provides general staff assistance to the Commissioner. Maintains the correspondence control system to assure timely high quality correspondence. Provides required administrative and personnel services for all organization elements in the Office of the Commissioner.

Office of Educational Community Liaison (EEA-C).—Serves as the focal point for liaison between the Office of Education and interest groups and national organizations, including nonpublic schools, which are concerned with educational issues. Provides interpretation of OE policy and assures that the views and concerns of constituent groups regarding the implementation of OE programs are made known to the Commissioner, and through the Commissioner, to the Assistant Secretary for Education. Assists program units within the agency to develop and implement consultation strategies with organizations to ensure communications during the development and implementation of policies and programs. Coordinates the resources of the central and field staffs as a total support system for responding to the education community.

Office of Legislation (EEA-L).—Provides coordination on OE legislative matters with the Office of the Assistant Secretary for Education and the Assistant Secretary for Legislation and effects contacts with Congress in consultation with and in coordination with the Assistant Secretary for Legislation. Plans and prepares the specifications for new legislation necessary to carry out the functions of the Office of Education. Coordinates the preparation of Congressional and other reports and analyses of legislation relating to education. Provides the Commissioner and the Office of Education with information on the status and progress of legislative proposals affecting education. Coordinates suggestions for new legislation within the Office and evaluates legislative proposals originated outside the Office of Education. Serves as liaison with Governors, Mayors, State legislators, and other elected officials, in general coordination with the Deputy Under Secretary for Intergovernmental Affairs.

Office of Policy Studies (EEA-P).—Initiates formulation of policy and resolution of major policy issues for the Office of Education. Obtains, synthesizes, and finalizes policy inputs from Bureau and Staff offices. Reviews substantive correspondence and policy papers to insure conformance with Education Division policy. Coordinates policy development with the Assistant Secretary for Education, the Department, and other bodies. Assures the congruence of existing and new policy with budgetary decisions and legislative proposals through review of the Education Division's long-range planning activities and budgets. Assures that bureau policy and planning activities are consistant with the policy direction of the Commissioner and the Assistant Secretary for Education.

TEACHER CORPS (EEAT)

The Teacher Corps administers a program to strengthen the educational opportunities available to children in areas having concentrations of low-income families. Encourages colleges and universities to broaden their programs of teacher education by developing systematic processes through which qualified teachers and teacher-interns can acquire specified competencies.

OFFICE OF CAREER EDUCATION (EEAC)

Plans, develops and coordinates all career education conceptualization, policy formulation and program activity within the Office of Education designed to improve the prospects of all Americans to have a successful life by enhancing the educational experience with career options. Develops objectives and plans for career education activities, coordinates activities that implement and support those efforts, and administers assigned programs of grants and contracts.

OFFICE OF BILINGUAL EDUCATION (EEAB)

The Office of Bilingual Education provides national leadership in development and administration of the policies of bilingual education of the Federal Government and provides for the coordination of the various programs which, in part or in whole, address themselves to the needs of persons of limited English speaking ability. The Office is responsible for administration of a program of assistance to develop and carry out bilingual education projects designed to meet the educational needs of students who have difficulty speaking and understanding instruction in the English language, and for administration of a bilingual education training program designed to strengthen bilingual-bicultural education programs by supporting training for teachers and trainers of teachers.

Division of Bilingual Education Program Development (EEAB4).—Administers supportive grant activities at centers, State educational agencies, local educational agencies, and institutions of higher education which affect bilingual education programs. Provides national direction for the development of effective materials, practices, and techniques used in bilingual education programs. Provides technical assistance to centers, State educational agencies, local educational agencies and institutions of higher education providing services for the development and dissemination of instructional materials and equipment suitable for use in bilingual education programs. Maintains appropriate operational systems for receipt and technical review of applications submitted for supportive and developmental activities. Directs long range planning for programs of equal educational opportunity which allow equal participation by students of limited English-speaking ability.

Division of Bilingual Educational Elementary and Secondary Programs (EEAB2).—Administers demonstration

programs and awards funds to local educational agencies, State educational agencies and institutions of higher education for the support of projects designed to meet the special educational needs of students with limited English-speaking ability. Provides professional leadership, direction, and guidance in the stimulation, development, evaluation, and monitoring of projects in State and local educational agencies and institutions of higher education.

Divison of Bilingual Education Postsecondary Programs (EEAB3).—Administers and coordinates all bilingual education training activities supervised by institutions of higher education excluding those under Part J of the Vocational Education Act of 1963, as amended. Assists in establishment, operation, and improvement of training programs for personnel preparing to participate in programs of bilingual education and auxiliary and supplementary training programs. Provides financial assistance to institutions of higher education for training programs in bilingual education.

OFFICE OF PUBLIC AFFAIRS (EEAP)

The Office of Public Affairs plans, develops, and directs a comprehensive public information program involving a variety of editorial services and the dissemination of news and publications for both print and audiovisual media in support of Office of Education programs. Its primary mission is to acquaint the general public, and especially the Nation's educational community, with Office of Education programs and activities. Coordinates all OE public affairs activities with those of the Assistant Secretary for Education, other Education Division components, and the Department. Provides OE-wide and HEW coordination of general audiovisual and print materials developed for OE through grant, contract, or inhouse resources.

Communication Support Division (EEAP2).—Provides Agency program staff "concept" advice, clearance, monitoring assistance, and other supportive services for all phases of audiovisual production and general public affairs activites. Processes recommendations for written denials of requests under the Freedom of Information Act. Responsible for Agency-wide public affairs planning, coordination and Regional liaison. Manages conferences, workshops, film production, and other special events.

Information Services Division (EEAP4).—As the central Agency channel for dissemination of education news and other education information to education organizations, the public, the news media, and key OE and HEW officials, prepares news releases, feature stories, and background material for the various news media. Maintains up-to-date briefing book for the Secretary and the Commissioner, answers inquiries from news media, produces an OE functional directory and daily news digest. Produces in-house newsletter, "inside OE." Participates in the development by OPA of a comprehensive public affairs program for OE programmatic activities.

Editorial Services Division (EEAP3).—Assists in the implementation of OE programs by providing a wide variety of editorial services, including writing, rewriting, and editing of statements, position papers, reference articles, speeches, pamphlets, booklets, memoranda, messages, and other materials about OE programs for internal use or for dissemination to professional and other special groups or the general public. Plans and directs an overall publications program. Provides technical and professional services and counsel for style, content and design of manuscripts, technical reports, and other publications of OE. Clears speeches, articles, and other materials produced for public presentation. Plans and produces the official journal of the Education Division, "American Education" magazine.

RIGHT TO READ PROGRAM (EEBB)

Represents the Office of Education in an active leadership role supporting the Right to Read effort with the education community, the private sector, and other units of Government. Administers a program of grants and contracts in a continuing effort to increase functional literacy in the United States.

Dated: December 2, 1977.

THOMAS S. MCFEE,
Acting Assistant Secretary for Management and Budget.

[FR Doc. 77-35466 Filed 12-12-77; 8:45 am]

[4110-07]

Office of the Secretary

SOCIAL SECURITY ADMINISTRATION

Statement of Organization, Functions, and Delegations of Authority

Part S (formerly Part 4) of the Statement of Organization, Functions, and Delegations of Authority for the Department of Health, Education, and Welfare contains the Statement of Organization, Functions, and Delegations of Authority for the Social Security Administration (SSA). Sections SM.00, SM.10, and SM.20 (formerly included in sections 4-02-00 through 4-02-20 of the SSA Statement 40 FR 4474-75 dated January 30, 1975) describe the Mission, Organization, Order of Succession, and Functions for SSA's Office of Management and Administration (OMA). Sections of the OMA Statement are hereby expanded to reflect a reorganization of OMA's Office of Financial Management (OFM). These changes bring OFM into conformity with other SSA components by redesignating existing organizational entities. The new material for OFM reads as follows:

SEC. SM.10 *Office of Management and Administration*—(Organization).

F. Office of Financial Management: 1. Special Projects Staff; 2. Division of Budget Management; 3. Division of Finance; 4. Division of Cost Analysis.

SEC. SM.20 *Office of Management and Administration*—(Functions).

F. The Office of Financial Management (OFM) develops SSA financial management objectives, policies, standards, and procedures; plans, prepares, justifies, and executes SSA budgets. It designs, maintains, and operates SSA automated financial systems; audits and certifies expenditures and prepares basic and required financial reports. OFM provides SSA liaison with OMB, Treasury, GAO, HEW, other Federal agencies and various private and public organizations concerning matters pertaining to the mission of OFM. The Office includes the following components and functions;

1. *Special Projects Staff* (SPS). (a) Coordinates/evaluates major procedural policy and systems changes in the financial management area that affect one or more components of OFM or SSA. (b) Conducts or assists in major or special studies; serves on major task forces, study groups, etc., which may affect any aspect of OFM's or SSA's financial management responsibilities. (c) Coordinates development of OFM's budget requests.

2. *Division of Budget Management* (DBM). (a) Responsible for the formulation, presentation and execution of the SSA budget including the review of SSA component budget requests; presentation and defense of the proposed SSA budget to the Commissioner, HEW and OMB. (b) Interprets budgetary policies and limitations; develops long-range projections for forward planning and trustees reports; and assists the Office of the Secretary, HEW in developing statements and materials for use in meeting with the President, OMB, and the Congress. (c) Provides leadership to budget staffs throughout the administration; issues budget instructions to SSA components; and monitors the SSA budget through man-year, position, and dollar controls.

3. *Division of Finance* (DF). (a) Develops and implements SSA-wide policies, procedures and instructions in the areas of accounting, disbursements, collections, travel and other reimbursements, and payroll, time and leave. (b) Designs and maintains SSA's automated systems in the areas of financial accounting, cashier and administrative payments and time and leave;

and surveys SSA components to identify new and changing needs for financial data. (c) Coordinates interfacing of accounting systems with other automated data systems. Controls the flow of cash from trust and Federal funds to meet SSA-wide cash requirements and maximize interest income; monitors availability of funds to prevent anti-deficiency conditions and reports violations to appropriate HEW officials; and prepares SSA's financial reports for internal/external use and to meet regulatory requirements.

4. *Division of Cost Analysis* (DCA). (a) Develops and Operates computer-based cost analysis system to produce reports and data for use in the budget and accounting processes and for other management purposes. Data includes component and agency-level workloads, and manpower and costs by workload, budget activity (program) and source of funds. (b) Assures coordination among the systems that provide input into or interact with the cost analysis system, such as work measurement, accounting and budgeting systems. (c) Develops agency-wide cost finding policies, standards for the evaluations of work measurement systems, and methodologies for measurement of productivity.

Dated: December 5, 1977.

CHARLES MILLER, II,
Acting Assistant Secretary for Management and Budget.

[FR Doc. 77-35467 Filed 12-12-77; 8:45 am]

[1505-01]

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[A-061179 and AA-6661-A]

ALASKA NATIVE CLAIMS SELECTION

Application

Correction

In FR Doc. 77-30931 appearing at page 56546 in the issue of Wednesday, October 26, 1977 and corrected at 42 FR 60617 is further corrected.

In the first column on page 56547 under the center heading, "Seward Meridian (Surveyed)" the last seven lines should read as follows:

Sec. 30, lots 10 to 20, inclusive, lots 25 to 33, inclusive, lots 43, 44, 54, 55, 67, 68, 79, 88, 89, 91, 94, 96 to 99, inclusive, lots 104, 105, 107, 108, 109, E½NW¼, E½W½NW¼, NW¼NE¼NW¼SW¼, NW¼SE¼NW¼SW¼, NE¼SW¼SW¼. Containing 2,654.35 acres.

[4310-70]

National Park System

PEST CONTROL PROGRAM FOR THE NATIONAL PARK SYSTEM

Review of Comments Received and Negative Declaration Regarding Environmental Assessment

Pursuant to the National Environmental Policy Act of 1969 (42 U.S.C. 4332), and Departmental and Service guidelines, the National Park Service has offered for public review an Environmental Assessment on its Pest Control Program. Notice of the availability of the document for review appeared in the FEDERAL REGISTER on Monday, July 25, 1977 (42 FR 37872). The closing date for comments was September 5, 1977.

About 180 copies of the assessment were mailed to 133 individuals, private organizations, and public agencies. As of October 11, 1977, 13 written replies had been received. Of the 13, 9 replies either had no comments or stated that the Pest Control Program would not affect their activities. Four organizations submitted comments pertaining to one or more of the following categories: Suggestions to correct and/or clarify text and tables, comments offering technical information, comments relating to policy and procedures.

The comments received which fall into the first two categories will be incorporated into the Pest Control Program. The only comment received concerning policies and procedures advocated the addition of a 30-day public review period for those specified uses that also require review by the Department of the Interior's Working Group on Pest Management. This suggestion has not been incorporated on the grounds that those uses which require the level of review constitute only a small fraction of the biocide usage by the National Park Service and that further review would yield no additional benefit. Review by the working group provides critical oversight by experts in the field of pesticide usage.

It is determined that implementation of the Pest Control Program is not a major Federal action having a significant impact on the human environment and that an environmental impact statement as defined in the National Environmental Policy Act of 1969 is not required.

WILLIAM J. WHALEN,
Director, National Park Service.

DECEMBER 8, 1977.

[FR Doc. 77-35490 12-12-77; 8:45 am]

[4310-70]

National Park Service

NATIONAL REGISTER OF HISTORIC PLACES

Notification of Pending Nominations

Nominations for the following properties being considered for listing in the National Register were received by the National Park Service before December 2, 1977. Pursuant to § 60.13(a) of 36 CFR Part 60, published in final form on January 9, 1976, written comments concerning the significance of these properties under the National Register criteria for evaluation may be forwarded to the Keeper of the National Register, National Park Service, U.S. Department of the Interior, Washington, D.C. 20240. Written comments or a request for additional time to prepare comments should be submitted by December 23, 1977.

WILLIAM J. MURTAGH,
Keeper of the National Register.

CALIFORNIA

Humboldt County

Samoa vicinity, *Humboldt Bay Lifesaving Station*, S of Samoa on Samoa Rd.

Los Angeles County

Long Beach, *Point Vicente Light*, Rancho Palos Verdes
Monrovia, *Aztec Hotel*, 311 W. Foothill Blvd.
Pomona, *La Casa Alvarado*, 1459 Old Settlers Lane.

Mendocino County

Branscomb vicinity, *Lovejoy Homestead*, N of Branscomb at end of Wilderness Rd.

Napa County

St. Helena, *St. Helena Catholic Church*, Oak and Tainter Sts.
Yountville, *French Laundry*, 6640 Washington St.

Orange County

Irvine, *Rancho San Joaquin Headquarters.*

Sacramento County

Galt, *Brewster House*, 206 5th St.

San Mateo County

Burlingame, *Burlingame Railroad Station*, Burlingame Ave. and California Dr.

DELAWARE

Kent County

Milford, *Wilkerson, J. H., & Son Brickworks*, off SR 409. HAER.
Milford vicinity, *Golden Mine*, W of Milford on DE 443.

HAWAII

Honolulu County

Wahiawa, *Dole, James D., Homestead*, 148 Dole Rd.

KENTUCKY

Calloway County

Murray, *Murray State University Historic District*, 15th 16th, and Main Sts.

Daviess County

St. Joseph, *Mount St. Joseph Academy*, KY 56.

LOUISIANA

Lafourche Parish

Thibodaux vicinity, *Laurel Valley Plantation, NE of Thibodaux off LA 308.*

MASSACHUSETTS

Essex County

Methuen, *First Church Congregational*, Pleasant and Stevens Sts.
Newburyport, *Dalton House*, 95 State St.

Middlesex County

Arlington, *Cutter, Ephraim, House*, 4 Water St.

Plymouth County

Brockton, *Bixby Block/Home Bank Building*, 106 Main St.

MICHIGAN

Marquette County

Marquette, *Marquette County Courthouse*, 400 S. 3rd St.

Saginaw County

Saginaw, *Saginaw Central City Historic Residential District*, roughly bounded by Federal Ave., S. Baum St., Park and Hoyt Aves. (both sides).

Shiawassee County

Perry, *Calkins, Charles H., House*, 127 E. 1st St.

Washtenaw County

Ann Arbor, *Main Street Post Office*, 220 N. Main St.

MINNESOTA

Goodhue County

Stanton vicinity, *Miller, Harrison, Farmhouse*, E of Stanton on MN 19.

Hennepin county

Minneapolis, *Washburn-Fair Oaks Mansion District*, 22nd St., 1st, 2nd, and Stevens Aves.

Meeker County

Litchfield, *Octagon Cottage*, off MN 22.

St. Louis County

Duluth, *Duluth Public Library*, 1012 W. 2nd St.

Winona County

Winona, *Sugar Loaf Brewery*, jct. of U.S. 14/61 and MN 43.

MISSISSIPPI

Claiborne County

Port Gibson vicinity, *Bayou Pierre Site*, W of Port Gibson.

DeSoto County

Hernando, *Labauve, Felix, House* 235 Magnolia Dr.

Madison County

Canton vicinity, *Doak's Stand Treaty Site*, NE of Canton.

Wilkinson County

Fort Adams vicinity, *Smith Creek Site*, N of Fort Adams.

NEW JERSEY

Atlantic County

Atlantic City, *Holmhurst Hotel*, Pennsylvania Ave.

NEW YORK

Lewis County

Lyons Falls, *Gould Mansion Complex*, Main St.

OREGON

Multonomah County

Portland, *Loeb, Nathan, House*, 726 NW 22nd Ave.

RHODE ISLAND

Newport County

Portsmouth, *Oak Glen*, 745 Union St.

Providence County

Central Falls, *Valley Falls Mill*, 1363 Broad St.
North Scituate, *Smithville Seminary*, Institute Lane.

Washington County

West Kingston, *Kingston Railroad Station*, Kingston Rd.

SOUTH CAROLINA

Kershaw County

Boykin vicinity, *Midfield Plantation*, NE of Boykin on SR 23.

Dorchester County

Ridgeville vicinity, *Cypress Methodist Camp Ground*, E of Ridgeville on SC 182.

SOUTH DAKOTA

Grant County

Milbank, *First Congregational Church of Milbank*, E. 3rd Ave.
Milbank, *First National Bank of Milbank*, 225 S. Main St.
Milbank, *Milbank Carnegie Library*, S. 3rd Ave.

Hyde County

Highmore, *Old Hyde County Courthouse*, 110 Commercial St. SE.

Jerauld County

Wessington Springs, *Vessey, Robert S., House*, 118 College Ave.

Spink County

Frankfort, *Masonic Temple/James River Bank Building*, off U.S. 212.

TENNESSEE

Robertson County

Springfield, *Robertson County Courthouse*, Public Square.

Sumner County

Gallatin, *Rosemont*, 810 S. Water St.

TEXAS

Bastrop County

Bastrop, *Crocheron-McDowall House*, 1502 Wilson St.

Gonzales County

Leesville vicinity, *Leesville Schoolhouse*, E of Leesville off TX 80.

Travis County

Austin, *Smith, B. J., House*, 700 W. 6th St.

Uvalde County

Uvalde, *Grand Opera House*, E. North and N. Getty Sts.

TRUST TERRITORY OF THE PACIFIC ISLANDS

Mariana Islands District

Saipan, *Waherak Maihar*, Public Works Hdqtrs., Lower Base.

Truk District

Tol Island, *Fauba Archeological Site*, Truk Lagoon.

VIRGINIA

Augusta County

Crimora vicinity, *Coiner House*, 1.5 mi. NW of Crimora.

Bedford (independent city)

Bedford Historic Meetinghouse, 153 W. Main St.

Fairfax County

Vienna, *Moorefield*, Morefield Hill Pl.

Gloucester County

Shacklefords vicinity, *Kempsville, E* of Shacklefords on VA 33.

King William County

Aylett vicinity, *Burlington*, NW of Aylett.

Nottoway County

Blackstone vicinity, *Oakridge*, W of Blackstone off VA 626.

[FR Doc.77-35385 Filed 12-12-77; 8:45 am]

[7020-02]

INTERNATIONAL TRADE COMMISSION

[Investigation No. 337-TA-32]

DOT MATRIX IMPACT PRINTERS

Commission Determination and Action

The Commission's rules allow any party to move for an order to terminate the investigation.[1] A favorable ruling on such motion by the Presiding Officer, when the Presiding Officer is not the Commission, constitutes a recommended determination under Rule 210.53.[2] The instant motion is based upon a non-exclusive cross-licensing agreement between Complainant Centronics Data Computer Corp. (Centronics) and Respondent Mannesmann-Prazisionstechnik, GmbH (MPT) concerning, inter alia, the '431 patent, and the alleged misappropria-

[1] Rule 210.51(a).
[2] Rule 210.51(c).

tion of trade secrets. In addition, the joint proposed stipulation to dismiss Data+Technik Co. (D+T) is based on the cancellation of D+T's distributorship prior to the institution of this investigation, and the resulting inability of the Complainant to demonstrate any present unfair act.

The Commission has decided to accept, with minor clerical corrections, proposed findings of fact 1-11 and proposed conclusions of law 1 and 2, which were proposed jointly by the private parties in this proceeding and were recommended by the presiding officer, and to terminate this investigation without further action.

FINDINGS OF FACT

1. The product involved in this investigation is a high speed impact printer, and more particularly the print head and solenoid assembly used in such printers. Matrix impact printers operate at extremely high speeds (on the order of 165 characters per second) by rapidly impacting a print wire against a ribbon. To attain the high speeds, it is important to provide a solenoid assembly capable of moving the print wire at extremely high speeds from a rest position within a time interval of one millisecond or less. Such a device is disclosed in U.S. Patent 3,690,431.

2. Complainant Centronics is a manufacturer of matrix impact printers having its principal place of business in Hudson, N.H. [Complaint, para. 8.]

3. Centronics is the owner of U.S. Letters Patent 3,690,431. [Complaint, para. 8.]

4. Respondents named in this proceeding are Mannesmann-Prazisionstechnik GmbH (MPT), SCI Systems, Inc. (SCI), and Data+Technik Co. (D+T). D+T was the exclusive distributor for MPT in the United States for certain matrix printers. D+T's distributorship was cancelled in November 1976, prior to the filing of the complaint in this investigation on March 14, 1977. Centronics, MPT, SCI and the Commission Investigative Staff have stipulated that D+T has not violated Section 337 and that the investigation as to D+T should be terminated. [Stipulation of October 27, 1977.]

5. Complainant and Respondents MPT and SCI have filed a joint motion to terminate the investigation. This motion was supported by the Commission Investigative Staff. [Response of Commission Staff to motion to terminate.]

6. All agreements between Centronics and Respondents respecting the subject matter of this proceeding have been submitted as exhibits to the parties' joint motion to terminate the investigation. [Affidavits of James M. Rhodes, Gregof Neff and Prentice Robinson, submitted with the parties' joint motion to terminate.]

7. Centronics, MPT and Mannesmann, A.G. have entered into a license agreement under which each party has granted the other a nonexclusive license under each other's patents to make, use and sell the dot matrix impact printers and solenoids and print head assemblies which are the subject of this investigation. [License agreement submitted with the parties' joint motion to terminate.]

8. The license agreement referred to above completely disposes of all outstanding allegations of violation of Section 337, regarding the use, manufacture and sale of devices which are covered by claims 1 and 4 of patent '431, and to trade secrets and proprietary information developed by Centronics.

9. The license agreement and other papers submitted with the parties' joint motion to terminate do not appear to conflict with the U.S. antitrust law or patent law, nor do they appear to have any other effects which might be detrimental to the public interest.[1]

10. U.S. Patent 3,690,431 for *Print Head Assembly Containing Solenoids* issued on September 12, 1972, from an application filed on June 14, 1971. The inventor is Robert Howard. The patent is assigned on its face to Centronics Data Computer Corp.

11. The Complainant, Respondent MPT and Mannesmann, A.G. have entered into a license agreement whereby MPT and its subsidiaries are licensed under patent '431 (along with other related patents) as well as to use confidential and proprietary information of Centronics concerning the manufacture of print heads and components thereof. The Complainant and Respondent have agreed upon a substantial consideration. Accordingly, any alleged unfair trade practice or misuse of trade secrets has ceased.

CONCLUSIONS OF LAW

1. The Commission has jurisdiction over the subject matter of this investigation and of the Respondents named by the Commission in its notice.

2. There is no violation of Section 337 in that Complainant has licensed Respondents under its patent and trade secrets, and hence, there is no unfair competition or unfair acts in the importation or sale of (i) print head assemblies for dot matrix printers; (ii) solenoids forming a part of such print head assemblies; and (iii) dot matrix impact printers containing such print head assemblies.

Accordingly, these proceedings are hereby terminated.

By order of the Commission.

Issued: December 8, 1977.

KENNETH R. MASON,
Secretary.

[FR Doc. 77-35575 Filed 12-12-77; 8:45 am]

[1] Vice Chairman Parker and Commissioner Ablondi do not concur in finding No. 9. However, in lieu of finding No. 9, we find that the recommended determination, which was based on the joint motion of the parties, was served upon the Department of Health, Education, and Welfare, the Department of Justice, and the Federal Trade Commission in accordance with the provisions of section 337(b)(2) of the Tariff Act of 1930 as amended, and that none of the agencies specified or any other person, including the Investigative Staff of the Commission, claimed that the recommended action would result in any adverse public interest. Nor does it appear that the recommended action would result in any adverse public interest.

[4510-26]

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

OREGON STATE STANDARDS

Approval

1. *Background.* Part 1953 of Title 29, Code of Federal Regulations prescribes procedures under section 18 of the Occupational Safety and Health Act of 1970 (hereinafter called the Act) by which the Regional Administrator for Occupational Safety and Health (hereinafter called Regional Administrator) under a delegation of authority from the Assistant Secretary of Labor for Occupational Safety and Health (hereinafter called the Assistant Secretary) (29 CFR 1953.4) will review and approve standards promulgated pursuant to a State plan which has been approved in accordance with section 18(c) of the Act and 29 CFR Part 1902. On December 28, 1972, notice was published in the FEDERAL REGISTER (37 FR 28628) of the approval of the Oregon plan and the adoption of Subpart D to Part 1952 containing the decision. The Notice of Approval of Revised Developmental Schedule was further published on April 1, 1974 in the FEDERAL REGISTER (39 FR 11881).

The Oregon plan provides for the adoption of State standards which are at least as effective as comparable Federal standards promulgated under section 6 of the Act.

Sections 1952.105-109 of Subpart D sets forth the State's schedule for the adoption of at least as effective State standards. By letter dated August 24, 1977 from M. Keith Wilson to James W. Lake and incorporated as part of the plan, the State submitted State standards comparable to 29 CFR Part 1926, as published in the FEDERAL REGISTER (39 FR 22801) dated June 24, 1974. These standards, which are contained in Oregon Construction Code,

were promulgated following hearings held on January 8, 1975 and May 25, 1977.

2. *Decision.* Having reviewed the State submission in comparison with Federal standards, it has been determined that the State standards are at least as effective as the comparable Federal standards and accordingly should be approved. In general, Oregon has changed the Federal numbering system to correspond to the Oregon Administrative Code, and made mandatory many of the informational Federal standards. The detailed standards comparison is available at the locations specified below.

3. *Location of supplement for inspection and copying.* A copy of the standards supplement, along with the approved plan, may be inspected and copied during normal business hours at the following locations: Office of the Regional Administrator, Occupational Safety and Health Administration, Room 6003, Federal Office Building, 909 First Avenue, Seattle, Wash. 98174; Workers' Compensation Board, Labor and Industries Building, Room 204, Salem, Oreg. 97310; and the Technical Data Center, Room S-6212, 200 Constitution Avenue NW., Washington, D.C. 20210.

4. *Public participation.* Under 29 CFR 1953.2(c) the Assistant Secretary may prescribe alternative procedures to expedite the review process or for other good cause which may be consistent with applicable laws. The Assistant Secretary finds that good cause exists for not publishing the supplement to the Oregon plan as a proposed change and making the Regional Administrator's approval effective December 13, 1977, for the following reason:

The standards were adopted in accordance with the procedural requirements of State law which included public comment and further public participation and notice would be repetitious.

This decision is effective December 13, 1977.

(Sec. 18, Pub. L. 91-596, 84 Stat. 1608 (29 U.S.C. 667).)

Signed at Seattle, Wash., this 18th day of October, 1977.

JAMES W. LAKE,
Regional Administrator, OSHA.

[FR Doc. 77-35429 Filed 12-12-77; 8:45 am]

[4510-26]

OREGON STATE STANDARDS

Approval

1. *Background.* Part 1953 of Title 29, Code of Federal Regulations prescribes procedures under section 18 of the Occupational Safety and Health Act of 1970 (hereinafter called the Act) by which the Regional Administrator for Occupational Safety and Health (hereinafter called Regional Administrator) under a delegation of authority from the Assistant Secretary of Labor for Occupational Safety and Health (hereinafter called the Assistant Secretary) (29 CFR 1953.4) will review and approve standards promulgated pursuant to a State plan which has been approved in accordance with section 18(c) of the Act and 29 CFR Part 1902. On December 28, 1972, notice was published in the FEDERAL REGISTER (37 FR 28628) of the approval of the Oregon plan and the adoption of Subpart D to Part 1952 containing the decision. The Notice of Approval of Revised Developmental Schedule was further published on April 1, 1974 in the FEDERAL REGISTER (39 FR 11881).

The Oregon plan provides for the adoption of State standards which are at least as effective as comparable Federal standards promulgated under section 6 of the Act.

Sections 1952.105-109 of Subpart D sets forth the State's schedule for the adoption of at least as effective State standards. By letter dated August 24, 1977 from M. Keith Wilson to James W. Lake and incorporated as part of the plan, the State submitted State standards comparable to 29 CFR Part 1926, as published in the FEDERAL REGISTER (39 FR 22801) dated June 24, 1974. These standards, which are contained in Oregon Construction Code, were promulgated following hearings held on January 8, 1975 and May 25, 1977.

2. *Decision.* Having reviewed the State submission in comparison with Federal standards, it has been determined that the State standards are at least as effective as the comparable Federal standards and accordingly should be approved. In general, Oregon has changed the Federal numbering system to correspond to the Oregon Administrative Code, and made mandatory many of the informational Federal standards. The detailed standards comparison is available at the locations specified below.

3. *Location of supplement for inspection and copying.* A copy of the standards supplement, along with the approved plan, may be inspected and copied during normal business hours at the following locations: Office of the Regional Administrator, Occupational Safety and Health Administration, Room 6003, Federal Office Building, 909 First Avenue, Seattle, Wash. 98174, Workers' Compensation Board, Labor and Industries Building, Room 204, Salem, Oreg. 97310; and the Technical Data Center, Room S-6212, 200 Constitution Avenue NW., Washington, D.C. 20210.

4. *Public participation.* Under 29 CFR 1953.2(c) the Assistant Secretary may prescribe alternative procedures to expedite the review process or for other good cause which may be consistent with applicable laws. The Assistant Secretary finds that good cause exists for not publishing the supplement to the Oregon plan as a proposed change and making the Regional Administrator's approval effective December 13, 1977, for the following reason:

The standards were adopted in accordance with the procedural requirements of State law which included public comment and further public participation and notice would be repetitious.

This decision is effective December 13, 1977.

(Sec. 18, Pub. L. 91-596, 84 Stat. 1608 (29 U.S.C. 667).)

Signed at Seattle, Wash., this 18th day of October, 1977.

JAMES W. LAKE,
Regional Administrator, OSHA.

[FR Doc.77-35430 Filed 12-12-77; 8:45 am]

[4510-26]

OREGON STATE STANDARDS

Approval

1. *Background.* Part 1953 of Title 29, Code of Federal Regulations prescribes procedures under section 18 of the Occupational Safety and Health Act of 1970 (hereinafter called the Act) by which the Regional Administrator for Occupational Safety and Health (hereinafter called Regional Administrator) under a delegation of authority from the Assistant Secretary of Labor for Occupational Safety and Health (hereinafter called the Assistant Secretary) (29 CFR 1953.4) will review and approve standards promulgated pursuant to a State plan which has been approved in accordance with section 18(c) of the Act and 29 CFR Part 1902. On December 28, 1972, notice was published in the FEDERAL REGISTER (37 FR 28628) of the approval of the Oregon plan and the adoption of Subpart D to Part 1952 containing the decision. The Notice of Approval of Revised Developmental Schedule was further published on April 1, 1974 in the FEDERAL REGISTER.

The Oregon plan provides for the adoption of State standards which are at least as effective as comparable Federal standards promulgated under section 6 of the Act. Section 1953.20 provides that "where any alteration in the Federal program could have an adverse impact on the at least as effective as" status of the State program, a program change supplement to a State plan shall be required.

In response to Federal standards changes, the State has submitted by

letter dated September 12, 1977 from Roy G. Green to James W. Lake and incorporated as part of the plan, State standards comparable to 29 CFR 1910.309(c) and 29 CFR 1926.400(h), Ground Fault Protection, as published in the FEDERAL REGISTER (41 FR 55696) dated December 21, 1977.

These State standards, which are contained in OAR 437 Chapter 4 Electrical Code, were promulgated after public hearings held on June 1, 1977.

2. *Decision.* Having reviewed the State submission in comparison with the Federal standards, it has been determined that the State standards are at least as effective as the comparable Federal standards and accordingly should be approved. The significant area of difference is the exclusion of double insulated power tools from the required test for continuity of the grounding conductor. The detailed standards comparison is available at the locations specified below.

3. *Location of supplement for inspection and copying.* A copy of the standards supplement, along with the approved plan, may be inspected and copied during normal business hours at the following locations: Office of the Regional Administrator, Occupational Safety and Health Administration, room 6003, Federal Office Building, 909 First Avenue, Seattle, Wash. 98174; Workers' Compensation Board, Labor and Industries Building, Salem, Oregon 97310; and the Technical Data Center, room N3620, 200 Constitution Avenue NW., Washington, D.C. 20210.

4. *Public participation.* Under 29 CFR 1953.2(c) the Assistant Secretary may prescribe alternative procedures to expedite the review process or for other good cause which may be consistent with applicable laws. The Assistant Secretary finds that good cause exists for not publishing the supplement to the Oregon plan as a proposed change and making the Regional Administrator's approval effective upon publication for the following reason:

The standards were adopted in accordance with the procedural requirements of State law which included public comment and further public participation and notice would be repetitious.

This decision is effective December 13, 1977.

(Sec. 18, Pub. L. 91-596, 84 Stat. 1608 (29 U.S.C. 667).)

Signed at Seattle, Wash., this 18th day of October, 1977.

JAMES W. LAKE,
Regional Administrator, Occupational Safety and Health Administration.

[FR Doc. 77-35427 Filed 12-12-77; 8:45 pm]

[4510-26]

MEETING FOR TECHNICAL DISCUSSION OF SAFETY STANDARDS

Temporary Floor and Wall Openings, Flat Roofs, Stairs, Railings, and Toe Boards

On January 10, 1978, the Occupational Safety and Health Administration (OSHA), Office of Construction and Civil Engineering Safety Standards will hold a meeting with representatives from the American National Standards Institute (ANSI). The purpose is to review the technical requirements of the ANSI standard A10.18-1977, Safety Requirements for Temporary Floor and Wall Openings, Flat Roofs, Stairs, Railings, and Toe Boards. The discussion should help define and identify those provisions which may be appropriate for regulatory consideration and the development of supportive and other pertinent data.

The meeting, which is open to the public, will begin at 9 a.m. in room S5215-C, U.S. Department of Labor, 200 Constitution Avenue NW., Washington, D.C. 20210. Interested persons are invited to attend.

Copies of documents presented at the meeting will be placed in the Public Document Room S6212, Technical Data Center, U.S. Department of Labor, 200 Constitution Avenue NW., Washington, D.C. 20210, where they will be available for inspection by the public.

Further information concerning the meeting may be obtained from the Office of Construction and Civil Engineering Safety Standards, Occupational Safety and Health Administration, Washington, D.C. 20210, 202-523-8164.

Dated at Washington, D.C., this 7th day of December, 1977.

BASIL J. WHITING, Jr.,
Deputy Assistant Secretary of Labor.

[FR Doc. 77-35428 Filed 12-12-77; 8:45 am]

[4510-28]

OFFICE OF THE SECRETARY

EARTH SHOE STORE CO., ET AL.

Investigations Regarding Certifications of Eligibility To Apply for Worker Adjustment Assistance

Petitions have been filed with the Secretary of Labor under section 221(a) of the Trade Act of 1974 ("the Act") and are identified in the Appendix to this notice. Upon receipt of these petitions, the Director of the Office of Trade Adjustment Assistance, Bureau of International Labor Affairs, has instituted investigations pursuant to section 221(a) of the Act and 20 CFR 90.12

The purpose of each of the investigations is to determine whether absolute or relative increases of imports of articles like or directly competitive with articles produced by the workers' firm or an appropriate subdivision thereof have contributed importantly to an absolute decline in sales or production, or both, of such firm or subdivision and to the actual or threatened total or partial separation of a significant number or proportion of the workers of such firm or subdivision.

Petitioners meeting these eligibility requirements will be certified as eligible to apply for adjustment assistance under Title II, Chapter 2, of the Act in accordance with the provisions of Subpart B of 29 CFR Part 90. The investigations will further relate, as appropriate, to the determination of the date on which total or partial separations began or threatened to begin and the subdivision of the firm involved.

Pursuant to 29 CFR 90.13, the petitioners or any other persons showing a substantial interest in the subject matter of the investigations may request a public hearing, provided such request is filed in writing with the Director, Office of Trade Adjustment Assistance, at the address shown below, not later than December 23, 1977.

Interested persons are invited to submit written comments regarding the subject matter of the investigations to the Director, Office of Trade Adjustment Assistance, at the address shown below, not later than December 23, 1977.

The petitions filed in this case are available for inspection at the Office of the Director, Office of Trade Adjustment Assistance, Bureau of International Labor Affairs, U.S. Department of Labor, 200 Constitution Avenue NW., Washington, D.C. 20210.

Signed at Washington, D.C., this 17th day of November 1977.

MARVIN M. FOOKS,
Director, Office of Trade Adjustment Assistance.

APPENDIX

Petitioner: Union/ workers or former workers of—	Location	Date received	Date of petition	Petition No.	Articles produced
Earth Shoe Store, (company).	Providence, R.I...	11/2/77	10/28/77	TA-W-2,618.....	Men's and women's earth shoes.
Fairhaven Corp. (workers).	New Bedford, Mass.	11/7/77	11/3/77	TA-W-2,619.....	Ladies' handbags.
General Electric Co., Imaging Devices Operation (IUE).	Syracuse, N.Y	11/7/77	11/1/77	TA-W-2,620.....	Vidicon tubes.

APPENDIX—Continued

Petitioner: Union/ workers or former workers of—	Location	Date received	Date of petition	Petition No.	Articles produced
Kay Windsor, Inc. (workers).	Dartmouth, Mass.	11/7/77	11/3/77	TA-W-2,621	Ladies' spotswear and dresses.
Madeline May Co. (ILGWU).	Salisbury, Pa.	11/7/77	10/28/77	TA-W-2,622	Ladies' sportswear and swim suits.
Roma Fashions, Inc. (ACTWU).	New York, N.Y.	11/7/77	10/31/77	TA-W-2,623	Men's suits.
Rubber Corp. of Pennsylvania (United Shoeworkers of America).	West Hazleton, Pa.	11/2/77	10/27/77	TA-W-2,624	Bedroom slippers, women's vinyl boots, and leisure shoes.
Vincent Formal & Leisurewear, Inc. (ACTWU).	New York, N.Y.	11/7/77	10/31/77	TA-W-2,625	Men's suits.

[FR Doc. 77-35426 Filed 12-12-77; 8:45 am]

[4510-28]

Office of the Secretary

[TA-W-2461]

CENTRAL ELECTRONICS CO., PARIS, ILL.

Certification Regarding Eligibility To Apply for Worker Adjustment Assistance

In accordance with section 223 of the Trade Act of 1974 the Department of Labor herein presents the results of TA-W-2461: Investigation regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigation was initiated on October 12, 1977, in response to a worker petition received on October 12, 1977, which was filed on behalf of workers and former workers producing color television parts and components at the Paris, Ill., plant of Central Electronics Co., a division of Zenith Radio Corp.

The notice of investigation was published in the FEDERAL REGISTER on October 25, 1977 (42 FR 56376). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of Zenith Radio Corp., the U.S. Department of Commerce, the U.S. International Trade Commission, the Electronics Industries Association, industry analysts, and Department files.

In order to make an affirmative determination and issue a certification of eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That a siginificant number or proportion of the workers in such workers' firm, or an appropriate subdivision thereof, have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such firm or sibdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increased quantities, either actual or relative to domestic production; and

(4) That such increased imports have contributed importantly to the separations, or threat thereof, and to the decrease in sales or production. The term "contributed importantly" means a cause which is important but not necessarily more important than any other cause.

The investigation has revealed that all of the above criteria have been met.

SIGNIFICANT TOTAL OR PARTIAL SEPARATIONS

The average number of hourly workers at the Paris, Ill., plant declined 6.1 percent from 1974 to 1975 and increased 3.5 percent from 1975 to 1976. Employment decreased 15.2 percent in the last quarter of 1976 compared to the last quarter of 1975. Employment declined 10.8 percent in the first nine months of 1977 compared to the same period in 1976.

SALES, OR PRODUCTION, OR BOTH, HAVE DECREASED ABSOLUTELY

Subassembly and component production declined in direct relation to increases in imports of those items.

INCREASED IMPORTS

Imports of color televisions, including combinations, increased in absolute terms from 1,318 thousand units in 1972 to 1,459 thousand units in 1973 and then declined to 1,303 thousand units in 1974 and to 1,021 thousand units in 1975. Imports rose to 2,856 thousand units in 1976, an increase of 179.8 percent from 1975. Imports further increased to 1,283 thousand units in the first six months of 1977 compared to 1,030 thousand units in the same period in 1976, an increase of 24.5 percent.

The ratio of imports to domestic production decreased from 18.9 percent 1973 to 17.9 percent in 1975 and then rose to 56.7 percent in 1976. The ratio of imports to domestic production increased from 43.9 percent in the first six months of 1976 to 44.9 percent in the first six months of 1977.

CONTRIBUTED IMPORTANTLY

Zenith has a plant in Matamoros, Mexico, where it produces various component parts and subassemblies used in the domestic production of both color and black and white televisions.

Imports include guns, tuners, yokes, pincushions, CRT sockets, channel selectors, tuner brackets, and nerve centers. Imports from Mexico, in terms of unadjusted value, increased 114.3 percent from 1974 to 1975 and increased 47.0 percent from 1975 to 1976. In 1977, based on data collected for six months, imports increased at an annual rate of 15.5 percent compared to 1976.

Zenith's plant in Taiwan, in conjunction with production of black and white televisions, produces various component parts and subassemblies used in the domestic production of both color and black and white televisions.

Imports from Taiwan, in terms of unadjusted value, increased 78.6 percent from 1975 to 1976. In the first nine months of 1977, imports declined 12.9 percent compared to the same period in 1976, but remained above 1975 levels. Imports of color components increased 15.7 percent from 1975 to 1976 and increased 22.0 percent in the first nine months of 1977 compared to the same period in 1976.

CONCLUSION

After careful review of the facts obtained in the investigation, I conclude that increases of imports of articles like or directly competitive with color televisions produced at Central Electronics Co., Paris, Ill., contributed importantly to the decrease in sales or production and to the total or partial separations of the workers of that plant. In acordance with the provisions of the Act, I make the following certification:

All workers at the Paris, Ill., plant of Central Electronics Co., a division of Zenith Radio Corp., who became totally or partially separated from employment on or after October 4, 1976, are eligible to apply for adjustment assistance under Title II, Chapter 2 of the Trade Act of 1974.

Signed at Washington, D.C., this 30th day of November 1977.

HARRY GRUBERT,
Director, Office of Foreign Economic Research.

[FR Doc. 77-35581 Filed 12-12-77; 8:45 am]

[4510-28]

[TA-W-1811]

GENERAL MOTORS CORP., TEREX DIVISION, HUDSON, OHIO

Negative Determination Regarding Eligibility To Apply for Worker Adjustment Assistance

In accordance with section 223 of the Trade Act of 1974 the Department of Labor herein presents the results of TA-W-1811: Investigation regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigation was initiated on March 15, 1977, in response to a worker petition received on March 14, 1977, which was filed by the United Auto Workers of America on behalf of workers and former workers producing wheel type, front-end loaders and crawler tractors at the Hudson, Ohio plant of Terex Division of General Motors Corp.

The notice of investigation was published in the FEDERAL REGISTER on April 5, 1977 (42 FR 18155). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of Terex Division, General Motors Corp., customers of the Hudson plant, the U.S. Department of Commerce, the U.S. International Trade Commission, industry analysts, and Department files.

In order to make an affirmative determination and issue a certification of eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That a significant number or proportion of the workers in the workers' firm, or an appropriate subdivision thereof, have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such firm or subdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increased quantities, either actual or relative to domestic production; and

(4) That such increased imports have contributed importantly to the separations, or threat thereof and to the decrease in sales and production. The term "contributed importantly" means a cause which is important but not necessarily more important than any other cause.

Without regard to whether any of the other criteria were met, criterion four (4) was not met.

The Department's investigation revealed that the Terex Division, Hudson, Ohio, plant produces two types of earth-moving equipment: Crawler tractors and wheel type, front-end loaders. Principal markets for these vehicles include the construction and mining industries.

Terex does not import finished front-end loaders or crawler tractors. Certain components used in the production of these vehicles are imported. However, no component parts that are, or were previously, manufactured at the Hudson plant are imported by Terex.

Customers of wheel type, front-end loaders and crawler tractors produced at the Hudson plant were surveyed regarding their purchases of off-highway construction equipment. Establishing a trend of customers' purchases is difficult because a company seldom buys vehicles in consecutive years or buys more than one vehicle at a time. None of the customers surveyed purchased vehicles that were manufactured offshore.

Loss of export sales accounted for a substantial part of the 1976 decline in Terex's sales of vehicles produced at the Hudson plant. While total sales (both domestic and export), of wheel loaders declined 57 percent from 1975 to 1976, export sales of wheel loaders declined 81 percent from 1975 to 1976. Similarly, total sales of crawler tractors declined 46 percent and export sales of crawler tractors declined 35 percent, from 1975 to 1976.

In the first quarter of 1977, both total sales and export sales of each wheel loaders and crawler tractors, increased when compared to the first quarter of 1976.

The decline in sales of Terex vehicles in 1976 follows the trend of the construction equipment industry. Domestic production and consumption of wheel loaders and crawler tractors declined in 1975 and 1976. The declines are attributed to the domestic recession which had an adverse effect on the construction industry. The recessionary impact induced contractors to undertake new projects with existing equipment and forego purchases of new construction vehicles. In 1977, sales of Terex vehicles are increasing, reflecting an industry recovery.

For the 5-year period 1972 through 1976, the ratio of imports of wheel type, front-end loaders to domestic production did not exceed 2.4 percent. For the same period, the ratio of imports of tracklaying tractors to domestic production peaked at 6.7 percent in 1972 and has remained below that level in subsequent years.

The relatively low levels of imports compared to domestic production is primarily the result of quality considerations. Domestic vehicles are of superior quality due to long life spans and low maintenance costs.

CONCLUSION

After careful review of the facts obtained in the investigation, I conclude that increases of imports like or directly competitive with wheel type front-end loaders and crawler tractors produced at the Hudson, Ohio, plant of Terex Division of General Motors Corp., did not contribute importantly to the decline in sales or production and the total or partial separation of workers of that plant.

Signed at Washington, D.C., this 2d day of December 1977.

JAMES F. TAYLOR,
Director, Office of Management, Administration, and Planning.

[FR Doc. 77-35582 Filed 12-12-77; 8:45 am]

[4510-28]

[TA-W-2259]

HARRY SCHNIDER CO., LOS ANGELES, CALIF.

Certification Regarding Eligibility To Apply for Worker Adjustment Assistance

In accordance with section 223 of the Trade Act of 1974 the Department of Labor herein presents the results of TA-W-2259: Investigation regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigation was initiated on August 15, 1977 in response to a worker petition received on August 4, 1977 which was filed by the Joint Board—International Ladies Garment Workers Union on behalf of workers and former workers producing ladies' coats at Harry Schnider Co., Los Angeles, Calif.

The Notice of Investigation was published in the FEDERAL REGISTER on September 2, 1977 (42 FR 44298). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of Harry Schnider Co., its customers, the International Ladies Garment Union, the U.S. Department of Commerce, the U.S. International Trade Commission, industry analysts, and Department files.

In order to make an affirmative determination and issue a certification of eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That a significant number or proportion of the workers in such workers' firm, or an appropriate subdivision of the firm have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such firm subdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increased quantities, either actual or relative domestic production; and

(4) That such increased imports have contributed importantly to the separation, or threat thereof, and to the decrease in sales

or production. The term "contributed importantly" means a cause which is important, but not necessarily more important than any other cause.

The investigation has revealed that all of the above criteria have been met.

SIGNIFICANT TOTAL OR PARTIAL SEPARATIONS

Average employment of all workers at Harry Schnider Co. declined 22.2 percent from 1975 to 1976. The company closed in June 1977.

SALES OR PRODUCTION, OR BOTH, HAVE DECREASED ABSOLUTELY

Total sales of ladies' coats declined 59.6 percent from 1975 to 1976, and declined 19.2 percent in the first 6 months of 1977 compared to the first 6 months of 1976. Since coats are produced for order at Harry Schnider Co., sales and production are equivalent.

INCREASED IMPORTS

Imports of ladies' coats and jackets increased in absolute terms from 1972 to 1973, declined 18.2 percent from 1973 to 1974, and increased 2.6 percent from 1974 to 1975. Imports increased 48.5 percent from 1975 to 1976, and increased 28.1 percent in the first 6 months of 1977 compared to the same period in 1976. The ratios of imports to domestic production and consumption increased from 38.9 percent and 28 percent, respectively, in 1975 to 57.5 percent and 36.5 percent, respectively, in 1976.

CONTRIBUTED IMPORTANTLY

The adverse effect of imports on small coat manufacturers has been compounded by changes in the ladies' coat market and the industry. The clothing industry is becoming concentrated into fewer, larger manufacturers with diversified product lines. The womens' coat market shifted to more casually styled, nonwool, all weather raincoats, made of imitation suedes, polyurethane, corduroy, etc. Both the larger domestic manufacturers and importers have been able to meet the style change with large quantities of stylish, low-priced coats making it difficult for small, specialized manufacturers, such as Harry Schnider Co., to stay in business or to switch to other apparel lines.

Customers of Harry Schnider Co. who were surveyed indicated the purchase of imports of ladies' coats allowed them to offer consumers quality merchandise at a lower price range in comparison to the higher costs of domestically manufactured goods. A major customer ceased all purchases from Harry Schnider Co. and as well as most of its other domestic manufacturers and now purchases over 60 percent of its coats from foreign sources.

CONCLUSION

After careful review of the facts obtained in the investigation, I conclude that increases of imports like or directly competitive with ladies' coats produced at Harry Schnider Co., Los Angeles, Calif. contributed importantly to the total or partial separations of the workers at that firm. In accordance with provisions of the Act, I make the following certification:

All workers at Harry Schnider Co., Los Angeles, Calif. who became totally or partially separated from employment on or after August 1, 1976 and on or before November 15, 1977 are eligible to apply for adjustment assistance under Title II, Chapter 2 of the Trade Act of 1974.

Signed at Washington, D.C., this 30th day of November 1977.

JAMES F. TAYLOR,
Director, Office of Management, Administration, and Planning.

[FR Doc. 77-35583 Filed 12-12-77; 8:45 am]

[4510-28]

[TA-W-2532]

HORTON & HUBBARD MANUFACTURING, CORP., NASHUA, N.H.

Terminatio n of Investigation

Pursuant to section 221 of the Trade Act of 1974, an investigation was initated on October 31, 1977 in response to a worker petition received on October 13, 1977 which was filed by three workers on behalf of workers formerly producing stereo speaker cabinets at Horton & Hubbard Manufacturing Corp., Nashua, N.H.

The notice of investigation was published in the FEDERAL REGISTER on November 15, 1977 (42 FR 59132). No public hearing was requested and none was held.

During the course of the investigation, it was established that all workers in the stereo speaker cabinet department at Horton & Hubbard Manufacturing Corp., Nashua, N.H., were previously denied eligibility to apply for adjustment assistance benefits on May 27, 1977 (see TA-W-1588).

The existing negative determination covered all workers of the stereo speaker cabinet department that were separated before or during December, 1976, when the plant was closed. No workers have been employed at the plant since that time. Since all workers in the stereo speaker cabinet department were covered by the negative determination, and since there has been no employment at the plant since the previous detemination was issued, a new investigation would serve no purpose; consequently the investigation has been terminated.

Signed at Washington, D.C., this 6th day of December 1977.

MARVIN M. FOOKS,
Director, Office of Trade Adjustment Assistance.

[FR Doc. 77-35584 Filed 12-12-77; 8:45 am]

[4510-28]

[TA-W-2587]

SISCO, INC., CANTON, OHIO

Negative Determination Regarding Eligibility To Apply for Worker Adjustment Assistance

In accordance with section 223 of the Trade Act of 1974 the Department of Labor herein presents the results of TA-W-2587: Investigation regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigation was initiated on November 9, 1977, in response to a worker petition received on October 31, 1977, which was filed by the United Steelworkers of America on behalf of workers and former workers of Sisco, Inc., who were hired to repair ingot molds at the Canton, Ohio, plant of republic Steel.

The Notice of Investigation was published in the FEDERAL REGISTER on November 18, 1977 (42 FR 59565). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of Sisco, Inc., and Department files.

In order to make an affirmative determination and issue a certification of eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That a significant number or proportion of the workers in such workers' firm, or an appropriate subdivision thereof, have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such firm or subdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increased quantities, either actual or relative to domestic production; and

(4) That such increased imports have contributed importantly to the separations, or threat thereof, and to the decrease in sales or production. The term "contributed importantly" means a cause which is important but not necessarily more important than any other cause.

Sisco, Inc., is a contractor for the steel industry in the repairing of ingot molds. The petitioners, employees of Sisco, were hired to repair ingot molds which were used in the production of stainless steel at the Canton, Ohio, plant of Republic Steel. There is no corporate relationship between Sisco, Inc., and Republic Steel.

The Department of Labor has previously determined that the performance of services is not included within the term "articles" as used in section 222 (3) of the Act. See Notice of Negative Determination in Pan American World Airways, Inc., (TA-W-153; 40 FR 54639).

Sisco, Inc., provides the service of repairing ingot molds for steel producers. Sisco, Inc., was not involved in the production of an article within the meaning of section 222 (3) of the Act.

CONCLUSION

After careful review of the issues, I have determined that the services provided by Sisco, Inc., are not articles within the meaning of section 222 (3) of the Trade Act of 1974 and that the workers should therefore be denied eligibility to apply for adjustment assistance.

Signed at Washington, D.C., this 30th day of November 1977.

JAMES F. TAYLOR,
Director, Office of Management, Administration, and Planning.

[FR Doc. 77-35585 Filed 12-12-77; 8:45 am]

[4510-28]

[TA-W-2440]

U.S. STAMPING CO., MOUNDSVILLE, W. VA.

Certification Regarding Eligibility To Apply for Worker Adjustment Assistance

In accordance with section 223 of the Trade Act of 1974 the Department of Labor herein presents the results of TA-W-2240: Investigation regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigation was initiated on October 11, 1977, in response to a worker petition received on October 4, 1977, which was filed by the United Steelworkers of America and the International Association of Machinists on behalf of workers and former workers producing porcelain enameled cookware at U.S. Stamping Co., Moundsville, W. Va.

The notice of investigation was published in the FEDERAL REGISTER on October 25, 1977 (42 FR 56375). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of U.S. Stamping Co., its customers, the U.S. Department of Commerce, the U.S. International Trade Commission, industry analysts, and Department files.

In order to make an affirmative determination and issue a certification of eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That a significant number or proportion of the workers in such workers' firm, or an appropriate subdivision thereof, have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such firm or subdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increase quantities, either actual or relative to domestic production; and

(4) That such increased imports have contributed importantly to the separations, or threat thereof, and to the decrease in sales or production. The term "contributed importantly" means a cause which is important but not necessarily more important than any other cause.

The Department's investigation has revealed that all of the above criteria have been met.

SIGNIFICANT TOTAL OR PARTIAL SEPARATIONS

The average number of production workers at U.S. Stamping Co. declined 8 percent from 1974 to 1975, declined 3 percent from 1975 to 1976, and declined 20 percent in the first 9 months of 1977 compared to the like period of 1976.

All production employment will be terminated when the company closes in December 1977.

SALES, PRODUCTION, OR BOTH HAVE DECREASED ABSOLUTELY

Sales of porcelain enameled cookware declined 2 percent in value from 1974 to 1975, declined 15 percent from 1975 to 1976, and declined 28 percent in the first 6 months of 1977 compared to the like period of 1976.

INCREASED IMPORTS

Imports of porcelain enameled cookware, in quantity, decreased from 1972 to 1973, declined from 1973 to 1974, and then increased from 1974 to 1975. Imports increased 18 percent in quantity, from 1975 to 1976 and increased 23 percent in the first 9 months of 1977 compared to the like period of 1976.

Imports of porcelain enameled cookware, in value, increased from 1972 to 1973, declined from 1973 to 1974 and then increased from 1974 to 1975. Imports increased 29 percent, in value, from 1975 to 1976 and increased 17 percent in the first 9 months of 1977 compared to the like period of 1976.

CONTRIBUTED IMPORTANTLY

U.S. Stamping Co., deals with a large volume of customers, each representing a negligible percentage of U.S. Stamping's total sales. A sample of 10 customers, representing approximately 10 percent of U.S. Stamping's total sales in each year 1975 and 1976, was surveyed by the Department regarding their purchases of porcelain enameled cookware. Eight responses were received. Six of the responding customers purchased imported porcelain enameled cookware. Of these, customer representing appoximately 30 percent of the sample of sales reduced purchases from U.S. Stamping Co., and substituted purchases of imported porcelain enameled cookware.

CONCLUSION

After careful review of the facts obtained in the investigation, I conclude that increases of imports like or directly competitive with porcelain enameled cookware produced at U.S. Stamping Co., Moundsville, W. Va., contributed importantly to the total or partial separation of the workers of that firm. In accordance with the provisions of the Act, I make the following certification:

All workers at U.S. Stamping Co., Moundsville, W. Va., who became totally or partially separated from employment on or after October 27, 1976, are eligible to apply for adjustment assistance under Title II, Chapter 2, of the Trade Act of 1974.

Signed at Washington, D.C., this 2d day of December 1977.

JAMES F. TAYLOR,
Director, Office of Management, Administration, and Planning.

[FR Doc. 77-35586 Filed 12-12-77; 8:45 am]

[4510-28]

[TA-W-2455, 2456]

ZENITH ELECTRONICS CORP. OF INDIANA, EVANSVILLE, IND.

Negative Determinations Regarding Eligibility To Apply for Worker Adjustment Assistance

In accordance with section 223 of the Trade Act of 1974, the Department of Labor herein presents the results of TA-W-2455 and 2456: Investigations regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigations were initiated on October 12, 1977, in response to worker petitions received on October 12, 1977, which were filed on behalf of workers and former workers producing television and stereo components at Zenith Electronics Corp. of Indiana's two plants in Evansville, Ind. The investigation revealed that television cabinets are produced in Evansville.

The notice of investigation was published in the FEDERAL REGISTER on October 25, 1977 (42 FR 56376). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of Zenith Radio Corp., the U.S. Department of Commerce, the U.S. International

Trade Commission, the Electronics Industries Association, industry analysts, and Department files.

In order to make an affirmative determination and issue a certification of eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That a significant number or proportion of the workers in such workers' firm, or an appropriate subdivision thereof, have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such firm or subdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increased quantities, either actual or relative to domestic production; and

(4) That such increased imports have contributed importantly to the separations, or threat thereof, and to the decrease in sales or production. The term "contributed importantly" means a cause which is important but not necessarily more important than any other cause.

Without regard to whether any of the other criteria have been met, criterion (2) has not been met.

The Department's investigation revealed that production of television cabinets produced at the Evansville plants increased 40.1 percent from 1974 to 1975, increased 26.7 percent from 1975 to 1976 and increased 0.9 percent in the first nine months of 1977 compared to the same period in 1976.

Television cabinets produced in Evansville are used almost exclusively in the production of color television consoles. Sales and production of color televisions at Zenith increased from 1975 to 1976 and in the first nine months of 1977 compared to the same period in 1976.

Conclusion

After careful review of the facts obtained in the investigation, I conclude that sales or production at the Evansville, Ind., plants of the Zenith Electronics Corp. of Indiana have not decreased absolutely as required for certification under section 222 of the Trade Act of 1974.

Signed at Washington, D.C., this 30th day of November 1977.

Harry Grubert,
Director, Office of Foreign Economic Research.

[FR Doc. 77-35587 Filed 12-12-77; 8:45 am]

[4510-28]

[TA-W-2453; TA-W-2457]

ZENITH ELECTRONICS CORP. OF IOWA, SIOUX CITY, IOWA AND ZENITH ELECTRONICS CORP. OF PENNSYLVANIA, WATSONTOWN, PA.

Certifications Regarding Eligibility To Apply for Worker Adjustment Assistance

In accordance with section 223 of the Trade Act of 1974, the Department of Labor herein presents the results of TA-W-2453 and 2457: Investigations regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigations were initiated on October 12, 1977, in response to a worker petition received on October 6, 1977, which was filed by the International Association of Machinists and Aerospace Workers (IAMAW), on behalf of workers and former workers producing television and stereo components at the Zenith Electronics Corp. of Iowa, Sioux City, Iowa, and in response to a worker petition received on October 12, 1977, which was filed on behalf of workers and former workers producing television and stereo products and component parts at Zenith Electronics Corp. of Pennsylvania, Watsontown, Pa.

The notice of investigation was published in the Federal Register on October 25, 1977 (42 FR 56376). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of Zenith Radio Corp., the U.S. Department of Commerce, the U.S. International Trade Commission, the Electronics Industries Association, industry analysts, and Department files.

In order to make an affirmative determination and issue a certification of eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That a significant number or proportion of the workers in such workers' firm, or an appropriate subdivision thereof, have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such firm or subdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increased quantities, either actual or relative to domestic production; and

(4) That such increased imports have contributed importantly to the separations, or threat thereof, and to the decrease in sales or production. The term "contributed importantly" means a cause which is important but not necessarily more important than any other cause.

The investigation has revealed that all of the above criteria have been met.

Significant Total or Partial Separations

SIOUX CITY, IOWA

The average number of hourly workers at the Sioux City, Iowa, plant declined 39.9 percent from 1974 to 1975 and declined 12.0 percent from 1975 to 1976.

Employment declined 39.1 percent in the fourth quarter of 1976 compared to the same period in 1975. Company officials have confirmed the imminent threat of substantial layoffs.

WATSONTOWN, PA.

The average number of hourly workers at the Watsontown, Pa., plant increased 22.4 percent from 1975 to 1976.

Employment declined 29.3 percent in the fourth quarter of 1976 and 12.3 percent in the first quarter of 1977 compared to the same periods of the previous year. Company officials have confirmed the imminent threat of substantial layoffs.

Sales or Production, or Both, Have Decreased Absolutely

Total stereo sales, in terms of unadjusted value, declined 12.6 percent from 1974 to 1975 and then increased 6.7 percent from 1975 to 1976. Sales declined 1.5 percent in the first nine months of 1977 compared to the same period in 1976. Sales of modular stereos, in terms of quantity, by Zenith declined 28.2 percent from 1974 to 1975 and then increased 37.9 percent from 1975 to 1976. Sales declined 17.6 percent in the first nine months of 1977 compared to the same period in 1976.

Sales of console stereos, in terms of quantity, by Zenith declined 28.5 percent from 1974 to 1975 and then increased 5.0 percent from 1975 to 1976. Sales declined 5.9 percent in the first nine months of 1977 compared to the same period in 1976.

Production of modular stereos at the Watsontown, Pa., plant increased 18.3 percent from 1975 to 1976. Production increased 5.8 percent in the first nine months of 1977 compared to the same period in 1976.

Production of modular stereos declined 47.9 percent in the fourth quarter of 1976 and 47.3 percent in the first quarter of 1977, compared to the same period of the previous year.

Production of console stereos at the Watsontown, Pa., plant increased 4.7 percent from 1975 to 1976. Production increased 2.1 percent in the first nine months of 1977 compared to the same period in 1976.

Production of console stereos declined 35.7 percent in the fourth quarter of 1976 and 39.3 percent in the

first quarter of 1977, compared to the same periods of the previous year.

INCREASED IMPORTS

Imports of radio-phonograph-tape combinations increased from 7,274,000 units in 1972 to 7,870,000 units in 1973 and then declined to 4,632,000 units in 1975. imports then increased 72 percent from the 1975 level to 7,966,000 units in 1976. Imports rose 44.9 percent in the first 6 months of 1977 compared to the same period in 1976, increasing from 2,960,000 units to 4,289,000 units.

The ratio of imports to domestic production decreased each year from 295.0 percent in 1972 to 177 percent in 1975 and then more than doubled to 360.3 percent in 1976. The ratio of imports to domestic production increased from 255.7 percent in the first 6 months of 1976 to 366.5 percent in the first 6 months of 1977.

CONTRIBUTED IMPORTANTLY

The ratio of imports to domestic consumption for radio-phonograph-tape combinations rose from 64.6 percent in 1975 to 78.9 percent in 1976 and further increased to 79.3 percent in the first half of 1977 compared to 72.7 percent in the first half of 1976. The high and rising import penetration ratio is indicative of the impact that imports have had in the market for radio-phonograph-tape combinations.

Zenith currently does not produce any stereo components and subassemblies offshore. Future plans indicate the transfer of such production offshore.

CONCLUSION

After careful review of the facts obtained in the investigation, I conclude that increases of imports like or directly competitive with stereos produced at Zenith Electronics Corp., of Iowa, and Zenith Electronics, Corp., of Pennsylvania, contributed importantly to the decrease in sales or production and to the total or partial separations of the workers at the Sioux City, Iowa, and Watsontown, Pa., plants. In accordance with the provisions of the Act, I make the following certifications:

All workers at Zenith Electronics Corp., of Iowa, Sioux City, Iowa, who became totally or partially separated from employment on or after September 30, 1976, are eligible to apply for adjustment assistance under Title II, Chapter 2 of the Trade Act of 1974; and

All workers at Zenith Electronics Corp., of Pennsylvania, Watsontown, Pa., who became totally or partially separated from employment on or after October 4, 1976, are eligible to apply for adjustment assistance under Title II, Chapter 2 of the Trade Act of 1974.

Signed at Washington, D.C., this 30th day of November 1977.

HARRY GRUBERT,
Director, Office of Foreign Economic Research.

[FR Doc. 77-35588 Filed 12-12-77; 8:45 am]

[4510-28]

[TA-W-2458]

ZENITH ELECTRONICS CORP. OF PENNSYLVANIA, LANSDALE, PA.

Negative Determination Regarding Eligibility To Apply for Worker Adjustment Assistance

In accordance with section 223 of the Trade Act of 1974 the Department of Labor herein presents the results of TA-W-2458: Investigation regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigation was initiated on October 12, 1977 in response to a worker petition received on October 12, 1977 which was filed on behalf of workers and former workers producing stereo and television components at Zenith Electronics Corp. of Pennsylvania, Lansdale, Pa.

The notice of investigation was published in the FEDERAL REGISTER on October 25, 1977 (42 FR 56376). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of Zenith Radio Corp., the U.S. Department of Commerce, the U.S. International Trade Commission, the Electronics Industries Association, industry analysts, and Department files.

In order to make an affirmative determination and issue a certification of eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That a significant number or proportion of the workers in such workers' firm, or an appropriate subdivision thereof, have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such frim or subdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increased quantities, either actual or relative to domestic production; and

(4) That such increased imports have contributed importantly to the separations, or threat thereof, and to the decrease in sales or production. The term "contributed importantly" means a cause which is important but not necessarily more important than any other cause.

Without regard to whether any of the other criteria have been met, criterion (4) has not been met.

The Department's investigation revealed that prior to 1975 the Lansdale, Pa. plant produced picture tubes for color televisions. At the end of 1974, color picture tube production was transferred to a new domestic facility in Melrose Park, Ill. Workers from Lansdale were given the opportunity to transfer to Melrose Park. A skeleton work force consisting of security guards and maintenance workers remained at Lansdale from 1975 until the plant closed in October 1977. The closure followed an expansion of capacity at Melrose Park to a level sufficient to meet Zenith's current requirements for color picture tubes and to support opportunities for future growth.

CONCLUSION

After careful review of the facts obtained in the investigation, I conclude that increases of imports like or directly competitive with color television components produced at Zenith Electronics Corp. of Pennsylvania, Lansdale, Pa. did not contribute importantly to the decline in sales or production or to the significant total or partial separations of the workers at that plant, as required for certification under section 222 of the Trade Act of 1974.

Signed at Washington, D.C., this 30th day of November 1977.

HARRY GRUBERT,
Director, Office of Foreign Economic Research.

[FR Doc. 77-35589 Filed 12-12-77; 8:45 am]

[TA-W-2442]

[4510-28]

ZENITH RADIO CORP., GLENVIEW, ILL.

Certification Regarding Eligibility To Apply for Worker Adjustment Assistance

In accordance with section 223 of the Trade Act of 1974 the Department of Labor herein presents the results of TA-W—2442: Investigation regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigation was initiated on October 12, 1977 in response to a worker petition received on October 6, 1977 which was filed on behalf of workers and former workers performing research and designing televisions and stereos at Zenith Electronics Corp., Glenview, Ill.

The notice of investigation was published in the FEDERAL REGISTER on October 25, 1977 (42 FR 56376). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of Zenith Radio Corp., the U.S. Department of Commerce, the U.S. International Trade Commission, the Electronics Industries Association, industry analysts, and Department files.

In order to make an affirmative determination and issue a certification of

eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That as significant number or proportion of the workers in such workers' firm, or an appropriate subdivision thereof, have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such firm or subdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increased quantities, either actual or relative to domestic production; and

(4) That such increased imports have contributed importantly to the separations, or threat thereof, and to the decrease in sales or production. The term "contributed importantly" means a cause which is important but not necessarily more important than any other cause.

The investigation revealed that all of the above criteria have been met.

SIGNIFICANT TOTAL OR PARTIAL SEPARATIONS

Zenith moved its corporate headquarters to Glenview in the latter part of 1976. Salaried employment at Glenview increased through August 1977. By October 1977, average employment at Glenview had declined 7.7 percent from the August 1977 level.

SALES OR PRODUCTION, OR BOTH, HAVE DECREASED ABSOLUTELY

Basic research activities peformed at Glenview are being phased out in the last half of 1977.

INCREASED IMPORTS

COLOR TELEVISIONS

Imports of color televisions, including combinations, increased in absolute terms from 1,318,000 units in 1972 to 1,459,000 units in 1973 and then declined to 1,303,000 units in 1974 and to 1,021,000 units in 1975. Imports rose to 2,856,000 units in 1976, an increase of 179.8 percent from 1975. Imports further increased to 1,283,000 units in the first 6 months of 1977 compared to 1,030,000 units in the same period in 1976, an increase of 24.5 percent.

The ratio of imports to domestics production decreased from 18.9 percent in 1973 to 17.9 percent in 1975 and then rose to 56.7 percent in 1976. The ratio of imports to domestic production increased from 43.9 percent in the first 6 months of 1976 to 44.9 percent in the first 6 months of 1977.

BLACK AND WHITE TELEVISIONS

Imports of monochrome (black and white) televisions decreased in each year from 5,056,000 units in 1972 to 2,975,000 units in 1975 and then rose to 4,327,000 units in 1976, an increase of 45.5 percent from 1975. Imports further increased to 2,159,000 units in the first 6 months of 1977 compared to 1,750,000 units in the same period in 1976, an increase of 23.4 percent.

The ratio of imports to domestic production increased from 158.6 percent in 1972 to 209.3 percent in 1974, decreased to 162.7 percent in 1975 and then rose to 350.5 percent in 1976. The ratio of imports to domestic production increased from 237.3 percent in the first 6 months of 1976 to 474.4 percent in the first 6 months of 1977.

STEREOS

Imports of radio-phonograph-tape combinations increased from 7,274,000 units in 1972 to 7,870,000 units in 1973 and then declined to 4,632,000 units in 1975. Imports then increased 72 percent from the 1975 level to 7,966,000 units in 1976. Imports rose 44.9 percent in the first 6 months of 1977 compared to the same period in 1976, increasing from 2,960,000 units to 4,289,000 units.

The ratio of imports to domestic production decreased each year from 295 percent in 1972 to 177 percent in 1975 and then more than doubled to 360.3 percent in 1976. The ratio of imports to domestic production increased from 255.7 percent in the first 6 months of 1976 to 366.5 percent in the first 6 months of 1977.

CONTRIBUTED IMPORTANTLY

The impact of imports on the Zenith Radio Corp., as a whole, must be considered when viewing the situation at Glenview. Imports of all products produced by Zenith have increased substantially in 1976 and 1977 and imports actually dominate the domestic market for monochrome televisions and stereos. To better compete in sales of such products, Zenith adopted several price reductions in 1977. Another cost cutting move was the elimination of basic research (as opposed to reserach directly related to product development). In the first half of 1977, corporate profits declined compared to the first half of 1976.

The decision to lay off workers at Glenview, and cut prices and reduce costs by Zenith resulted importantly from increasing imports of televisions and stereos.

CONCLUSION

After careful review of the facts obtained in the investigation, I conclude that increases of imports like or directly competitive with televisions and stereos produced at Zenith Radio Corp. contributed importantly to the total or partical separations of the workers at Zenith Radio Corp., Glenview, Ill. In accordance with the provisions of the Act, I make the following certification:

All workers at Zenith Radio Corp., Glenview, Ill. who became totally or partially separated from employment on or after August 1, 1977 are eligible to apply for adjustment assistance under Title II, Chapter 2 of the Trade Act of 1974.

Signed at Washington, D.C., this 30th day of November 1977.

HARRY GRUBERT,
Director, Office of Foreign Economic Research.

[FR Doc. 77-35590 Filed 12-12-77; 8:45 am]

[4510-28]

[TA-W-2443]

ZENITH RADIO CORP., FRANKLIN PARK, CHICAGO, ILL.

Negative Determination Regarding Eligibility To Apply for Worker Adjustment Assistance

In accordance with section 223 of the Trade Act of 1974, the Department of Labor herein presents the results of TA-W-2443: Investigations regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigation was initiated on October 12, 1977, in response to a worker petition received on October 12, 1977, which was filed on behalf of workers and former workers of Zenith Radio Corp., Franklin Park Parts and Service Center, Chicago, Ill.

The notice of investigation was published in the FEDERAL REGISTER on October 25, 1977 (42 FR 56376). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of Zenith Radio Corporation and Department files.

In order to make an affirmative determination and issue a certification of eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That a significant number or proportion of the workers in such workers' firm, or an appropriate subdivision thereof, have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such firm or subdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increased quantities, either actual or relative to domestic production; and

(4) That such increased imports have contributed importantly to the separations, or threat thereof, and to the decrease in sales or production. The term "contributed importantly" means a cause which is important but not necessarily more important than any other cause.

Without regard to whether any of the other criteria have been met, criterion (1) has not been met.

The Department's investigation revealed that average hourly employment at Franklin Park increased 0.9 percent from 1975 to 1976 and increased 103.4 percent in the first nine months of 1977 compared to the same period in 1976. There are no significant threats of layoffs at Franklin Park.

CONCLUSION

After careful review of the facts obtained in the investigation, I conclude that a significant number or proportion of the workers at Zenith Radio Corp., Franklin Park Parts and Service Center, Chicago, Ill. have not become totally or partially separated and are not threatened to become totally or partially separated as required for certification under section 222 of the Trade Act of 1974.

Signed at Washington, D.C., this 30th day of November 1977.

JAMES F. TAYLOR,
Director, Office of Management, Administration, and Planning.

[FR Doc. 77-35591 Filed 12-12-77; 8:45 am]

[4510-28]

[TA-W-2446; TA-W-2454]

ZENITH RADIO CORP., PLANT NO. 6, CHICAGO, ILL., AND ZENITH ELECTRONICS CORP. OF MISSOURI, SPRINGFIELD, MO.

Determinations Regarding Eligibility To Apply for Worker Adjustment Assistance

In accordance with section 223 of the Trade Act of 1974 the Department of Labor herein presents the results of TA-W-2446 and TA-W-2454: Investigations regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigations were initiated on October 12, 1977, in response to worker petitions received on October 12, 1977, which were filed by the International Radionic Workers of America (IRWA, Chicago), and the International Brotherhood of Electrical Workers (IBEW, Springfield) on behalf of workers and former workers producing color televisions and component parts thereof at Zenith Radio Corp., plant No. 6, Chicago, Ill., and Zenith Electronics Corp. of Missouri, Springfield, Mo.

The notice of investigation was published in the FEDERAL REGISTER on October 25, 1977 (42 FR 56376). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of Zenith Radio Corp., the U.S. Department of Commerce, the U.S. International Trade Commission, the Electronics Industries Association, industry analysts, and Department files.

In order to make an affirmative determination and issue a certification of eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That a significant number or proportion of the workers in such workers' firm, or an appropriate subdivision thereof, have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such firm or subdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increased quantities, either actual or relative to domestic production; and

(4) That such increased imports have contributed importantly to the separations, or threat thereof, and to the decrease in sales or production. The term "contributed importantly" means a cause which is important but not necessarily more important than any other cause.

The investigation has revealed that criterion (2) has not been met with regard to workers engaged in the final assembly of color televisions, at plant No. 6 and Springfield, Mo.; and that all of the above criteria have been met with regard to workers engaged in the production of components and subassemblies for televisions at Chicago plant No. 6 and Springfield.

SIGNIFICANT TOTAL OR PARTIAL SEPARATIONS

PLANT NO. 6

The average number of hourly workers at the Chicago, Ill. plant No. 6 declined 3.9 percent from 1974 to 1975 and then increased 4.3. percent from 1975 to 1976. Employment declined 1.8 percent in the first 9 months of 1977 compared to the same period in 1976. Company officials have confirmed the imminent threat of substantial layoffs.

SPRINGFIELD, MO.

The average number of hourly workers at the Springfield, Mo. plant declined 27.3 percent from 1974 to 1975 and declined 8.8 percent from 1975 to 1976. Employment declined 1.4 percent in the first 9 months of 1977 compared to the same period in 1976. Company officials have confirmed the imminent threat of substantial layoffs.

SALES OR PRODUCTION, OR BOTH, HAVE DECREASED ABSOLUTELY

Sales of color televisions (74 percent of 1976 corporate sales), in terms of quantity, by Zenith declined 1.4 percent from 1974 to 1975 and then increased 11.7 percent from 1975 to 1976. Sales increased 11 percent in the first 9 months of 1977 compared to the same period in 1976.

Total domestic production of color televisions declined 4.8 percent from 1974 to 1975 and then increased 10.3 percent from 1975 to 1976. Production increased 12.3 percent in the first 9 months of 1977 compared to the same period in 1976.

Production of color televisions at the Springfield, Mo. plant declined 12.9 percent from 1974 to 1975 and 2.2 percent from 1975 to 1976. Production increased 15.5 percent in the first 9 months of 1977 compared to the same period in 1976.

Production of color televisions at the Chicago, Ill., plant No. 6 increased 3.9 percent from 1974 to 1975 and 21.6 percent from 1975 to 1976. Production increased 9.9 percent in the first 9 months of 1977 compared to the same period in 1976.

Subassembly and component production declined in direct relation to increases in imports of those items.

INCREASED IMPORTS

Imports of color televisions, including combinations, increased in absolute terms from 1,318,000 units in 1972 to 1,459,000 units in 1973 and then declined to 1,303,000 units in 1974 and to 1,021,000 units in 1975. Imports rose to 2,856,000 units in 1976, an increase of 179.8 percent from 1975. Imports further increased to 1,283,000 units in the first 6 months of 1977 compared to 1,030,000 units in the same period in 1976, an increase of 24.5 percent.

The ratio of imports to domestic production decreased from 18.9 percent in 1973 to 17.9 percent in 1975 and then rose to 56.7 percent in 1976. The ratio of imports to domestic production increased from 43.9 percent in the first 6 months of 1976 to 44.9 percent in the first 6 months of 1977.

CONTRIBUTED IMPORTANTLY

Zenith has a plant in Matamoros, Mexico where it produces various component parts and subassemblies used in the domestic production of both color and black and white televisions.

Imports include guns, tuners, yokes, pincushions, CRT sockets, channel selectors, tuner brackets, and nerve centers. Imports from Mexico, in terms of unadjusted value, increased 114.3 percent from 1974 to 1975 and increased 47 percent from 1975 to 1976. In 1977, based on data collected for 6 months, imports increased at an annual rate of 15.5 percent compared to 1976.

Zenith's plant in Taiwan, in conjunction with production of black and white televisions, produces various component parts and subassemblies used in the domestic production of both color and black and white televisions.

Imports from Taiwan, in terms of unadjusted value, increased 78.6 percent from 1975 to 1976. In the first 9 months of 1977, imports declined 12.9 percent compared to the same period in 1976, but remained above 1975

levels. Imports of color components increased 15.7 percent from 1975 to 1976 and increased 22 percent in the first 9 months of 1977 compared to the same period in 1976.

CONCLUSION

After careful review of the facts obtained in the investigation, I conclude that increases of imports like or directly competitive with color televisions produced at Zenith Radio Corp. contributed importantly to the total or partial separations of the workers engaged in employment related to component and subassembly production at Zenith Electronics Corp. of Missouri, Springfield, Mo. and Zenith Radio Corp., plant No. 6, Chicago Ill. In accordance with the provisions of the Act, I make the following certifications:

All workers at Zenith Electronics Corporation of Missouri, Springfield, Missouri, except those engaged in employment related to color television final assembly operations, who became totally or partially separated from employment on or after July 1, 1977 are eligible to apply for adjustment assistance under Title II, Chapter 2 of the Trade Act of 1974; and

All workers at Zenith Radio Corporation, plant No. 6, 1900 N. Austin, Chicago, Illinois, except those engaged in employment related to color television final assembly operations, who became totally or partially separated from employment on or after June 1, 1977 are eligible to apply for adjustment assistance under Title II, Chapter 2 of the Trade Act of 1974.

I further conclude that all workers engaged in employment related to the final assembly operations of color televisions at plant No. 6, Chicago, Ill. and Springfield, Mo., be denied eligibility to apply for adjustment assistance.

Signed at Washington, D.C., this 30th day of November 1977.

HARRY GRUBERT,
Director, Office of Foreign Economic Research.

[FR Doc. 77-35592 Filed 12-12-77; 8:45 am]

[4510-28]

[TA-W-2448; TA-W-2447, 2452]

ZENITH RADIO CORP., PLANTS NO. 1 AND NO. 2, CHICAGO, ILL.

Certifications Regarding Eligibility To Apply for Worker Adjustment Assistance

In acordance with section 223 of the Trade Act of 1974 the Department of Labor herein presents the results of TA-W-2448 and 2447, 2452: Investigations regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigations were initiated on October 12, 1977 in response to worker petitions received on October 12, 1977 which were filed by the International Radionic Workers of America (IRWA) on behalf of workers and former workers producing black and white televisions, color televisions and component parts thereof at Zenith Radio Corp., plants No. 1 and No. 2, Chicago, Ill.

The notice of investigation was published in the FEDERAL REGISTER on October 25, 1977 (42 FR 56376). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of Zenith Radio Corp., the U.S. Department of Commerce, the U.S. International Trade Commission, the Electronics Industries Association, industry analysts, and Department files.

In order to make an affirmative determination and issue a certification of eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That a significant number or proportion of the workers in such workers' firm, or an appropriate subdivision thereof, have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such firm or subdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increased quantities, either actual or relative to domestic production; and

(4) That such increased imports have contributed importantly to the separations, or threat thereof, and to the decrease in sales or production. The term "contributed importantly" means a cause which is important but not necessarily more important than any other cause.

The investigation has revealed that all of the above criteria have been met.

SIGNIFICANT TOTAL OR PARTIAL SEPARATIONS

PLANT NO. 1

The average number of hourly workers at the Chicago, Ill. plant No. 1 declined 31.9 percent from 1974 to 1975 and then increased 3.5 percent from 1975 to 1976. Employment declined 10.1 percent in the first 9 months of 1977 compared to the same period in 1976.

PLANT NO. 2

The average number of hourly workers at the Chicago, Ill., plant No. 2 declined 30.7 percent from 1974 to 1975 and declined 32.9 percent from 1975 to 1976. Employment declined 9.9 percent in the first 9 months of 1977 compared to the same period in 1976.

SALES OR PRODUCTION, OR BOTH, HAVE DECREASED ABSOLUTELY

Sales of black and white televisions (9 percent of 1976 corporate sales), in terms of quantity, by Zenith declined 21.5 percent from 1974 to 1975 and then increased 16.4 percent from 1975 to 1976. Sales decreased 6.3 percent in the first 9 months of 1977 compared to the same period in 1976.

Production of black and white televisions at the Chicago, Ill., plant No. 1, declined 21.0 percent from 1974 to 1975 and then increased 24.2 percent from 1975 to 1976. Production declined 22.6 percent in the first 9 months of 1977 compared to the same period in 1976.

Subassembly and component production declined in direct relation to increases in imports of those items.

INCREASED IMPORTS

Imports of monochrome (black and white) televisions decreased in each year from 5,056,000 units in 1972 to 2,975,000 units in 1975 and then rose to 4,327,000 units in 1976, an increase of 45.5 percent from 1975. Imports further increased to 2,159,000 units in the first 6 months of 1977 compared to 1,750,000 units in the same period in 1976, an increase of 23.4 percent.

The ratio of imports to domestic production increased from 158.6 percent in 1972 to 209.3 percent in 1974, decreased to 162.7 percent in 1975 and then rose to 350.5 percent in 1976. The ratio of imports to domestic production increased from 237.3 percent in the first 6 months of 1976 to 474.4 percent in the first 6 months of 1977.

CONTRIBUTED IMPORTANTLY

Company imports of black and white televisions produced by Zenith in Taiwan declined 36.6 percent from 1974 to 1975 and then increased 4.3 percent from 1975 to 1976. Offshore production increased 17.8 percent in the first 9 months of 1977 compared to the same period in 1976. Offshore production of black and white televisions accounted for an average of 53 percent of total black and white television production in 1974 through 1976. In the first 9 months of 1977, Taiwan production accounted for 55 percent of total production, an increase over the 45 percent it represented in the first 9 months of 1976.

Zenith's plant in Taiwan, in conjunction with production of black and white televisions, produces various component parts and subassemblies used in the domestic production of both color and black and white televisions.

Imports from Taiwan, in terms of unadjusted value, increased 78.6 percent from 1975 to 1976. In the first 9 months of 1977, imports declined 12.9 percent compared to the same period in 1976, but remained above 1975 levels.

Zenith also imports television subassemblies and components from a plant in Mexico. Imports from Mexico, in

terms of unadjusted value, increased 114.3 percent from 1974 to 1975 and increased 47 percent from 1975 to 1976. In 1977, based on data collected for 6 months, imports increased at an annual rate of 15.5 percent compared to 1976.

The ratio of imports to domestic consumption for aggregate imports reflects the import penetration on the domestic market, i.e., the share of the market held by imports. For black and white televisions, the I/C ratio has been high and increasing since 1975. The I/C ratio rose from 63.1 percent in 1975 to 80 percent in 1976 and further increased to 84.8 percent in the first half of 1977, compared to 72.4 percent in the first half of 1976. The high ratio indicates the dominance imports have achieved in the market for black and white televisions.

CONCLUSION

After careful review of the facts obtained in the investigation, I conclude that increases of imports like or directly competitive with black and white televisions produced at Zenith Radio Corp. contributed importantly to the total or partial separations of the workers at plants No. 1 and No. 2 of Zenith Radio Corp., Chicago, Ill. In accordance with the provisions of the Act, I make the following certifications:

All workers at plant No. 1, 6001 W. Dickens, of the Zenith Radio Corporation, Chicago, Illinois who became totally or partially separated from employment on or after October 3, 1976 are eligible to apply for adjustment assistance under Title II, Chapter 2 of the Trade Act of 1974; and

All workers at plant No. 2, 1500 N. Kostner Avenue of the Zenith Radio Corp., Chicago, Ill., who became totally or partially separated from employment on or after October 3, 1976 are eligible to apply for adjustment assistance under Title II, Chapter 2 of the Trade Act of 1974.

Signed at Washington, D.C., this 30th day of November 1977.

HARRY GRUBERT,
Director, Office of Foreign Economic Research.

[FR Doc. 77-35593 Filed 12-12-77; 8:45 am]

[4510-28]

[TA-W-2449]

ZENITH RADIO CORP., CHICAGO, ILL.

Negative Determination Regarding Eligibility To Apply for Worker Adjustment Assistance

In accordance with section 223 of the Trade Act of 1974 the Department of Labor herein presents the results of TA-W-2449: Investigation regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigation was initiated on October 12, 1977, in response to a worker petition received on October 12, 1977, which was filed on behalf of workers and former workers of Zenith Radio Corp., Narragansett warehouse, Chicago, Ill.

The notice of investigation was published in the FEDERAL REGISTER on October 25, 1977 (42 FR 56376). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of Zenith Radio Corp. and Department files.

In order to make an affirmative determination and issue a certification of eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That a significant number or proportion of the workers in such workers' firm, or an appropriate subdivision thereof, have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such firm or subdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increased quantities, either actual or relative to domestic production; and

(4) That such increased imports have contributed importantly to the separations, or threat thereof, and to the decrease in sales or production. The term "contributed importantly" means a cause which is important but not necessarily more important than any other cause.

With regard to whether any of the other criteria have been met, criterion (1) has not been met.

The Department's investigation revealed that the Narragansett warehouse of Zenith, located in Chicago, Ill., was closed in September 1977. Warehouse functions were transferred to Chicago plant No. 1 at that time. The three workers that were regularly employed at Narragansett transferred to plant No. 1 without any loss of work. These workers are not threatened with layoff.

CONCLUSION

After careful review of the facts obtained in the investigation, I conclude that a significant number or proportion of the workers at Zenith Radio Corp., Narragansett warehouse, Chicago, Ill., have not become totally or partially separated and are not threatened to become totally or partially separated as required for certification under section 222 of the Trade Act of 1974.

Signed at Washington, D.C., this 30th day of November 1977.

JAMES F. TAYLOR,
Director, Office of Management, Administration, and Planning.

[FR Doc. 77-35594 Filed 12-12-77; 8:45 am]

[4510-28]

[TA-W-2450, 2451]

ZENITH RADIO CORP., NORTHLAKE, ILL.

Negative Determination Regarding Eligibility To Apply for Worker Adjustment Assistance

In accordance with section 223 of the Trade Act of 1974 the Department of Labor herein presents the results of TA-W-2450 and 2451: Investigations regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigations were initiated on October 12, 1977, in response to worker petitions received on October 6, 1977, which was filed on behalf of workers and former workers of Zenith Radio Corp., Northlake Distribution Center, Northlake, Ill. The Northlake Distribution Center is comprised of two facilities.

The notice of investigation was published in the FEDERAL REGISTER on October 25, 1977 (42 FR 56376). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of Zenith Radio Corporation and Department files.

In order to make an affirmative determination and issue a certification of eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That a significant number or proportion of the workers in such workers' firms, or an appropriate subdivision thereof, have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such firm or subdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increased quantities, either actual or relative to domestic production; and

(4) That such increased imports have contributed importantly to the separations, or threat thereof, and to the decrease in sales or production. The term "contributed importantly" means a cause which is important but not necessarily more important than any other cause.

Without regard to whether any of the other criteria have been met, criterion (2) has not been met.

The Department's investigation revealed that sales at the Northlake facilities increased 9.8 percent in 1976 compared to 1975 and increased 8.6 percent during January-September 1977 compared to the same period in 1976.

CONCLUSION

After careful review of the facts obtained in the investigation, I conclude

that sales or production at Zenith Radio Corporation's Northlake Distribution Center in Northlake, Ill., have not decreased absolutely as required for certification under section 222 of the Trade Act of 1974.

Signed at Washington, D.C., this 30th day of November 1977.

JAMES F. TAYLOR,
Director, Office of Management, Administration, and Planning.

[FR Doc. 77-35595 Filed 12-12-77; 8:45 am]

[4510-28]

[TA-W-2459 and TA-W-2460]

ZENITH RADIO CORP., ELK GROVE, ILL. AND (RAULAND DIVISION), MELROSE PARK, ILL.

Negative Determinations Regarding Eligibility To Apply for Worker Adjustment Assistance

In accordance with section 223 of the Trade Act of 1974 the Department of Labor herein presents the results of TA-W-2459 and TA-W-2460: Investigations regarding certification of eligibility to apply for worker adjustment assistance as prescribed in section 222 of the Act.

The investigations were initiated on October 12, 1977 in response to worker petitions received on October 12, 1977, which were filed on behalf of workers and former workers producing television and stereo components at Zenith Radio Corp., Elk Grove and Melrose Park, Ill.

The notice of investigation was published in the FEDERAL REGISTER on October 25, 1977 (42 FR 56376). No public hearing was requested and none was held.

The information upon which the determination was made was obtained principally from officials of Zenith Radio Corp., the U.S. Department of Commerce, the U.S. International Trade Commission, the Electronics Industries Association, industry analysts, and Department files.

In order to make an affirmative determination and issue a certification of eligibility to apply for adjustment assistance, each of the group eligibility requirements of section 222 of the Trade Act of 1974 must be met:

(1) That a significant number or proportion of the workers in such workers' firm, or an appropriate subdivision thereof, have become totally or partially separated, or are threatened to become totally or partially separated;

(2) That sales or production, or both, of such firm or subdivision have decreased absolutely;

(3) That articles like or directly competitive with those produced by the firm or subdivision are being imported in increased quantities, either actual or relative to domestic production; and

(4) That such increased imports have contributed importantly to the separations, or threat thereof, and to the decrease in sales or production. The term "contributed importantly" means a cause which is important but not necessarily more important than any other cause.

Without regard to whether any of the other criteria have been met, criterion (1) has not been met, at both the Elk Grove and Melrose Park plants, and criterion (2) has not been met at the Melrose Park plant.

The Department's investigation revealed that there have been no significant total or partial separations or threats of layoffs at either the Elk Grove, Ill. plant or the Melrose Park, Ill. plant of the Zenith Radio Corp. In addition, sales or production at the Melrose Park plant have not decreased absolutely.

MELROSE PARK, ILL.

The average number of hourly workers at the Melrose Park, Ill. plant declined 1.2 percent from 1974 to 1975 and then increased 7.8 percent from 1975 to 1976. Employment increased 4.3 percent in the first 9 months of 1977 compared to the same period in 1976.

Production of picture tubes (for color televisions) at Melrose Park increased 10 percent from 1974 to 1975, remained almost stable, at a decline of 0.5 percent, from 1975 to 1976 and increased 14.9 percent in the first 9 months of 1977 compared to the same period in 1976. Zenith domestic production of color televisions increased 10.3 percent from 1975 to 1976 and increased 12.3 percent in the first 9 months of 1977 compared to the same period in 1976.

Employment increased in each quarter from the last quarter of 1976 through the third quarter of 1977, compared to the same quarter of the previous year.

ELK GROVE, ILL.

The average number of hourly workers at the Elk Grove, Ill. plant increased 20.9 percent from 1974 to 1975 and increased 47.6 percent from 1975 to 1976. Employment increased 24.7 percent in the first 9 months of 1977 compared to the same period in 1976.

Employment increased in each quarter from the fourth quarter of 1976 through the third quarter of 1977, compared to the same quarter of the previous year.

CONCLUSION

After careful review of the facts obtained in the investigation, I conclude that a significant number or proportion of the workers at Zenith Radio Corp., Elk Grove and Melrose Park, Ill. have not become totally or partially separated and are not threatened to become totally or partially separated and that sales or production at the Rauland Division, Melrose Park have not decreased absolutely as required for certification under section 222 of the Trade Act of 1974.

Signed at Washington, D.C., this 30th day of November 1977.

HARRY GRUBERT,
Director, Office of Foreign Economic Research.

[FR Doc. 77-35596 Filed 12-12-77; 8:45 am]

[4510-29; 4830-01]

DEPARTMENT OF LABOR

Pension and Welfare Benefit Programs

DEPARTMENT OF THE TREASURY

Internal Revenue Service

[Prohibited Transaction Exemption 77-13]

EMPLOYEE BENEFIT PLANS

Exemption From the Prohibitions Respecting Transactions Involving the Retirement Plan for Employees of Dallas North Lumber Company and Affiliates

AGENCIES: Department of Labor, Department of the Treasury/Internal Revenue Service.

ACTION: Grant of individual exemption.

SUMMARY: This exemption enables the Retirement Plan for Employees of Dallas North Lumber and Affiliates (the Plan) to sell a note to Texteel Manufacturing Co. (Texteel) an employer of employees covered by the Plan, and also enables Texteel to assume a first lien note held by the Plan.

FOR FURTHER INFORMATION CONTACT:

Ronald D. Allen, Office of Regulatory Standards and Exceptions, Pension and Welfare Benefit Programs, room C-4526, U.S. Department of Labor, 200 Constitution Avenue NW., Washington D.C. 20216, 202-523-8883.

Gary H. Lefkowitz, Internal Revenue Service, 1111 Constitution Avenue NW., Washington, D.C. 20224, Attention: E:EP:PT, 202-566-4260. (These are not toll-free numbers.)

SUPPLEMENTARY INFORMATION

On May 20, 1977, notice was published in the FEDERAL REGISTER (42 FR 25998) of the pendency before the Department of Labor and the Internal Revenue Service (the Agencies) of an exemption from the provisions of sections 406(a) and 406(b)(2) of the Employee Retirement Income Security Act of 1974 (the Act) and from the taxes imposed by sections 4975(a) and (b) of the Internal Revenue Code of 1954 (the Code) by reason of sections 4975(c)(1) (A) through (D) of the Code, for a transaction described in an application submitted by Harold R.

Clark Trustee for the Plan. The notice set forth a summary of the facts and representations contained in the application for exemption and referred interested persons to the application for a complete statement of the facts and representations. The application has been available for public inspection at the Agencies in Washington, D.C. The notice also invited interested persons to submit comments on the requested exemption to the Department. In addition, the notice stated that any interested person might submit a written request that a hearing be held relating to this exemption. No public comments and no request for a hearing were received by the Department.

GENERAL INFORMATION

The attention of interested persons is directed to the following:

(1) The fact that a transaction is the subject of an exemption granted under section 408(a) of the Act and section 4975(c)(2) of the code does not relieve a fiduciary or party in interest or disqualified person with respect to a plan to which the exemption is applicable from certain other provisions of the Act and the Code. These provisions include any prohibited transaction provisions to which the exemption does not apply and the general fiduciary responsibility provisions of section 404 of the Act, which among other things require a fiduciary to discharge his duties respecting the plan solely in the interests of the participants and beneficiaries of the plan and in a prudent fashion in accordance with subsection (a)(1)(B) of section 404 of the Act, nor does the fact the transaction is the subject of an exemption affect the requirement of section 401(a) of the code that a plan must operate for the exclusive benefit of the employees of the employer maintaining the plan and their beneficiaries.

(2) This exemption does not extend to transactions prohibited under section 406(b) (1) and (3) of the Act and section 4975(c)(1) (E) and (F) of the Code.

(3) This exemption is supplemental to, and not in derogation of, any other provision of the Act and the Code, including statutory or administrative exemptions and transitional rules. Furthermore, the fact that a transaction is subject to an administrative or statutory exemption or transitional rule is not dispositive of whether the transaction is in fact a prohibited transaction.

(4) In accordance with section 408(a) of the Act and section 4975(c)(2) of the Code and the procedure set forth in ERISA Proc. 75-1 (40 FR 18471, April 28, 1975) and Rev. Proc. 75-26, 1975-1 C.B. 722, and based upon the entire record, the Agencies make the following determinations:

(i) The exemption is administratively feasible;

(ii) It is in the interests of the Plan and of the participants and beneficiaries; and

(iii) It is protective of the rights of participants and beneficiaries of the Plan.

EXEMPTION

Accordingly, the following exemption is hereby granted under the authority of section 408(a) of the Act and section 4975(c)(2) of the Code and in accordance with the procedures set forth in ERISA Procedure 75-1 (40 FR 18471, April 28, 1975) and Rev. Proc. 75-26, 1975-1 C.B. 722.

Effective April 30, 1975, the restrictions of section 406(a) and section 406(b)(2) of the Act and the taxes imposed under section 4975 (a) and (b) of the Code, by reason of section 4975(c)(1) (A) through (D) of the Code shall not apply to a transaction involving the sale of a note by the Plan to Texteel and assumption by Texteel of a first lien note held by the Plan, subject to the terms, conditions, and representations set forth in the application.

The availability of this exemption is subject to the express conditions that the material facts and representations contained in the application are true and complete and that the application accurately describes all material terms of the transaction consummated pursuant to the exemption.

Signed at Washington, D.C., this 7th day of December 1977.

IAN D. LANOFF,
Administrator of Pension and Welfare Benefit Programs, Labor-Management Services Administration, U.S. Department of Labor.

FRED OCHS,
Director/Employee Plans Division, Internal Revenue Service.

[FR Doc. 77-35609 Filed 12-12-77; 8:45 am]

[6820-31]

MARINE MAMMAL COMMISSION

MARINE MAMMAL COMMISSION AND COMMITTEE OF SCIENTIFIC ADVISORS ON MARINE MAMMALS

Meetings

Notice is hereby given that the Marine Mammal Commission and the Committee of Scientific Advisors on Marine Mammals will meet on February 23-25, 1978, in Houston, Tex., at the Ramada Inn North, 4225 North Freeway, Houston, Tex. 77022. Notice of specific times and agenda items will be published in the near future.

The purpose of this notice is to invite suggestions from interested persons concerning issues and subjects to be considered at the meeting. Suggestions should be submitted, in writing, to the Marine Mammal Commission, 1625 I Street NW., Washington, D.C. 20006, by January 10, 1978.

JOHN R. TWISS, Jr.,
Executive Director, Marine Mammal Commission.

DECEMBER 7, 1977.

[FR Doc. 77-35455 Filed 12-12-77; 8:45 am]

[7590-01]

NUCLEAR REGULATORY COMMISSION

[Docket No. PRM 2-1]

CONSUMERS' UNION ET AL.

Denial of Petition To Establish Model Rules of Practice for Citizen Participation in Agency Proceedings

Notice is hereby given of the denial of a petition for rulemaking entitled "Petition to the President of the United States and to the Independent Regulatory Agencies to Establish Model Rules of Practice for Citizen Participation in Agency Proceedings Affecting the Public, Citizens and Consumers" directed to former President Nixon by letter of October 30, 1970, with copies to the Chairmen of the Atomic Energy Commission and other independent regulatory agencies on behalf of the following petitioners: Consumers' Union; the Ad Hoc Committee on Consumer Protection representing the Council of Churches of Greater Washington, Jewish Community Council, National Consumer Law Center of the Boston College Law School, National Consumers' League, and the Washington Urban League; Citizens Communications Center; Black Efforts for Soul in Television; National Council on Hunger; and the Migrant Legal Action Program.

The petition requested that the President promulgate by Executive Order "Model Rules of Practice for Citizen Participation," attached to the petition, for those agencies of the Executive Branch that vitally affect consumers or other citizen interests and that the Atomic Energy Commission and the other independent regulatory agencies promulgate the "Model Rules" by regulation. The stated purpose of the "Model Rules" was to promote citizen participation in administrative proceedings and to make such participation easier.

On April 24, 1971, the Atomic Energy Commission published a notice in the FEDERAL REGISTER acknowledging receipt of the petition (36 FR 7761) and stating that the Commission would consider the petition a "petition for rulemaking to amend the Commission's 'Rules of Practice,' 10 CFR Part 2." No comments were received in response to this notice.

On May 9, 1972 (37 FR 9331) the Atomic Energy Commission instituted a public rulemaking proceeding to consider proposed amendments to its regulations to restructure its facility license application review and hearing processes. The purpose of the proposed amendments, which were intended to implement concepts outlined in a public announcement issued by the Commission on November 19, 1971, was to achieve more effective public participation in the process of licensing nuclear powerplants and increased efficiency in the conduct of public hearings.

On July 28, 1972, the Atomic Energy Commission published the amended makings (37 FR 15127) which became effective August 27, 1972. In commenting on the restructured rules, the Commission expressed concern "* * * not only with its obligation to the segment of the public participating in licensing proceedings but also with its responsibility to the general public—a responsibility to arrive at sound decisions, whether favorable or unfavorable to any particular party, in a timely fashion."

On January 19, 1975, the U.S. Nuclear Regulatory Commission, established pursuant to section 201 of the Energy Reorganization Act of 1974, as amended, assumed the licensing and related regulatory functions vested in the former U.S. Atomic Energy Commission by the provisions of the Atomic Energy Act of 1954, as amended. Following its organization, the NRC announced that it intended to review those of its regulations and procedures pertaining to the licensing and regulation of nuclear facilities and materials which were originally promulgated by the Atomic Energy Commission with a view to considering what changes should be made.

After review of its experience under the restructured rules, the Commission concluded that public participation in its facility license application review and hearing process could be improved and facilitated if the rules were further amended. Accordingly, on May 2, 1977, the Commission published a notice of proposed rolemaking announcing that it was considering certain miscellaneous amendments to its rules of practice, 10 CFR Part 2, including amendments to § 2.714 relating to petitions to intervene and § 2.715 relating to participation in Commission proceedings by a person who is not a party. Interested persons were given until July 5, 1977 to submit written comments.

These rulemaking actions, which have taken place during the period the Consumers' Union petition has been pending, reflect the Commission's continuing concern that its rules of practice contain procedures which provide for effective public participation in Commission proceedings.

The Commission believes that the proposal in the petition that all executive branch agencies and all independent regulatory agencies adopt uniform "Model Rules of Practice for Citizen Participation" is overly simplistic and is ill-adapted to NRC licensing proceedings in which difficult technical questions must be resolved. For these reasons, and in view of the fact that the Commission has already taken several positive steps to achieve more effective public participation in the NRC licensing process, the requested relief—adoption of uniform "Model Rules"—is not appropriate or necessary. Accordingly, the petition for rulemaking filed by the Consumers' Union; the Ad Hoc Committee on Consumer Protection representing the Council of Churches of Greater Washington, Jewish Community Council, National Consumer Law Center of the Boston College Law School, National Consumers' League, and the Washington Urban League; Citizens Communications Center; Black Efforts for Soul in Television; National Council on Hunger; and the Migrant Legal Action Program is denied.

Dated at Washington, D.C., this 6th day of December 1977.

For the Nuclear Regulatory Commission.

SAMUEL J. CHILK,
Secretary of the Commission.

[FR Doc.77-35470 Filed 12-12-77; 8:45 am]

[7590-01]

[Dockets Nos. 50-250, 50-251]

FLORIDA POWER AND LIGHT CO.

Proposed Issuance of Amendments to Facility Operating Licenses

The U.S. Nuclear Regulatory Commission (the NRC) has received from the Florida Power and Light Co. (the licensee) a program for repair of the steam generators at the Turkey Point Nuclear Generating Units Nos. 3 and 4 located in Dade County, Fla. Such a program will entail amendments of Facility Operating Licenses Nos. DPR-31 and DPR-41. Accordingly, notice is hereby given that the NRC has under consideration amendments to these licenses which would authorize the licensee to repair the steam generators now in use in each facility, replacing major portions of such steam generators with new components, and to return the units to operation using the steam generators, so repaired. The work on each unit would be carried out while the other unit is in operation.

The NRC will not issue the amendments: (1) Until the completion of a Safety Evaluation on the licensee's request by its Office of Nuclear Reactor Regulation and the completion of any environmental review which may be required by the NRC's regulations in 10 CFR Part 51, and (2) unless favorable findings required by the Atomic Energy Act of 1954, as amended (the Act) and the NRC's Rules and Regulations have been made.

By January 13, 1978, the licensee may file a request for a hearing and any person whose interest may be affected by this proceeding may file a request for a hearing in the form of a petition for leave to intervene with respect to the issuance of such amendments to the subject facility operating licenses. Requests for a hearing and/or petitions for leave to intervene shall be filed in accordance with the NRC's "rules of practice" in 10 CFR Part 2. If a request for a hearing and/or petition for leave to intervene is filed within the time prescribed in this notice, the Commission or an Atomic Safety and Licensing Board, designated by the Commission or by the Chairman of the Atomic Safety and Licensing Board Panel, will rule on the request and/or petition and the Secretary of the Commission or the designated Atomic Safety and Licensing Board will issue a notice of hearing or an appropriate order.

A petition for leave to intervene must be filed under oath or affirmation in accordance with the provisions of 10 CFR 2.714. As required in 10 CFR 2.714, a petition for leave to intervene shall set forth the interest of the petitioner in the proceeding, how that interest may be affected by the results of the proceeding, and any other contentions of the petitioner including the facts and reasons why he should be permitted to intervene, with particular reference to the following factors: (1) The nature of the petitioner's right under the Act to be made a party to the proceeding, (2) the nature and extent of the petitioner's property, financial, or other interest in the proceedings, and (3) the possible effect of any order which may be entered in the proceeding on the petitioner's interest. Any such petition shall be accompanied by a supporting affidavit identifying the specific aspect or aspects of the subject matter of the proceeding as to which he wishes to intervene and setting forth with particularity both the facts pertaining to this interest and the basis for his contentions with regard to each aspect on which he desires to intervene. Contentions shall be limited to the matters within the scope of the amendments under consideration. A petition that sets forth contentions relating only to matters outside the scope of the amendments under consideration will be denied. Persons whose petitions are denied for such reason, and persons whose contentions are denied as outside of the scope of the amendments under consideration, may file requests

with respect to such matters with the Director of Office of Nuclear Reactor Regulation in accordance with 10 CFR 2.206.

A request for a hearing or a petition for leave to intervene must be filed with the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Section or may be delivered to the NRC Public Document Room, 1717 H Street NW., Washington, D.C., by the above date. A copy of the petition and/or request should also be sent to the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 and to Robert Lowenstein, Esq., Lowenstein, Newman, Reis & Axelrad, 1025 Connecticut Avenue NW., Washington, D.C. 20036, attorney for the licensee.

A petition for leave to intervene which is not timely will not be granted unless the Commission, the presiding officer, or the Atomic Safety and Licensing Board designated to rule on the petition determines that the petitioner, in addition to the matters specified in 10 CFR 2.714(d), has made a substantial showing of good cause. The reasons for tardiness in filing a petition for leave to intervene, as well as the factors specified in 10 CFR 2.714(a) (1)-(4), shall be considered in determining whether there has been a substantial showing of good cause by petitioners.

As part of its authority to regulate the conduct of the hearing, if one is held, the presiding Atomic Safety and Licensing Board may, in accordance with 10 CFR Part 2, Appendix A, upon request of a party or on its own initiative, consider a particular issue or issues, encompassed within the amendments under consideration, separately from and prior to other issues; and may issue a separate initial decision thereupon, if deemed appropriate, which shall be dispositive of such issue(s) in the absence of appeal or Commission or Appeal Board review, before hearing on and consideration of the remaining issues in the proceeding.

For further details pertinent to these matters, see the licensee's letter dated September 20, 1977, along with other material that may be submitted by the licensee in support of this action, all of which are or will be available for public inspection at the NRC's Public Document Room, 1717 H Street NW., Washington, D.C., and at the Environmental and Urban Affairs Library, Florida International University, Miami, Fla. 33199.

Dated at Bethesda, Md., this 6th day of December 1977.

For the Nuclear Regulatory Commission.

EDSON G. CASE,
Acting Director, Office of Nuclear Reactor Regulation.

[FR Doc. 77-35471 Filed 12-12-77; 8:45 am]

[7590-01]

[Docket Nos. 50-324; 50-325]

CAROLINA POWER AND LIGHT CO.

Issuance of Amendments to Facility Operating Licenses

The U.S. Nuclear Regulatory Commission (the Commission), has issued Amendment No. 11 to Facility Operating License No. DPR-71 and Amendment No. 37 to Facility Operating License No. DPR-62, issued to Carolina Power and Light Co. (the licensee), which revised the licenses and Technical Specifications for operation of Brunswick Steam Electric Plant, Unit Nos. 1 and 2 (the facility), located in Brunswick County, N.C. The amendments are effective as of the date of issuance.

These amendments add license conditions relating to the completion of facility modifications for fire protection. Amendment No. 11 also revises the Unit No. 1 Appendix A-Prime Technical Specifications for operating and surveillance requirements for existing fire protection systems and administrative controls. Similar requirements will be added to the Unit No. 2 Technical Specifications prior to the restart of this unit from its present refueling outage on or about November 26, 1977. Additional operating and surveillance requirements for the modifications being performed will be added to the Technical Specifications for both units after the modifications are completed.

The applications for the amendments comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of these amendments.

For further details with respect to this action, see (1) the licensee's submittals dated December 29, 1976, June 23, August 23, August 24, and September 20, 1977, (2) Amendment No. 11 to License No. DPR-71, (3) Amendment No. 37 to License No. DPR-62, and (4) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C., and at the Southport-Brunswick County Library, 109 West Moore Street, Southport, N.C. 28461. A copy of items (2), (3), and (4) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Md., this 22d day of November 1977.

For the Nuclear Regulatory Commission.

A. SCHWENCER,
Chief, Operating Reactors Branch No. 1, Division of Operating Reactors.

[FR Doc. 77-35472 Filed 12-12-77; 8:45 am]

[7590-01]

[Docket Nos. 50-325 and 50-324]

CAROLINA POWER & LIGHT CO.

Issuance of Amendments to Facility Operating Licenses and Granting of Specific Exemptions From Regulations in 10 CFR Part 50 Appendix J

The U.S. Nuclear Regulatory Commission (the Commission), has issued Amendments Nos. 10 and 36 to Facility Operating Licenses Nos. DPR-71 and DPR-62, respectively, issued to Carolina Power & Light Co. (the licensee), which revised Technical Specifications for operation of the Brunswick Steam Electric Plant, Units Nos. 1 and 2 (the facilities), located in Brunswick County, N.C. The amendments are effective as of their date of issuance. The Commission has also granted three specific exemptions from the regulations in 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing For Water-Cooled Power Reactors."

The amendments and associated specific exemptions (1) allow the continued leakage testing of main steam isolation valves at a test pressure of 25 pounds per square inch (gauge) (psig), (2) require that the containment personnel air lock door seal be tested at 49 psig after each opening except during maintenance periods involving frequent air lock usage, in which case the door seal shall be tested once every three days and (3) allow the licensee to defer local leakage rate (Type C), testing of the feedwater check valves until the first refueling outage (scheduled for fall 1977), for

Unit 2, and defer such testing for Unit 1 until the first cold shutdown outage of at least 72 hours duration following the refueling outage of Unit 2. An overall airlock leakage test will be conducted at 49 psig at least once per six months, consistent with Appendix J.

The applications for the amendments and specific exemptions comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments and related letter to the licensee. Prior public notice of the amendments were not required since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of these amendments.

For further details with respect to this action, see (1) the applications for amendment and exemptions dated May 2 and September 8, 1975, February 9 and September 16, 1977, (2) Amendments Nos. 10 and 36 to Licenses Nos. DPR-71 and DPR-62, respectively, and (3) the Commission's related Safety Evaluation and letter to the licensee dated November 8, 1977. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C., and at the Southport-Brunswick County Library, 109 West Moore Street, Southport, N.C. 28461. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Md., this 8th day of November 1977.

For the Nuclear Regulatory Commission.

A. SCHWENCER,
Chief, Operating Reactors Branch No. 1, Division of Operating Reactors.

[FR Doc. 77-35473 Filed 12-12-77; 8:45 am]

[7590-01]

[Dockets Nos. 50-295 and 50-304]

COMMONWEALTH EDISON CO.

Issuance of Amendments to Facility Operating Licenses

The U.S. Nuclear Regulatory Commission (the Commission), has issued Amendment Nos. 31 and 28 to Facility Operating License Nos. DPR-39 and DPR-48 issued to Commonwealth Edison Co. (the licensee), which revised Technical Specifications for operation of the Zion Station Units Nos. 1 and 2, located in Zion. The amendments are effective as of the date of issuance.

These amendments (1) revise operating limits for operation of Zion Unit 1 in fuel Cycle 3, (2) delete the requirement that power be removed from Mov-SI8813, MOV-SI8814, MOV-SI8811A, and—MOV-SI8811B during normal operations of Zion Unit 1 and (3) include a revised $F_{\Delta H}$ rod bow penalty for Zion Units 1 and 2.

The application for these amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Notice of Proposed Issuance of Amendments to Facility Operating Licenses in connection with this action was published in the FEDERAL REGISTER on September 22, 1977 (42 FR 47898). No request for a hearing or petition for leave to intervene was filed following notice of the proposed action.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement, negative declaration or environmental impact appraisal need not be prepared in connection with issuance of these amendments.

For further details with respect to this action, see (1) the application for amendments dated July 12, 1977, as supplemented September 28, 1977, (2) Amendment Nos. 31 and 28 to License Nos. DPR-39 and DPR-48, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. 20555, and at the Waukegan Public Library, 128 North County Street, Waukegan, Ill. 60685. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Md., this 9th day of November 1977.

For the Nuclear Regulatory Commission.

A. SCHWENCER,
Chief, Operating Reactors Branch No. 1, Division of Operating Reactors.

[FR Doc. 77-35474 Filed 12-12-77; 8:45 am]

[7590-01]

[Docket No. 50-213]

CONNECTICUT YANKEE ATOMIC POWER CO.

Issuance of Amendment to Facility Operating License

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 23 to Facility Operating License No. DPR-61, issued to Connecticut Yankee Atomic Power Co. for operation of the Haddam Neck Plant, located in Meddlesex County, Conn. The amendment is effective as of the date of issuance.

The amendment incorporates changes to the Technical Specifications necessary to support Cycle 8 operation and result in cycle independent Technical Specifications, that is, the revised Technical Specifications would remain applicable to future operating cycles of the Haddam Neck Plant.

The principal changes to the Technical Specifications are as follows: (a) new limiting linear heat generation rates for fuel, (b) deletion of the specifications referring to batch fuel, (c) new allowable power versus axial offset curves for 0 to 200 effective full power days (EFPD) and 200 EFPD to end of cycle (EOC) exposure, (d) specification of a single more conservative value for statistical density factor applicable to all fuel and (e) modification of the procedures for power distribution monitoring and control.

The applications for the amendment comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see: (1) The application for

amendment dated August 1, 1977, as supplemented November 10, 1977, and application dated October 31, 1977, (2) Amendment No. 23 to License No. DPR-61, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. and at the Russell Library, 119 Broad Street, Middletown, Conn. 06457. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Md., this 11th day of November 1977.

For the Nuclear Regulatory Commission.

A. SCHWENCER,
Chief Operating Reactors Branch No. 1, Division of Operating Reactors.

[FR Doc. 77-35475 Filed 12-12-77; 8:45 am]

[7590-01]

[Dockets Nos. 50-247 and 50-286]

CONSOLIDATED EDISON CO. OF NEW YORK, INC. AND POWER AUTHORITY OF THE STATE OF NEW YORK

Issuance of Amendments to Facility Operating Licenses

The U.S. Nuclear Regulatory Commission (the Commission) has issued to Consolidated Edison Co. of New York, Inc. (Con Ed), Amendment No. 36 to Facility Operating License No. DPR-26 for the Indian Point Nuclear Generating Unit No. 2, and has issued to Con Ed and the Power Authority of the State of New York, Amendment No. 10 to Facility Operating License No. DPR-64 for the Indian Point Nuclear Generating Unit No. 3. These amendments revised Technical Specifications for operation of Indian Point Units Nos. 2 and 3 located in Buchanan, Westchester County, New York. The amendments become effective 30 days after the date of issuance.

The amendments incorporate fire protection Technical Specifications on the existing fire protection equipment and add administrative controls related to fire protection at the facilities. This action is being taken pending completion of the Commission's overall fire protection review of the facilities.

The applications for the amendments comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

For further details with respect to this action, see: (1) The applications for amendments transmitted by letters dated July 20, 1977, (2) Amendment No. 36 to License No. DPR-26, (3) Amendment No. 10 to License No. DPR-64, and (4) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. and at the White Plains Public Library, 100 Martine Avenue, White Plains, N.Y. A copy of items (2) through (4) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 30th day of November 1977.

For the Nuclear Regulatory Commission.

ROBERT W. REID,
Chief, Operating Reactors Branch No. 4, Division of Operating Reactors.

[FR Doc. 77-35476 Filed 12-12-77; 8:45 am]

[7590-01]

[Docket Nos. 50-329, 50-330]

CONSUMERS POWER COMPANY, (MIDLAND PLANT, UNITS 1 AND 2)

Establishment of Atomic Safety and Licensing Board for Special Proceeding

The notice, "Establishment of Atomic Safety and Licensing Board for Special Proceeding", published November 11, 1977 (FEDERAL REGISTER, Vol. 42, No. 218, p. 58802) is hereby amended to read as follows:

Pursuant to 10 CFR 2.721, as amended, an Atomic Safety and Licensing Board is hereby established for a special proceeding.

The Chairman of this Board is:

Valentine B. Deale, Esquire, 1001 Connecticut Avenue NW., Washington, D.C. 20036.

The other two members of the Board are:

Margaret M. Laurence, Esquire, 5007 King Richard Drive, Annandale, Va. 22003.

Gary L. Milhollin, Esquire, 1815 Jefferson Street, Madison, Wis. 53711.

The subject special proceeding is for the purpose of affording an opportunity, pursuant to 10 CFR 2.713, to certain attorneys to be heard on the charges preferred against them by the Presiding Officer through an Order dated November 4, 1977, in the captioned matter.

Dated at Bethesda, Md., this 7th day of December 1977.

JAMES R. YORE,
Chairman, Atomic Safety and Licensing Board Panel.

[FR Doc. 77-35477 Filed 12-12-77; 8:45 am]

[7590-01]

[Docket No. 50-264]

DOW CHEMICAL CO.

Renewal of Facility License and Negative Declaration

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 3 to Facility License No. R-108, issued to the Dow Chemical Co. (the licensee), which renews the license for operation of the TRIGA Mark I type nuclear reactor (the facility) located in Midland, Mich. The facility is a research reactor that has been operating since July 1967 and is currently licensed to operate at 100 kilowatts (thermal). The amendment is effective as of its date of issuance.

The amendment extended the duration of Facility License No. R-108 until December 20, 1986.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Notice of the proposed issuance of this action was published in the FEDERAL REGISTER on November 18, 1976 (41 FR 50877). No request for a hearing or petition for leave to intervene was filed following notice of the proposed action.

The Commission has prepared an environmental impact appraisal for the renewal of the Facility License and has concluded that an environmental impact statement for this particular action is not warranted because there will be no significant environmental impact attributable to the action.

For further details with respect to this action, see: (1) The application for amendment dated March 11, 1976, as supplemented November 5, 1976, (2) Amendment No. 3 to License No. R-108, and (3) the Commission's related

Safety Evaluation/Environmental Impact Appraisal. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C.

A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Md., this 21st day of November 1977.

For the Nuclear Regulatory Commission.

ROBERT W. REID,
Chief Operating Reactors Branch No. 4, Division of Operating Reactors.

[FR Doc. 77-35478 12-12-77; 8:45 am]

[7590-01]

[Docket Nos. 50-269, 50-270, 50-287]

DUKE POWER CO.

Issuance of Amendments To Facility Operating Licenses

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment Nos. 54, 54 and 51 to Facility Operating License Nos. DPR-38, DPR-47, and DPR-55, respectively, issued to Duke Power Co. which revised the Technical Specifications for operation of the Oconee Nuclear Station, Unit Nos. 1, 2, and 3, located in Oconee County, S.C. The amendments are effective within 30 days of date of issuance.

These amendments revise the Technical Specifications to identify or conservatively account for radionuclides which may be present at low activity levels in mixtures of gamma emitters.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as requird by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and the pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of these amendments.

For further details with respect to this action, see: (1) The application for amendments dated May 6, 1977, (2) Amendment Nos. 54, 54 and 51 to License Nos. DPR-38, DPR-47, and DPR-55, respectively, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. and at the Oconee County Library, 201 South Spring Street, Walhalla, S.C. 29691. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Md., this 23rd day of November 1977.

For the Nuclear Regulatory Commission.

A. SCHWENCER,
Chief, Operating Reactors Branch No. 1, Division of Operating Reactors.

[FR Doc. 77-35479 Filed 12-12-77; 8:45 am]

[7590-01]

[Docket No. 50-334]

DUQUESNE LIGHT CO., ET AL.

Issuance of Amendment To Facility Operating License

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 11 to Facility Operating License No. DPR-66, issued to Duquesne Light Co., Ohio Edison Co., and Pennsylvania Power Co. (the licensees), which revised Technical Specifications for operation of the Beaver Valley Power Station, Unit No. 1 (the facility) located in Beaver County, Pa. The amendment becomes effective 30 days after its date of issuance.

The amendment incorporates fire protection Technical Specifications on the existing fire protection equipment and adds administrative controls related to fire protection at the facility. This action is being taken pending completion of the Commission's overall fire protection review of the facility.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see: (1) The application for amendment dated February 11, 1977, as revised July 12, 1977, (2) Amendment No. 11 to License No. DPR-66, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C., and at the Beaver Area Memorial Library, 100 College Avenue, Beaver, Pa. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Md., this 30th day of November 1977.

For the Nuclear Regulatory Commission.

ROBERT W. REID,
Chief, Operating Reactors Branch No. 4, Division of Operating Reactors.

[FR Doc. 77-35480 Filed 12-12-77; 8:45 am]

[7590-01]

[Docket No. 50-302]

FLORIDA POWER CORP. ET AL

Issuance of Amendment To Facility Operating License

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 9 to Facility Operating License No. DPR-72, issued to the Florida Power Corp., City of Alachua, City of Bushnell, City of Gainesville, City of Kissimmee, City of Leesburg, City of New Smyrna Beach and Utilities Commission, City of New Smyrna Beach, City of Ocala, Orlando Utilities Commission and City of Orlando, Sebring Utilities Commission, Seminole Electric Cooperative, Inc., and the City of Tellahassee (the licensees) which revised Technical Specifications for operation of the Crystal River Unit No. 3 Nuclear Generating Plant located in Citrus County, Fla. The amendment is effective as of the date of issuance.

This amendment revises the reporting requirements to allow the use of improved Licensee Event Report and Monthly Operating Report formats. This amendment also deletes the requirement for an Annual Operating Report while retaining the requirement that occupational exposure data

be reported on an annual basis. Furthermore, this amendment deletes respiratory protection requirements, as they are now stipulated in 10 CFR § 20.103.

The applications for the amendment comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see: (1) The applications for amendment dated July 15, and September 28, 1977, (2) Amendment No. 9 to License No. DPR-72, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C., and at the Crystal River Public Library, Crystal River, Fla. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Md., this 22nd day of November 1977.

For the Nuclear Regulatory Commission.

ROBERT W. REID,
Chief, Operating Reactors Branch No. 4, Division of Operating Reactors.

[FR Doc. 77-35481 Filed 12-12-77; 8:45 am]

[7590-01]

[Docket No. 50-206]

SOUTHERN CALIFORNIA EDISON CO. AND SAN DIEGO GAS AND ELECTRIC CO.

Issuance of Amendment to Provisional Operating License

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 28 to Provisional Operating License No. DPR-13, issued to Southern California Edision Co. and San Diego Gas and Electric Co. (the licensee), which revised the Technical Specifications for operation of the San Onofre Nuclear Generating Station, Unit No. 1 (SO-1) located in San Diego County, Calif. The amendment is effective as of its date of issuance.

The amendment changes the provisions in Subsection 3.1.1.a(5) "Thermal Measurements" in Appendix B to permit temperature measurements to be taken every hour instead of every half hour and for temperature recording system operability verification to be performed once every month instead of once every two weeks.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see: (1) The application for amendment dated June 24, 1977, (2) Amendment No. 28 to License No. DPR-13, and (3) the Commission's letter to the licensee dated November 28, 1977. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. and at the Mission Viejo Branch Library, 24851 Chrisanta Drive, Mission Viejo, Calif. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Md., this 28th day of November 1977.

For the Nuclear Regulatory Commission.

A. SCHWENCER,
Chief, Operating Reactors Branch No. 1, Division of Operating Reactors.

[FR Doc. 77-35482 Filed 12-12-77; 8:45 am]

[7590-01]

TOPICAL REPORT

Issuance and Availability

The Nuclear Regulatory Commission has issued a topical report, NUREG-0172, "Age-Specific Radiation Dose Commitment Factors for a One-Year Chronic Intake."

This report was prepared by Battelle Pacific Northwest Laboratories under contract with the Office of Standards Development of the Nuclear Regulatory Commission. This effort was undertaken to remove some inconsistencies from the age-dependent dose conversion factors used in NRC Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," as published for comment in March 1976. The revised dose conversion factors appearing in NUREG-0172 have been incorporated in Revision 1 of Regulatory Guide 1.109 (published October 1977) and are currently being used in evaluations performed by the staff of NRC's Office of Nuclear Reactor Regulation for the purpose of determining compliance with Appendix I of 10 CFR Part 50.

NUREG-0172 is available for inspection at the Commission's Public Document Room at 1717 H Street NW., Washington, D.C. Copies may be purchased at current rates from the National Technical Information Service, Springfield, Va. 22161. (Paper copy: $5.50; Microfiche: $3.00)

(5 U.S.C. 552(a).)

Dated at Rockville, Md., this 5th day of December 1977.

For the Nuclear Regulatory Commission.

ROBERT B. MINOGUE,
Director, Office of Standards Development.

[FR Doc. 77-35489 Filed 12-12-77; 8:45 am]

[7590-01]

[Docket No. 50-271]

VERMONT YANKEE NUCLEAR POWER CORP.

Issuance of Amendment To Facility Operating License

The U.S. Nuclear Regulatory Commission (the Commission), has issued Amendment No. 41 to Facility Operating License No. DPR-28, issued to Vermont Yankee Nuclear Power Corp. (the licensee), which revised Technical Specifications for operation of the Vermont Yankee Nuclear Power Station (the facility), located near Vernon, Vt. The amendment is effective as of its date of issuance.

This amendment modifies the Technical Specifications relating to an increase in the Maximum Average Planar Linear Heat Generation Rate (MAPLHGR), limits for the facility. This increase in the MAPLHGR limits is based on the results of a new evaluation of the Emergency Core Cooling

System (ECCS), performance submitted in compliance with our Order for Modification of License dated March 11, 1977. This amendment terminates the March 11, 1977 Order.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Notice of Proposed Issuance of Amendment to Facility Operating License in connection with this action was published in the FEDERAL REGISTER on October 17, 1977 (42 FR 55507). No request for a hearing or petition for leave to intervene was filed following notice of the proposed action.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental statement, or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated October 12, 1977, (2) Amendment No. 41 to License No. DPR-28 and the Commission's related Safety Evaluation, (3) Amendment No. 39 to License No. DPR-28 and the Commission's related Safety Evaluation, (4) the Commission's Order for Modification of License dated March 11, 1977, and (5) the licensee's ECCS submittal dated August 12, 1977. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C., and at the Brooks Memorial Library, 224 Main Street, Brattleboro, Vt. A copy of items (2), (3), and (4) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Md., this 30th day of November 1977.

For the Nuclear Regulatory Commission.

ROBERT W. REID,
Chief, Operating Reactors Branch No. 4, Division of Operating Reactors.

[FR Doc. 77-35483 Filed 12-12-77; 8:45 am]

[7590-01]

[Docket No. 50-271]

VERMONT YANKEE NUCLEAR POWER CORP.

Issuance of Amendment to Facility Operating License and Negative Declaration

The U.S. Nuclear Regulatory Commission (the Commission), has issued Amendment No. 40 to Facility Operating License No. DPR-28, issued to Vermont Yankee Nuclear Power Corp. (the licensee), which revised Technical Specifications for operation of the Vermont Yankee Nuclear Power Station (the facility), located near Vernon, Vt. The amendment is effective as of its date of issuance.

This amendment allows the use of open-cycle cooling to shut the plant down in the event of a failure of the closed-cycle cooling system.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has prepared an environmental impact appraisal for this amendment and has concluded that an environmental impact statement for this particular action is not warranted because there will be no environmental impact attributable to this action other than that which has already been predicted and described in the Commission's final environmental statement for the facility dated July 1972.

For further details with respect to this action, see (1) the application for amendment dated September 22, 1975, as supplemented May 10, 1976, and March 8, 1977, (2) Amendment No. 40 to License No. DPR-28, and (3) the Commission's related Environmental Impact Appraisal. All of the these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C., and at the Brooks Memorial Library, 224 Main Street, Brattleboro, Vt.

A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Md., this 21st day of November 1977.

For the Nuclear Regulatory Commission.

ROBERT W. REID,
Chief, Operating Reactors Branch No. 4, Division of Operating Reactors.

[FR Doc. 77-35484 Filed 12-12-77; 8:45 am]

[7590-01]

[Docket Nos. 50-280, 50-281]

VIRGINIA ELECTRIC AND POWER CO.

Issuance of Amendments to Facility Operating Licenses

The U.S. Nuclear Regulatory Commission (the Commission), has issued Amendments Nos. 34 and 33 to Facility Operating Licenses Nos. DPR-32 and DPR-37, issued to Virginia Electric and Power Co. (the licensee), which revised Technical Specifications for operation of the Surry Power Stations, Units Nos. 1 and 2 (the facilities), located in Surry County, Va. The amendments become effective 30 days after the date of issuance.

The amendments incorporate fire protection Technical Specifications on the existing fire protection equipment and add administrative controls related to fire protection at the facilities. This action is being taken pending completion of the Commission's overall fire protection review of the facilities.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of these amendments.

For further details with respect to this action, see (1) the application for amendments dated December 31, 1976, as revised August 1, 1977, (2) Amendments Nos. 34 and 33 to Licenses Nos. DPR-32 and DPR-37, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C., and at the Swem Library, College of William and Mary, Williamsburg, Va. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Md., this 30th day of November 1977.

For the Nuclear Regulatory Commission.

ROBERT W. REID,
Chief, Operating Reactors Branch No. 4, Division of Operating Reactors.

[FR Doc. 77-35485 Filed 12-12-77; 8:45 am]

[7590-01]

[Docket Nos. 50-280, 50-281]

VIRGINIA ELECTRIC & POWER CO.

Establishment of Atomic Safety and Licensing Board To Rule on Petitions

Pursuant to delegation by the Commission dated December 29, 1972, published in the FEDERAL REGISTER (37 FR 28710) and §§ 2.105, 2.700, 2.702, 2.714, 2.714a, 2.717, and 2.721 of the Commission's regulations, all as amended, an Atomic Safety and Licensing Board is being established to rule on petitions and/or requests for leave to intervene in the following proceeding:

VIRGINIA ELECTRIC & POWER CO.

(SURRY POWER STATION UNITS NOS. 1 AND 2)

Facility Operating Licenses Nos. DPR-32 and DPR-37.

This action is in reference to a notice published by the Commission on October 27, 1977, in the FEDERAL REGISTER (42 FR 56652) entitled "Proposed Issuance of Amendments to Facility Operating Licenses."

The Chairman of this Board and his address is as follows:

Marshall E. Miller, Esq., Atomic Safety and Licensing Board Panel, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

The other members of the Board and their address are as follows:

Dr. Oscar H. Paris, Mr. Frederick J. Shon, Atomic Safety and Licensing Board Panel, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Dated at Bethesda, Md., this 6th day of December 1977.

For the Atomic Safety and Licensing Board Panel.

JAMES R. YORE,
Chairman.

[FR Doc. 77-35486 Filed 12-12-77; 8:45 am]

[7590-01]

[Docket No. 50-29]

YANKEE ATOMIC ELECTRIC CO.

Issuance of Amendment to Facility Operating License

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 44 to Facility Operating License No. DPR-3, issued to Yankee Atomic Electric Co. (the licensee), which revised Technical Specifications for operation of the Yankee Nuclear Power Station (Yankee-Rowe) (the facility), located in Rowe, Franklin County, Mass. The amendment is effective as of its date of issuance.

The amendment revises the Technical Specifications related to the ECCS accumulator actuation time delay setting and to burnup-dependent Linear Heat Generation Rates (LHGR's).

The applications for the amendment comply with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the applications for amendment dated September 8 and October 27, 1977, (2) related submittals dated September 21, October 7 and 11, and November 14, 1977, (3) Amendment No. 44 to License No. DPR-3, and (4) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C., and at the Greenfield Public Library, 422 Main Street, Greenfield, Mass. 01581. A copy of items (3) and (4) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Md., this 29th day of November 1977.

For the Nuclear Regulatory Commission.

A. SCHWENCER,
Chief, Operating Reactors Branch No. 1, Division of Operating Reactors.

[FR Doc. 77-35488 Filed 12-12-77; 8:45 am]

[3110-01]

OFFICE OF MANAGEMENT AND BUDGET

Office of Federal Procurement Policy

PROFIT POLICY FOR THE FEDERAL MARKETPLACE

Invitation for Public Comment

The Office of Federal Procurement Policy (OFPP) in conjunction with the recently established Federal Procurement Institute is undertaking a research project intended to examine profit policy for the Federal contractors. Initially, the research effort will concentrate on development of a conceptual framework for a profit policy to complement the modernization of the Federal procurement process currently being undertaken in the Congress and within the executive branch. From this conceptual framework, profit concepts will be examined for their effects on Federal procurement. The research will take into account those comments received at the November 4, 1976 OFPP public meeting on major issues pertinent to the adoption of Government-wide pricing and profit policies on negotiated procurements.

The OFPP will exercise overall direction of this project. The Federal Procurement Institute is responsible for the management of the research effort much of which is to be accomplished by the Logistics Management Institute.

The OFPP solicits the views of interested parties with respect to this research effort including innovative concepts and suggestions as to means for exploiting profit motivation to promote the economy, efficiency, innovation, capital investment, and productivity. Such views should be addressed to Mr. Conroy Johnson, Office of Federal Procurement Policy, room 5002, New Executive Office Building, Office of Management and Budget, Washington, D.C. 20503, 202-395-4946. Subsequently and as deemed appropriate, contributors may be interviewed to assure complete comprehension of the ideas being expounded. To insure proper consideration, the views should be submitted by January 16, 1978.

Dated: December 6, 1977.

LESTER A. FETTIG,
Administrator.

[FR Doc. 77-35548 Filed 12-12-77; 8:45 am]

[8010-01]

SECURITIES AND EXCHANGE COMMISSION

[Release No. 20289; 70-6095]

ALABAMA POWER CO., ET AL.

Proposal To Issue First Mortgage Bonds for Sinking Fund Purposes

DECEMBER 2, 1977.

In the matter of Alabama Power Co., P.O. Box 2641, Birmingham, Ala. 35291; Gulf Power Co., P.O. Box 1151, Pensacola, Fla. 32520; Georgia Power Co., P.O. Box 4545, Atlanta, Ga. 30302; Mississippi Power Co., P.O. Box 4079, Gulfport, Miss. 39501.

Notice is hereby given that Alabama Power Co. ("Alabama"), Gulf Power Co. ("Gulf"), Georgia Power Co. ("Georgia"), and Mississippi Power Co. ("Mississippi"), all of which are public-utility subsidiaries of The Southern Co., a registered holding company, have filed a declaration with this Commission pursuant to the Public Utility Holding Company Act of 1935 ("Act"), designating Sections 6(a) and 7 of the Act and Rule 50(a)(5) promulgated thereunder as applicable to the following proposed transactions. All interested persons are referred to the declaration, which is summarized below, for a complete statement of the proposed transactions.

Alabama, Georgia, Gulf, and Mississippi propose to issue their respective First Mortgage Bonds ("Sinking Fund Bonds") and to surrender such Sinking Fund Bonds to the trustees under their respective Indentures for the purpose of satisfying the sinking fund (improvement fund, in the case of Alabama) requirements thereunder to be satisfied on or prior to June 1, 1978. The amounts and series of Sinking Fund Bonds are proposed to be issued as follows:

Name of Company	Amount	Series
Alabama	$16,270,000	3⅛ pct. Series due 1985.
Georgia	20,378,000	2⅞ pct. Series due 1980.
Gulf	2,516,000	3¼ pct. Series due 1984.
Mississippi	2,513,000	2¾ pct. Series due 1980.

The Sinking Fund Bonds are to be issued on the basis of unfunded net property additions, thus making available for construction purposes cash which would otherwise be needed to satisfy the sinking fund requirements or to purchase bonds to be used for such purpose. It is stated that the delivery of the Sinking Fund Bonds is exempt from the competitive bidding requirements of Rule 50 by reason of clause (a)(5) thereof inasmuch as such Bonds will not constitute obligations of the companies for the payment of money.

The fees, commissions, and expenses incurred or to be incurred in connection with the proposed transactions will aggregate $8,000, of which total fees for legal counsel will be $1,600. The Alabama Public Service Commission has authorized the issuance of the bonds by Alabama. The Georgia Public Service Commission and the Florida Public Service Commission have jurisdiction over the issuance of the Sinking Fund Bonds by Georgia and Gulf, respectively. It is stated that no other State commission and no Federal commission, other than this Commission, has jurisdiction over the proposed transactions.

Notice is further given that any interested person may, not later than December 27, 1977, request in writing that a hearing be held on such matter, stating the nature of his interest, the reasons for such request, and the issues of fact or law raised by said declaration which he desires to controvert; or he may request that he be notified if the Commission should order a hearing thereon. Any such request should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request should be served personally or by mail upon the declarants at the above-stated addresses, and proof of service (by affidavit or, in case of an attorney at law, by certificate) should be filed with the request. At any time after said date, the declaration, as filed or as it may be amended, may be permitted to become effective as provided in Rule 23 of the general rules and regulations promulgated under the Act, or the Commission may grant exemption from such rules as provided in Rules 20(a) and 100 thereof or take such other action as it may deem appropriate. Persons who request a hearing or advice as to whether a hearing is ordered will receive any notices and orders issued in this matter, including the date of the hearing (if ordered) and any postponements thereof.

For the Commission, by the Division of Corporate Regulation, pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

[FR Doc. 77-35442 Filed 12-12-77; 8:45 am]

[8010-01]

[Rel. No. 34-14225, Filed No. SR-Amex-77-33]

AMERICAN STOCK EXCHANGE, INC.

Self-Regulatory Organization; Proposed Rule Change

Pursuant to section 19(b)(1) of the Securities Exchange Act of 1934 (the "Act"), 15 U.S.C. 78s(b)(1), as amended by Pub. L. No. 94-29, 16 (June 4, 1975), notice is hereby given that on November 25, 1977 the above-mentioned self-regulatory organization filed with the Securities and Exchange Commission a rule change as follows:

EXCHANGE'S STATEMENT OF TERMS OF SUBSTANCE OF THE PROPOSED RULE CHANGE

Amex Rule 991(c) is amended to read as follows: Advertisements, Market Letters and Sales Literature Relating to Options.

Rule 991

(c) Exchange Approval Required for Options Advertisements—In addition to the approval required by paragraph (a) of this rule, every advertisement of a member or member organization pertaining to options shall be submitted to the [Membership Services Division] Legal and Regulatory Policy Division of the Exchange at least 10 days prior to use (or such shorter period as the Division may allow in particular instances) and, if expressly disapproved by the Exchange, shall be withheld or withdrawn from circulation until any changes specified by the Exchange have been made and the advertisement resubmitted for Exchange approval. The requirements of this paragraph shall not be applicable to advertisements submitted to and approved by another national securities exchange (having similar requirements regarding approval of advertisements) pursuant to an arrangement approved by the Exchange.

* * * * *

EXCHANGE'S STATEMENT OF BASIS AND PURPOSE

This change reflects the delegation of the responsibility for reviewing and determining the appropriateness of options advertisements to the Legal and Regulatory Policy Division of the Amex.

The proposed change is concerned solely with the administration of Amex Rule 991(c), and is consistent with section 6(b)(1) of the Act.

No comments were solicited or received with respect to the proposed rule change.

The Am ex has determined that no burden on competition will be imposed by the proposed rule change.

The foregoing rule change has become effective, pursuant to Section 19(b)(3) of the Securities Exchange Act of 1934. At any time within sixty days of the filing of such proposed rule change, the Commission may summarily abrogate such rule change if it appears to the Commission that such action is necessary or appropriate in the public interest, for the protection of investors, or otherwise in fur-

therance of the purposes of the Securities Exchange Act of 1934.

Interested persons are invited to submit written data, views and arguments concerning the foregoing. Persons desiring to make written submissions should file 6 copies thereof with the Secretary of the Commission, Securities and Exchange Commission, Washington, D.C. 20549. Copies of the filing with respect to the foregoing and of all written submissions will be available for inspection and coping in the Public Reference Room, 1100 L Street NW., Washington, D.C. Copies of such filing will also be available for inspection and copying at the principal office of the above-mentioned self-regulatory organization. All submissions should refer to the file number referenced in the caption above and should be submitted on or before January 3, 1978.

For the Commission by the Division of Market Regulation, pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

DECEMBER 5, 1977.

[FR Doc. 77-35441 Filed 12-12-77; 8:45 am]

[8010-01]

[Release No. 14231; SR-AMEX-77-13]

AMERICAN STOCK EXCHANGE, INC.

Order Approving Proposed Rule Change

DECEMBER 5, 1977.

On June 15, 1977, the American Stock Exchange, Inc., 86 Trinity Place, New York, N.Y. 10006, filed with the Commission, pursuant to Section 19(b) of the Securities Exchange Act of 1934 (the "Act"), as amended by the Securities Acts Amendments of 1975, and Rule 19b-4 thereunder, copies of the proposed rule change. The proposed rule change eliminates restrictions on members executing agency orders off the Amex with a third market maker or non-member block positioner, eliminates restrictions on wire connections between offices of members and non-members,[1] and, among other things, amends its rules relating to short sales, the retention of fingerprinting records, and the procedures which must be utilized to revoke wire connection privileges between offices of members and the Amex floor.

Notice of the proposed rule change together with the terms of substance of the proposed rule change was given by publication of a Commission release (Securities Exchange Act Release No. 13724 (July 6, 1977), and by publication in the FEDERAL REGISTER (42 FR 36334 (July 14, 1977).

The Commission finds that the proposed rule change is consistent with the requirements of the Act and the rules and regulations thereunder are applicable to national securities exchanges, and in particular, the requirements of Section 6 and the rules and regulations thereunder.

It is therefore ordered, pursuant to section 19(b)(2) of the Act, that the above mentioned rule change be, and it hereby is, approved.

For the Commission, by the Division of Market Regulation. Pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

[FR Doc.77-35443 Filed 12-12-77; 8:45 am]

[1] Amex Rules 500-505, which have been rescinded, previously required a member, among other things, to obtain prior approval of the Amex before establishing a wire connection between his office and the office of a non-member.

[8010-01]

[Release No. 20294; 70-6100]

COLUMBIA GAS SYSTEM, INC., ET AL.

Proposed Open Account Advances To Subsidiary Companies by Parent Company in Connection With Intrasystem Prepayment of Promissory Notes and Related Transactions

DECEMBER 2, 1977.

In the matter of the Columbia Gas System, Inc., Columbia LNG Corp., Columbia Gas Development Corp., Columbia Gas System Service Corp., 20 Montchanin Road, Wilmington, Del. 19807; Columbia Gas Transmission Corp., 1700 MacCorkle Avenue SE., Charleston, W. Va. 25314; Columbia Gas of Ohio, Inc., Columbia Gas of Kentucky, Inc., Columbia Gas of Virginia, Inc., Columbia Gas of West Virginia, Inc., Columbia Gas of Pennsylvania, Inc., Columbia Gas of New York, Inc., Columbia Gas of Maryland, Inc., 99 North Front Street, Columbus, Ohio 43215; Columbia Gulf Transmission Co., 3805 West Alabama Avenue, Houston, Tex. 77027, Columbia Hydrocarbon Corp., the Inland Gas Co., Inc., 340—17th Street, Ashland, Ky. 41101.

Notice is hereby given that the Columbia Gas System, Inc. ("Columbia"), a registered holding company, and its wholly owned subsidiary companies listed above, have filed an application-declaration with this Commission pursuant to the Public Utility Holding Company Act of 1935 ("Act"), designating Sections 6(a), 6(b), 9, 10, and 12(b) of the Act and Rules 42(b)(2) and 45 promulgated thereunder as applicable to the proposed transactions. All interested persons are referred to the application-declaration, which is summarized below, for a complete statement of the proposed transactions.

It is stated that during the winter heating season Columbia's distribution subsidiary companies generate substantial amounts of cash in excess of current requirements. During the same period, however, the transmission subsidiary companies generate lesser amounts of cash and have generally larger construction expenditures, requiring Columbia to advance funds to such subsidiary companies. In recent years, the Commission has authorized open account advances by Columbia to subsidiary companies and certain related transactions which are designed to alleviate this situation. The present filing request authorization to continue such transactions during the calendar year 1978.

It is proposed that the subsidiary companies listed below will prepay from time to time prior to the end of 1978, with excess cash in aggregate amounts not to exceed the amounts set forth below, a portion of their outstanding installment promissory notes ("Notes"), held by Columbia. The following amounts represent the estimated aggregate maximum excess funds that such companies are expected to accumulate at any one time during the year 1978.

Columbia Gas System Service Corp.	$6,000,000
Columbia Gas Transmission Corp.	350,000,000
Columbia Gas of Pennsylvania, Inc.	40,000,000
Columbia Gas of New York, Inc.	7,500,000
Columbia Gas of Maryland, Inc.	4,000,000
Columbia Gas of Kentucky, Inc.	12,000,000
Columbia Gas of Virginia, Inc.	3,000,000
Columbia Gas of West Virginia, Inc.	20,000,000
Columbia Gas of Ohio, Inc.	90,000,000
Columbia Gulf Transmission Co.	50,000,000
Columbia Hydrocarbon Corp.	3,548,000
The Inland Gas Co., Inc.	3,500,000
Columbia LNG Corp.	86,000,000
Columbia Gas Development Corp.	35,000,000
Total	710,548,000

The Notes ("Indebtedness"), prepaid by the individual companies will be those bearing the highest interest rate or rates outstanding at the time of each prepayment. Interest on such Indebtedness will cease upon prepayment and recommence upon reissuance. As any of such companies require funds for construction and other corporate purposes after prepayment, it is proposed that advances be made to them on open account by Columbia, provided that at no time will the amount of such advances to any subsidiary exceed the amount of Indebtedness theretofore prepaid by it, less any current maturities applicable to prepaid Notes which would have matured subsequent to the date of prepayment.

The open account advances to any subsidiary company will bear interest commencing on the date of the advances, at the same rate or rates as borne by the equivalent principal amounts of Indebtedness previously prepaid by it during 1978, but in reverse order to that of the prepayments, i.e., beginning from the lowest rate payable on the Indebtedness previously prepaid to the highest rate. In-

terest on the open account advances will become due on June 30, 1978, and December 31, 1978, and/or on the date such advances are repaid by the issuance of Notes. It is further proposed that advances on open account to individual subsidiary companies will be increased or decreased from time to time in accordance with variations in the cash flow of the individual subsidiary companies. The proposed advances will not be in excess of the Indebtedness prepaid theretofore. At such time as the advances to any subsidiary company equal the aggregate amount of the Indebtedness prepaid by it, or in any event not later than December 31, 1978, such prepaid Indebtedness will be reinstated in repayment of the outstanding open account advances.

Financing of construction or gas storage programs of any operating subsidiary company pursuant to Commission authorization will not be consummated until such time as advances have been made in amount equal to the amount of Indebtedness prepaid. Any subsidiary company which during 1978 has borrowed on open account from Columbia an amount smaller than the amount of Indebtedness theretofore prepaid by it will, on December 31, 1978, reinstate its Indebtedness to Columbia in an amount sufficient to discharge its open account borrowings, and the balance of its prepaid Indebtedness will be considered to have been permanently prepaid. Such permanent prepayment would be applied against Indebtedness bearing the highest interest rates and would be consummated only with respect to Indebtedness bearing interest at a rate equal to or in excess of the rate applicable to borrowings by subsidiary companies from Columbia as of December 31, 1978. In the event that a permanent prepayment by any subsidiary company would be indicated with respect to Notes bearing an interest rate less than the rate applicable to debt purchased by Columbia from subsidiary companies at December 31, 1978, such Notes will be reissued by the subsidiary company at or before the end of 1978.

It is stated that the proposed transactions are designed to achieve the following: (1) Flexibility to prepay at the earliest possible date inventory loans with commercial banks and other short-term borrowings, (2) deferment of outside financing until aggregate system funds approach a minimum balance, (3) facilitate the internal financing of emergency requirements, and (4) allow subsidiaries, during any period in which they have excess cash, to temporarily prepay Notes owed Columbia, thereby decreasing their own net corporate interest expense.

Expenses to be incurred by Columbia and its subsidiary companies in connection with the proposed transactions are estimated at $6,000, including $3,000 for services, at cost, provided by Columbia Gas System Service Corp.

It is stated that the Public Service Commission of West Virginia has authorized the prepayment and reissuance of prepaid Notes by Columbia Gas of West Virginia, Inc., that the Public Service Commission of New York has authorized the reissuance of prepaid notes by Columbia Gas of New York, Inc., that the Public Service Commission of Kentucky has authorized the reissuance of prepaid Notes by Columbia Gas of Kentucky, Inc., and that the State Corporation Commission of Virginia has authorized the reissuance of prepaid Notes by Columbia Gas of Virginia, Inc. It is represented that no other State or Federal commission, other than this Commission, has jurisdiction over the proposed transactions.

Notice is further given that any interested person may, not later than December 28, 1978, request in writing that a hearing be held on such matter, stating the nature of his interest, the reasons for such request, and the issues of fact or law raised by said application-declaration which he desires to controvert; or he may request that he be notified should the Commission order a hearing in respect thereof. Any such request should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request should be served personally or by mail upon the applicants-declarants at the above-stated addresses, and proof of service (by affidavit or, in case of an attorney-at-law, by certificate), should be filed with the request. At any time after said date, the application-declaration, as filed or as it may be amended, may be granted and permitted to become effective as provided in Rule 23 of the general rules and regulations promulgated under the Act, or the Commission may grant exemption from such rules as provided in Rules 20(a) and 100 thereof or take such other action as it may deem appropriate. Persons who request a hearing or advice as to whether a hearing is ordered will receive any notices and orders issued in this matter, including the date of the hearing (if ordered), and any postponements thereof.

For the Commission, by the Division of Corporate Regulation, pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

[FR Doc.77-35444 Filed 12-12-77; 8:45 am]

[8010-01]

[Rel. No. 10040; 812-4240]

FIRST VARIABLE LIFE INSURANCE CO., ET AL.

Application for Order; for an Order of Exemption; and for Approval of an Offer of Exchange Exempting Proposed Reorganization Transactions

DECEMBER 6, 1977.

Notice is hereby given that First Variable Life Insurance Co. (the "Company"), a stock life insuracne company organized under the laws of the State of Arkansas, United Variable Annuity Fund A ("Fund A"), a separate account of the Company registered under the Investment Company Act of 1940 ("Act") as an open-end management investment company, Variable Annuity Sales Corp. ("VASC"), a wholly-owned subsidiary of the Company and principal underwriter for Fund A, and FVL Growth Fund, Inc. (the "Fund"), suite 590, Plaza West Building, Little Rock, Ark. 72205, a Maryland corporation registered under the Act as an open-end non-diversified management investment company (hereinafter collectively referred to as the "Applicants") filed an application on December 5, 1977, for an order: (1) pursuant to section 17(f) of the Act and for an order pursuant to section 6(c) of the Act exempting Applicants, to the extent noted below, from the provisions of sections 14(a), 15(a), 15(b), 16(a), 26(a), 27(c)(2), and 32(a) of the Act, and Rule 17f-2 thereunder, all in connection with a proposed reorganization of the Company's variable annuity operations (the "reorganization"), (2) pursuant to sections 11(a) and 11(c) of the Act to permit certain offers of exchange, and (3) pursuant to section 17(b) of the Act to exempt from section 17(a) of the Act a series of proposed transactions necessary to effect the proposed reorganization. All interested persons are referred to the application on file with the Commission for a statement of the representations contained therein, which are summarized below.

The Company is principally engaged in the business of selling both fixed and variable annuity contracts. Fund A was established by the Company for the purpose of funding variable annuity contracts issued by it. Fund A invests its assets in a portfolio of securities, primarily equity investments. The Company is investment adviser to Fund A and VASC serves as principal underwriter for Fund A.

Subject to the approval of the proposed reorganization of the variable annuity operations of the Company and Fund A by contract holders of Fund A at a meeting expected to be held on December 30, 1977, the proposed reorganization would be accom-

plished by transferring all of the assets of Fund A to Fund in exchange for Fund shares to be issued without sales charge to Fund A. As a result of the transfer of its assets to Fund in exchange for shares of Fund, Fund A would no longer be functioning as a management investment company but would thereupon become a unit investment trust as Fund A will invest solely in shares of the Fund.

Pursuant to the proposed reorganization, the Company organized the Fund as a Maryland corporation on November 14, 1977. The Fund was registered under the Act as an open-end no-diversified management investment company on November 25, 1977. The Fund is a no-load fund.

No shares of the fund are presently outstanding, and no shares will be issued prior to consummation of the proposed reorganization. At present, shares of the Fund will be sold only to separate accounts and the general account of the Company. The Fund has investment objectives, policies, and restrictions which are substantially the same as those now applicable to Fund A, with the exception that the Fund will adopt an investment policy which will seek to avoid the realization of long-term gains by selling such of its portfolio as necessary to avoid gains in securities held for 1 year or longer.

Fund A will file a post-effective amendment to its registration statement on Form S-5 under the Securities Act of 1933 and will send a proxy statement to contractholders to seek contractholder approval of the proposed reorganization at a special meeting expected to be held on December 30, 1977. If the proposed reorganization is approved by the vote of the requisite majority of contractholders, Fund A will file an amendment to its registration statement under the Act to convert its status from a management investment company to a unit investment trust. Fund will file its registration statement on Form S-5 under the Securities Act of 1933 to register its shares to be sold to Fund A pursuant to the reorganization and thereafter. Copies of the proposed registration statements hereinbefore described in the form expected to be formally filed by Applicants have been attached as exhibits to this application.

The Company will act as investment adviser to the Fund. Under an Investment Advisory Agreement between the Company and the Fund, the Company will receive an investment advisory fee deducted from the Fund's assets, at an annual rate of 0.75 percent. This is the same fee presently charged to Fund A. Since the sale of Fund shares will be limited to the Company's general account and its separate accounts, the Company will not be registered as an investment adviser under the Investment Advisers Act of 1940.

Variable Annuity Sales Corporation ("VASC") presently acts and after the proposed reorganization, if approved, will function as the principal underwriter for Fund A.

All expenses attributable to the reorganization will be borne by the Company.

Applicants represent that the proposed reorganization will be tax free, for Federal income tax purposes, with respect to the Fund, Fund A and with respect to Fund A's contract owners. The proposed reorganization has been approved by the Board of Directors of the Company, by the Board of Directors of the Fund, by the Board of Directors of VASC and by the Board of Managers of Fund A. The proposed reorganization does not require the approval of the Arkansas Insurance Department. To effectuate the proposed reorganization, Applicants request exemptions from the following provisions of the Act, to the extent noted below.

SECTION 14(a)

Section 14(a) of the Act provides, in pertinent part, that no registered investment company, and no principal underwriter for such company, shall make a public offering of securities of which such company is the issuer unless it has a net worth of at least $100,000. The Fund and Fund A each will have assets substantially in excess of $100,000 when the reorganization is consummated. The Fund will have no assets prior to that date. No shares of the Fund will be sold prior to the consummation of the reorganization. However, as part of the process of reorganization, the Fund will issue its shares in return for assets of Fund A and will not satisfy the provisions of section 14(a) of the Act.

Applicants seek an exemption from section 14(a) to permit the Fund to issue its shares to Fund A in return for the assets of Fund A without the Fund having the required minimum net assets in order to effect the reorganization.

SECTIONS 15(a), 15(b), 16(a), AND 32(a)

Section 15(a) of the Act provides, in pertinent part, that it shall be unlawful for any person to serve or act as investment advisor of a registered investment company, except pursuant to a written contract which has been approved by the vote of a majority of the outstanding voting securities of such registered company.

Section 15(b) of the Act provides, in pertinent part, that it shall be unlawful for any principal underwriter of a registered open-end investment company to offer for sale or sell any security of which such investment company is the issuer, except pursuant to a written contract which has been approved by the board of directors or by vote of a majority of the outstanding voting securities of such registered company.

Section 16(a) provides, in pertinent part, that no person shall serve as a director of a registered investment company unless elected to that office by the holders of the outstanding voting securities of the company.

Section 32(a) provides, in pertinent part: That it shall be unlawful for any registered management investment company to file with the Commission any financial statement signed or certified by an independent public accountant unless such accountant has been selected at a meeting within thirty days before or after the beginning of the fiscal year or before the annual meeting of stockholders in that year by the vote, cast in person, of a majority of those members of the board of directors who are not interested persons of such registered investment company and such selection has been ratified by the stockholders of such company.

There will be no shares of the Fund issued and outstanding prior to the date the reorganization is effected and accordingly, there will not be any stockholders. Thus, the Company has caused the incorporator of the fund to name, as directors of the Fund, all those persons who currently serve as members of the Board of Managers of Fund A. In addition, the Fund's directors have approved an investment advisory agreement with the Company and have selected L. Cotton Thomas & Co., which is the independent public accountant for the Company and Fund A, as the independent public accountant for the fund. It is currently contemplated that Fund shares will be sold only to the Company's separate accounts (including Fund A) or general account and there is no present intention of offering the shares of the Fund directly to the public. Although VASC will continue to serve as the principal underwriter for Fund A, it is contemplated that no person will serve as principal underwriter for the Fund and that there will not be an underwriting contract for the Fund. However, as the Company has organized the Fund, the Company may be deemed to be in control of Fund, and as such may be viewed as selling the shares of Fund to Fund A in connection with the reorganization. Accordingly, the Company may be viewed as the principal underwriter for Fund.

Applicants, therefore, request exemption from the provisions of sections 15(a), 15(b), 16(a), and 32(a), to permit the Company to function as Investment Adviser for the fund and to permit the persons selected as directors and independent public accountants for the Fund by the Company to function as such until the first meeting of stockholders of the Fund which

will be held not later than six (6) months after the consummation of the reorganization and further, to permit the Fund to sell its shares without having an effective underwriting agreement.

SECTION 17(f) AND RULE 17f-2

Section 17(f)(3) provides, in pertinent part, that a registered management investment company may maintain its securities and similar investments in its own custody, but only in accordance with such rules and regulations or orders as the Commission may from time to time prescribe for the protection of investors. Rule 17f-2(b) provides, with certain exceptions, that such investments must be deposited in the safekeeping of a bank or other company whose functions and physical facilities are supervised by Federal or State authority. Rule 17f-2(d) provides that no more than five (5) persons who are officers or responsible employees of such registered investment company shall have access to such investments.

In accordance with the rule, investments of the fund will be held in the safekeeping of Brown Bros. Harriman & Co., a bank which meets the requirements of the rule. Such agreement will permit inspection of the Fund's investments.

Shares of the Fund will be sold only to the general and separate accounts of the Company. Under Arkansas law the assets allocated to the general and separate accounts of the Company are deemed to be owned by the Company. The Company is subject to extensive supervision and regulation by the Commissioner of Insurance of the State of Arkansas as well as the insurance authorities of other states. Representatives of such insurance authorities periodicaly make a physical examination of securities held by the Company, including those allocated to its separate accounts. Representatives of such insurance authorities may consider it appropriate to inspect the securities and similar investments of the Fund in order to totally fulfill their responsibilities regarding the security of the Company assets. Applicants assert that the provisions for access by such persons will furnish additional protection to owners of or participants under variable annuity contracts participating in the separate accounts of the Company which invest in Fund shares.

Applicants request an order pursuant to section 17(f) and, pursuant to section 6(c), an order of exemption from Rule 17f-2, to permit duly authorized representatives of the Commissioner of Insurance of Arkansas to have access to the assets of the Fund and to permit the Safekeeping agreement for the Fund to provide for such access.

SECTIONS 26(a) AND 27(c)(2)

Sections 26(a) and 27(c)(2) of the Act, in pertinent part, provide that a registered unit investment trust and any depositor or underwriter for such trust are prohibited from selling periodic payment plan certificates issued with respect to such trust unless the proceeds of all payments except such amounts as are deducted for sales load are deposited with a qualified bank as trustee or custodian and held under an agreement of custodianship containing certain specified provisions required by section 26(a) of the Act. Section 26(a) of the Act provides, in pertinent part, that any such agreement must provide that: (i) The trustee or custodian shall have possession of all property of the unit investment trust and shall segregate and hold the same, in trust, subject only to the charges and collections specifically allowed under clauses (A), (B), and (C) of section 26(a)(2) until distribution to the security holders of the trust, (ii) the custodian bank shall not resign until the trust has been liquidated or a successor has been appointed, (iii) the custodian bank may collect from the income and, if necessary, from the corpus of the trust such fees for services performed and reimbursement of the expenses incurred as are provided for in the agreement, and (iv) no payment to the depositor shall be allowed the custodian bank as an expense except as a fee not exceeding such reasonable amount as the Commission may prescribe as compensation for performing bookkeeping and other administrative services normally performed by the custodian.

After the proposed reorganization, all of Fund A's assets will be shares of the Fund. In addition, to the extent permitted by applicable insurance regulatory authorities, the Fund will maintain an open-account system and certificates for shares of the Fund will not be issued to Fund A. Ownership of Fund shares will be shown only on the books and records of Fund A and the Fund. Ownership will not be represented by certificates which require custodianship for safekeeping. Accordingly, it is proposed that the Company act as custodian for Fund A and not appoint a bank or other trustee as custodian as required by Section 26(a)(1). The Company will maintain a record of all purchases and redemptions of mutual fund shares and will be responsible for the preparation of reports to the Securities and Exchange Commission and others, where required. The Company will pay for the expenses of safekeeping of Fund A assets.

In support of the requested exemptions from the foregoing provisions of the Act, Applicants state the Company will hold the assets of Fund A physically segregated and separate from any other assets and that the Company will maintain a record of all purchases and redemptions of Fund shares in Fund A.

Applicants represent that the Company is subject to extensive supervision and control by the Arkansas Insurance Commissioner and the comparable official of each State in which it does business. Such supervision requires the Company to file complete and detailed periodic reports. Applicants also state that the activities of the Company are subject to review by the Arkansas Insurance Department and its representatives at all times and are subject to comprehensive periodic examinations. The Company's obligations under variable annuity contracts issued in respect of Fund A are general obligations of the Company and may not be abrogated. Applicants also state that any substitution of the shares of an underlying fund for the shares of Fund can only take place in compliance with the requirements of the Act.

As further protection, the Company maintains with United States Fire Insurance Co., a commercial blanket bond for $1,000,000. An additional fidelity bond, in the amount of $150,000, is maintained with the same insurer by the Fund.

Applicants assert that the foregoing laws, regulations and arrangements will provide substantial assurance that all obligations under the contracts issued by the Company will be performed.

Applicants therefore request an exemption from the provisions of sections 26(a) and 27(c)(2) to the extent necessary to make the requirement of a trust inapplicable and to permit the operation of Fund A in the manner herein described.

Applicants hereby consent that the foregoing requested exemptions from sections 26(a) and 27(c)(2) may be made subject to the following conditions: (1) The charges to variable annuity Contract Owners for administrative services shall not exceed such reasonable amounts as the Commission shall prescribe, jurisdiction being reserved for such purpose, and (2) the payment of sums and charges out of the assets of Fund A shall not be deemed to be exempted from regulation by the Commission by reason of the requested Order; provided, that Applicants' consent to this condition shall not be deemed to be a concession to the Commission of authority to regulate the payment of sums and charges out of such assets other than charges for administrative services, and Applicants reserve the right in any proceeding before the Commission, or in any suit or action in any court, to assert that the Commission has no authority to regulate the payment of such other sums or charges.

SECTION 6(c)

Section 6(c) authorizes the Commission to exempt any person, security, or transaction or any class or classes of persons, securities or transactions, from the provisions of the Act and Rules promulgated thereunder if and to the extent that such exemption is necessary or appropriate in the public interest and consistent with the protection of investors and the purposes fairly intended by the policy and provisions of the Act.

SECTIONS 11(a) AND 11(c)

Section 11(a) of the Act provides that it shall be unlawful for any registered open-end company, or any principal underwriter for such a company, to make, or cause to be made, an offer to the holder of a security of such company, or of any other open-end investment company, to exchange his security for a security in the same or another such company on any basis other than the relative net asset values of the respective securities to be exchanged unless the terms of the offer have first been submitted to and approved by the Commission. Section 11(c) provides that, irrespective of the basis of exchange, the provisions of section 11(a) shall be applicable to any type of offer of exchange of the securities of a registered unit investment trust for the securities of any other investment company.

Applicants state that the proposed reorganization may be construed to involve, as part of the series of transactions necessary to effect the reorganization, the exchange of securities of a registered unit investment trust for the securities of another registered investment company.

Accordingly, Applicants have requested an order pursuant to section 11 of the Act to the extent necessary to effect the proposed reorganization.

SECTION 17

Section 17(a) of the Act, in pertinent part, provides that it shall be unlawful for any affiliated person or promoter of or principal underwriter for a registered investment company, or any affiliated person of such person, promoter, or principal underwriter, acting as a principal, knowingly to sell to or purchase from such investment company, any security or other property.

Section 17(b) of the Act essentially provides that the Commission, upon application, shall exempt from the provisions of section 17(a) a proposed transaction if evidence establishes that the terms of the proposed transaction, including the consideration to be paid or received, are fair and reasonable and do not involve any overreaching on the part of any person concerned and that the proposed transaction is consistent with the policy of each registered investment company concerned and with the general purposes of the Act.

Applicants state that the Company is the investment adviser to Fund A and will be for the Fund and is, therefore, an affiliated person of the Fund and of Fund A. Since the Company has organized the Fund and Fund A, it may be deemed, for purposes of the Act, to be the promoter of, and at present in control of, the fund and Fund A. Consequently, the Fund and Fund A may be considered affiliated persons of the Company. As a result, in connection with the proposed reorganization and the transactions whereby Fund A will become a unit investment trust. Applicants represent that:

(a) An affiliated person and promoter (the Company) of a registered investment company (the Fund) will sell securities and other property (all of the assets of Fund A) to such registered investment company;

(b) An affiliated person (the Fund) of a registered investment company (Fund A) will purchase securities and other property (all of the assets of Fund A) from such registered investment company;

(c) An affiliated person (the Fund) of a registered investment company (Fund A) will sell securities (Fund shares) to such registered investment company;

(d) An affiliated person and promoter (the Company) of two registered investment companies (the Fund and Fund A) might be deemed to be selling securities (Fund shares) to a registered investment company (Fund A); and

(e) An affiliated person (the Company) of a registered investment company (Fund A) might be deemed to be purchasing securities (Fund shares) from such registered investment company.

Applicants assert that the terms of the transactions, including the consideration to be paid or received, are reasonable and fair and do not involve overreaching on the part of any person concerned. Applicants note that the Fund will be acquiring the assets of Fund A and will issue in exchange therefor its shares which will have a value equal to the value of the assets acquired. After the exchange, the Fund shares transferred to Fund A will have a value equal to the assets transferred to the Fund. Thus, the transactions themselves will not confer any advantage on any party at the expense of any other party thereto. Furthermore, all expenses attributable to the proposed reorganization, including those incurred in connection with these transactions, will be borne by the Company.

Applicants assert that the transactions are consistent with the policies of the Fund and have been approved by its Board of Directors. The investment objectives, policies, and restrictions of the Fund are substantially the same as those of Fund A. Consequently, all of the assets of Fund A transferred to the Fund will be compatible with the investment objectives, policies, and restrictions of the Fund.

Applicants assert that the transactions are consistent with the general purposes of the Act since the result thereof will be essentially changes in form which will permit the Company to conform the pattern of registration and regulation of its variable annuity operations to that used by most other life insurance companies engaged in the sale of variable annuity contracts subject to the Federal securities laws.

Accordingly, Applicants request, pursuant to section 17(b) of the Act, an exemption from section 17(a) to the extent necessary to permit the transactions described.

Notice is further given that any interested person may, not later than December 29, 1977, at 5:30 p.m., submit to the Commission in writing a request for a hearing on the matter accompanied by a statement as to the nature of his interest, the reason for such request, and the issues, if any, of fact or law proposed to be controverted, or he may request that he be notified if the Commission should order a hearing thereon. Any such communication should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request shall be served personally or by mail upon Applicants at the address stated above. Proof of such service (by affidavit, or in the case of an attorney-at-law, by certificate) shall be filed contemporaneously with the request. As provided by Rule 0-5 of the rules and regulations promulgated under the Act, an order disposing of the application will be issued as of course following December 29, 1977, unless the Commission thereafter orders a hearing upon request or upon the Commission's own motion. Persons who request a hearing, or advice as to whether a hearing is ordered, will receive any notices and orders issued in this matter, including the date of the hearing (if ordered) and any postponements thereof.

For the Commission, by the Division of Investment Management, pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

[FR Doc. 77-35445 Filed 12-2-77; 8:45 am]

[8010-01]

[Rel. No. 20295; 70-6099]

GENERAL PUBLIC UTILITIES CORP.

Proposed Issue and Sale of Short-Term Notes to Banks

DECEMBER 2, 1977.

Notice is hereby given that General Public Utilities Corp. ("GPU"), 260 Cherry Hill Road, Parsippany, N.J. 07054, a registered holding company, has filed an application with this Commission pursuant to the Public Utility Holding Company Act of 1935 ("Act"), designating section 6(b) of the Act as applicable to the proposed transaction. All interested persons are referred to the application, which is summarized below, for a complete statement of the proposed transaction.

By orders dated January 12, 1976, and December 30, 1976 (HCAR Nos. 19338 and 19830), the Commission authorized GPU until December 31, 1977, to issue and sell its short-term notes to various commercial banks pursuant only to informal lines of credit, provided that the aggregate principal amount outstanding at any one time would not exceed $175,000,000.

GPU now requests that, for the period commencing on the date of an order granting this application and ending December 31, 1978, it be permitted from time to time to issue or renew its unsecured promissory notes to various commercial banks pursuant only to informal lines of credit, provided that the aggregate principal amount of such unsecured promissory notes outstanding at any one time shall not exceed $71,000,000. Each such note will bear interest at a rate not exceeding the "prime rate" which may be the floating rate of each lending bank for commercial borrowing at the date of issue of such note, will mature not more than 9 months from the date of issue, will be prepayable at any time without premium and will not be issued as part of a public offering. GPU proposes to use the proceeds of the short-term borrowings for investment in its operating subsidiaries or for reimbursement of its treasury for expenditures made therefrom for that purpose.

Although no commitments or agreements for the proposed borrowings have been made, GPU expects that, to the extent that its cash needs require, borrowings will be effected from among eight designated banks. It is proposed that the maximum short-term credit made available by the banks will total $115,000,000, which exceeds by $44,000,000 the maximum amount for which authority is being requested. It is stated that the purpose of this excess amount of available credit is to provide flexibility with one or more particular banks (but without exceeding such authorized total for all banks), since some banks have indicated from time to time that it is not always convenient for them to renew outstanding notes at the time GPU requests them to do so.

It is anticipated that the banks from which borrowings will be made will require compensating balances at levels generally approximating 10 percent of the line of credit or 20 percent of the amounts borrowed, whichever is higher. Assuming compensating balance will equal 20 percent of the aggregate amounts borrowed and a prime of 7¾ percent, the effective cost of borrowing will be 9.68 percent.

The fees and expenses to be incurred in connection with the proposed transaction will be supplied by amendment. It is stated that no State commission and no Federal commission, other than this Commission, has jurisdiction over the proposed transaction.

Notice is further given that any interested person may, not later than December 28, 1977, request in writing that a hearing be held on such matter, stating the nature of his interest, the reasons for such request, and the issues of fact or law raised by said application which he desires to controvert; or he may request that he be notified if the Commission should order a hearing thereon. Any such request should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request should be served personally or by mail upon the applicant at the above-stated address, and proof of service (by affidavit or, in case of an attorney-at-law, by certificate), should be filed with the request. At any time after said date, the application, as filed or as it may be amended, may be granted as provided in Rule 23 of the general rules and regulations promulgated under the Act, or the Commission may grant exemption from such rules as provided in Rules 20(a) and 100 thereof or take such other action as it may deem appropriate. Persons who request a hearing or advice as to whether a hearing is ordered will receive any notices and orders issued in this matter, including the date of the hearing (if ordered), and any postponements thereof.

For the Commission, by the Division of Corporate Regulation, pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

[FR Doc. 77-35446 Filed 12-12-77; 8:45 am]

[8010-01]

[Rel. No. 10038; 812-4192]

INVESTORS SYNDICATE OF AMERICA, INC. AND KNAPP KING-SIZE CORP.

Filing of Application for an Order Exempting Proposed Transaction From the Provisions

DECEMBER 2, 1977.

Notice is hereby given that Investors Syndicate of America, Inc. ("ISA"), IDS Tower, Minneapolis, Minn. 55402, a wholly owned subsidiary of Investors Diversified Services, Inc. ("IDS"), One Knapp Centre, Brockton, Mass. 02401, and registered as a face-amount certificate company under the Investment Company Act of 1940 ("Act"), and Knapp King-Size Corp. ("Knapp"), a Massachusetts corporation (hereinafter collectively "Applicants"), filed an application on September 20, 1977, and an amendment thereto on November 18, 1977, pursuant to section 17(b) of the Act for an order of the Commission exempting from the provisions of section 17(a) of the Act the proposed sale by ISA to Knapp of 79,063 shares of Knapp common stock currently held by ISA. All interested persons are referred to the application which is on file with the Commission for a statement of the representations contained therein, which are summarized below.

ISA is engaged in the business of selling and issuing face-amount certificates. Knapp, incorporated under the laws of the Commonwealth of Massachusetts on January 15, 1970, acquired in June of the same year all of the assets and liabilities of Knapp Brothers Shoe Manufacturing Corp. ("Knapp Brothers"), a Delaware corporation founded in 1920. Since the date of such acquisition, Knapp has conducted the business activities formerly conducted by Knapp Brothers, which consist of shoe manufacturing and sale, and distribution of clothing for large and tall men through a wholly owned subsidiary, King-Size, Inc.

Applicants represent that, in June 1970, ISA purchased from Knapp pursuant to a purchase agreement dated April 30, 1970 ("Agreement"), an aggregate of $687,500 principal amount of 9 percent junior subordinated notes due May 1, 1985, and 790,063 shares of Knapp common stock. The ISA purchases were part of aggregate purchases of $19,750,000 principal amount of four classes of long term debt securities sold at par and 316,252 shares of Knapp common stock sold at a price of $4.35 per share made by 14 institutional investors. Applicants state that ISA presently holds all the securities of Knapp that it purchased in 1970, except that a portion of the principal amount of the junior notes held by ISA have been retired in accordance with the mandatory payment terms

specified in the Agreement. Applicants further state that the 79,063 shares of Knapp common stock purchased by ISA represents 12.3 percent of the total number of shares of Knapp common stock which were outstanding as of June 30, 1977, and, on a fully diluted basis, 7.8 percent of the total number of Knapp shares which were then outstanding and reserved for issue under outstanding warrants.

Applicants further represent that on May 16, 1977, Knapp submitted to all the holders of its outstanding common stock and warrants an Invitation to Submit Offers ("Invitation"), inviting such holders to tender offers to sell part or all of their security holdings to Knapp for cash at prices to be determined by the holders, but not in excess of $10 per share. In response to the Invitation Knapp received offers from six holders ranging in prices from $9.49 to $10 per share. Applicants state that Knapp has accepted the three offers calling for it to repurchase its securities submitted at the lowest prices (namely $9.49, $9.50, and $9.75 per share, respectively). The $9.50 offer was submitted by ISA. Applicants further assert that Knapp has completed the purchases of the Knapp shares held by the other two offerees, but that Knapp has not completed the purchase of the 79,063 shares of Knapp common stock held by ISA, as such a purchase will require an order of the Commission under section 17(b) of the Act exempting that transaction from the provisions of section 17(a) of the Act.

Applicants also represent that, in addition to the three offers noted above, Knapp proposes to accept the offers made by two other holders which submitted offers at $9.90 and $9.95 per share, respectively above from these two additional offerees. Applicants state that Knapp has conducted negotiations for a proposed sale of $2,000,000 of new Knapp preferred stock. On the basis of the negotiations to date, Applicants believe that the sale of this new preferred stock to one institutional investor and the consequent purchase of the securitiers described above from the two additional offerees, can be completed by December 31, 1977.

Section 17(a) of the Act, in pertinent part, prohibits an affiliated person of a registered investment company or any affiliated person of such an affiliated person, acting as principal, from knowingly selling any security or other property to such registered company or knowingly purchasing any security or other property from such registered company subject to certain exceptions.

Section 17(b) of the Act provides, however, that the Commission, upon application, may exempt a proposed transaction from the provisions of section 17(a) of the Act if evidence establishes that the terms of the proposed transaction, including the consideration to be paid or received, are reasonable and fair and do not involve overreaching on the part of any person concerned, and the proposed transaction is consistent with the policy of each registered investment company concerned, and with the general purposes of the Act.

Applicants state that ISA presently owns more than 5 percent of the total number of shares of Knapp common stock presently outstanding. Accordingly, Knapp and ISA are affiliated persons of each other within the meaning of section 2(a)(3) of the Act.

Therefore, the proposed repurchase by Knapp of all the Knapp common stock held by ISA might be deemed to constitute the sale of a security by a registered investment company to an affiliated person of such investment company and, concurrently, the purchase of a security by such investment company from an affiliated person thereof. Accordingly, Applicants request an order exempting the proposed transaction from the provisions of Section 17(a) of the Act pursuant to section 17(b).

In support of the relief requested, Applicants state that Knapp has entered into an additional agreement with ISA evidenced by a letter dated November 14, 1977, between Edward C. Brown, Treasurer of Knapp and Richard N. Latzer, Vice-President (Finance), of ISA ("Supplemental Letter"). Applicants represent that this supplemental agreement is that, provided Knapp is able, on or before June 30, 1978, to purchase the specified securities from either or both of the above two additional offerees at the prices they submitted in their original offers, namely $9.90 and $9.95 per share respectively, Knapp will acquire the specified shares of Knapp common stock from ISA at a price equal to the weighted average, rounded to the nearest whole cent of the price per share being paid to either or both of the two additional offerees. Applicants further state that assuming the purchase of Knapp shares from the two additional offerees can be completed in accordance with these terms, as now appears likely, the price to be paid to ISA for the Knapp shares will be $9.95 per share, since the weighted average per share for the two additional purchases will only be a fraction of a cent less than $9.95. Applicants further represent that this new agreement between ISA and Knapp does not depend upon the source of the funds used by Knapp to effect the purchases of Knapp shares from the two additional offerees, and said agreement extends the time period for the consummation of the proposed transactions until June 30, 1978.

Applicants state that June 30, 1978, was selected as the termination date for the proposed transaction to allow sufficient time for completion of two steps planned in connection with the proposed purchase of Knapp shares from the two additional offerees, namely: (1) The holding of a special meeting of Knapp stockholders, now planned to occur in December 1977, at which time all stockholders of Knapp (including ISA), will vote upon the proposed authorization of new Knapp preferred stock, and (2) the preparation, authorization and execution of formal documentation providing for the sale of new Knapp preferred stock to the one institutional investor refered to above. Applicants further state that in the event any delays prevent the completion of the two steps described above and, consequently, the purchase by Knapp of the Knapp shares held by the two additional offerees, using the proceeds of the sale of new Knapp preferred stock, is not possible by December 31, 1977, it is anticipated that such delays can be resolved by June 30, 1978.

Applicants state that ISA, in the supplemental letter of November 14, 1977, has agreed that the purchase of the Knapp common stock held by ISA will take place simultaneously with the purchase of Knapp shares from either or both of the two additional offerees, provided that if by December 31, 1977, neither of the proposed purchases from the two additional offerees has taken place, Knapp and ISA will complete the proposed sale to Knapp of all the Knapp shares held by ISA at the price of $9.50 per share presently agreed to between Knapp and ISA. Applicants further assert that Knapp will thereafter be obligated to make the additional payment (approximately $.45 per share), to ISA only if, at any time subsequent to December 31, 1977, but prior to June 30, 1978, Knapp completes the proposed purchase of Knapp shares from either or both of the two additional offerees at the respective prices of $9.90 and $9.95 per share specified by the two additional offerees in the offers submitted by them to Knapp in response to Knapp's Invitation.

In support of the relief requested, ISA provides the following additional information:

1. ISA has determined to sell its 79,063 shares of Knapp common stock for the following reasons:

(a) Knapp common stock does not presently pay a dividend and Knapp has advised ISA that it has no present intention of declaring dividends. ISA believes it can reinvest the proceeds from the sale of the shares in interest or dividend paying securities which would result in greater income to ISA.

(b) For several years, ISA has been attempting to sell its Knapp common

stock. However, there is not a public market for the shares, and ISA feels that the offer to purchase made by Knapp through the Invitation represents a realistic opportunity to implement ISA's investment decision to sell the shares.

(c) In the Invitation, Knapp limited the maximum price it was willing to pay to $10 per share. Knapp also indicated that it was willing and able to commit an aggregate of $1,000,000 to the proposed purchases, subject to upward adjustment at the discretion of Knapp should Knapp determine that additional funds were available for such purpose. Taken in the context of the $10 limit and the limited amount of funds available to Knapp to repurchase its shares and warrants, ISA's decision to offer its shares at $9.50 represented and now represents, in ISA's judgment, an informed investment decision as to what is a fair price since it has concluded that a price of $9.50 per share (and, of course, a price of $9.90 or $9.95 per share), is realistic in terms of price/earnings ratios commanded by shares of comparably situated shoe and clothing companies.

(d) It is in the best interests of ISA to complete the transaction in a timely manner, since the $751,098 from the sale at $9.50 would generate a return to ISA or $63,843 yearly if invested at 8.50 percent, or $177 if computed on a daily basis. If the sale can be completed at a price of $9.90 or $9.95 per share in accordance with Knapp's new agreement with ISA, this return to ISA will be proportionately increased.

2. Since ISA must continue to meet its contractual obligations to its certificate holders, ISA perceives the availability of extra funds to meet its ongoing obligations to credit interest to be in the best interest of both ISA and its certificate holders. However, it is of course noted that the proceeds from the proposed sale of the Knapp shares by ISA to Knapp will not flow directly to the ISA certificate holders, but rather will be reinvested in the portfolio of ISA which is used to back the contractural promises which ISA has made in the ISA certificates to its certificate holders.

Applicants submit on the basis of the foregoing that the terms of the proposed transaction are reasonable and fair and do not involve any overreaching. Applicants further represent that the proposed transactions are consistent with the ISA's investment policy and the purposes of the Act.

Notice is further given that any interested person may, not later than December 27, 1977, at 5:30 p.m., submit to the Commission in writing, a request for a hearing on the application accompanied by a statement as to the nature of his interest, the reasons for such request, and the issues, if any, of fact or law proposed to be controverted, or he may request that he be notified if the Commission shall order a hearing thereon. Any such communication should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request shall be served personally or my mail upon Applicants at the addresses stated above. Proof of such service (by affidavit, or in case of an attorney-at-law, by certificate), shall be filed contemporaneously with the request. As provided by Rule 0-5 of the rules and regulations promulgated under the Act, an order disposing of the application will be issued as of course following said date, unless the Commission thereafter orders a hearing upon request or upon the Commission's own motion. Persons who request a hearing, or advice as to whether a hearing is ordered, will receive any notices and orders issued in this matter, including the date of the hearing (if ordered), and any postponements thereof.

For the Commission, by the Division of Investment Management, pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

[FR Doc.77-35447 Filed 12-12-77; 8:45 am]

[8010-01]

[Rel. No. 20290; 70-6098]

JERSEY CENTRAL POWER & LIGHT CO.

Proposed Issue and Sale of Short-term Notes to Banks

DECEMBER 2, 1977.

Notice is hereby given that Jersey Central Power & Light Co. ("JCP&L"), Madison Avenue at Punch Bowl Road, Morristown, N.J. 07960, an electric utility subsidiary company of General Public Utilities Corp. ("GPU"), a registered holding company, has filed an application with this Commission pursuant to the Public Utility Holding Company Act of 1935 ("Act"), designating Section 6(b) of the Act as applicable to the proposed transaction. All interested persons are referred to the application, which is summarized below, for a complete statement of the proposed transaction.

By orders dated January 12, 1976 and December 31, 1976 (HCAR Nos. 19340 and 19831), the Commission authorized JCP&L, for the period ending December 31, 1977, to issue and sell its short-term notes to various commercial banks, provided that the aggregate principal amount of such notes outstanding at any one time would not exceed $110,000,000.

JCP&L now requests that, for the period commencing on the date of an order granting this application and ending December 31, 1978, it be permitted from time to time to issue or renew notes, of a maturity of nine months or less evidencing short-term bank borrowings up to the lesser of (A) $127,000,000 principal amount outstanding at any one time or (B) the amount permitted by JCP&L's charter.

The short-term notes will bear interest at the lending bank's prime interest rate for commercial borrowing at the date of issue of the notes, will mature not more than nine months from the date of issue, will be repayable at any time without premium and will not be issued as a part of a public offering.

Although no commitments or agreements for the proposed borrowings have been made, JCP&L expects that, to the extent its cash needs require, borrowings will be effected from time to time from among 32 designated banks. It is proposed that the maximum short-term credit made available by the banks will total $178,800,000, which exceeds by $51,800,000 the maximum amount for which authority is being requested. It is stated that the purpose of this excess amount of available credit is to provide flexibility with one or more particular banks (but without exceeding such authorized total amount for all banks) since some banks have indicated from time to time that it is not always convenient for them to renew outstanding notes at the time JCP&L requests them to do so.

It is anticipated that the banks, from which borrowings will be made, will require compensating balances at levels generally approximately 10 percent of the line of credit or 20 percent of the amounts actually borrowed, whichever is higher. Assuming compensating balances will equal 20 percent of the aggregate amounts borrowed and a prime rate of 7¾ percent, the effective cost of borrowing would be 9.68 percent.

JCP&L proposes to use the proceeds of the short-term loans for its short-term working capital requirements, including repayment of other short-term borrowings, and for construction expenditures. JCP&L states that it now has short-term notes outstanding in an aggregate principal amount of $35,100,000. The cost of JCP&L's 1978 construction program is approximately $305,349,000.

The fees and expenses to be incurred in connection with the proposed transaction will be supplied by amendment. It is stated that no state commission and no federal commission, other than this Commission, has jurisdiction over the proposed transaction.

Notice is further given that any interested person may, not later than December 28, 1977, request in writing that a hearing be held on such matter,

stating the nature of his interest, the reasons for such request, and the issues of fact or law raised by said application which he desires to controvert; or he may request that he be notified if the Commission should order a hearing thereon. Any such request should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request should be served personally or by mail upon the applicant at the above-stated address, and proof of service (by affidavit or, in case of an attorney at law, by certificate) should be filed with the request. At any time after said date, the application, as filed or as it may be amended, may be granted as provided in Rule 23 of the general rules and regulations promulgated under the Act, or the Commission may grant exemption from such rules are provided in Rules 20(a) and 100 thereof or take such other action as it may deem appropriate. Persons who request a hearing or advice as to whether a hearing is ordered will receive any notices and orders issued in this matter, including the date of the hearing (if ordered) and any postponements thereof.

For the Commission, by the Division of Corporate Regulation, pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

[FR Doc. 77-35448 Filed 12-12-77; 8:45 pm]

[8010-01]

[Rel. No. 20291; 70-5982]

METROPOLITAN EDISON CO.

Filing of Post-effective Amendment Regarding Issue and Sale of Short-term Notes to Banks

DECEMBER 2, 1977.

Notice is hereby given, that Metropolitan Edison Co. ("Met-Ed"), 2800 Pottsville Pike, Muhlenberg Township, Berks County, Pa. 19605, an electric utility subsidiary company of General Public Utilities Corp., a registered holding company, has filed with this Commission a post-effective amendment to its application previously filed in this proceeding pursuant to the Public Utility Holding Company Act of 1935 ("Act"), designating section 6(b) of the Act as applicable to the proposed transaction. All interested persons are referred to the application, as now amended, which is summarized below, for a complete statement of the proposed transaction.

By order dated April 5, 1977 (HCAR No. 19974), the Commission authorized Met-Ed, for the period ending December 31, 1977, to issue or renew notes of a maturity of 9 months or less, evidencing short-term bank borrowings provided that the aggregate principal amount of such notes to be outstanding at any one time shall not exceed $89,000,000, subject to certain reductions.

Met-Ed now requests authorization for an extension of time through December 31, 1978, to issue or renew the aforesaid notes. It is also requested that the aggregate principal amount of such notes to be understanding at any one time be revised so that such aggregate amount shall not exceed the lesser of (A) $66,000,000, or (B) the amount permitted by Met-Ed's Articles of Incorporation provided, that said aggregate principal amount shall be reduced upon consummation of the transfers of ownership interests in certain nuclear generating stations as described in the separate application docketed in File No. 70-5951. In no event shall any such reduction result in a lesser amount which Met-Ed would otherwise be permitted to have outstanding without order of the Commission.

It is stated that the banks generally require compensating balances ranging from a minimum of 10 percent of the line of credit to a maximum of 10 percent of the line plus 10 percent of the loan outstanding. Assuming a 7¾ percent prime rate and a 20 percent compensating balance, the effective interest rate to be paid by Penelec would be 9.68 percent.

Met-Ed proposes to use the proceeds of the short-term loans to provide funds for its short-term working capital requirements, including repayment of other short-term borrowings, and to provide a temporary source of funds for construction expenditures. Met-Ed states that it now has short-term notes outstanding in an aggregate principal amount of $42,800,000. The cost of Met-Ed's 1978 construction program is approximately $64,577,000.

Any fees and expenses to be incurred in connection with the proposed transaction will be supplied by amendment. It is stated that no State commission and no Federal commission, other than this Commission, has jurisdiction over the proposed transaction.

Notice is further given, that any interested person may, not later than December 28, 1977, request in writing that a hearing be held on such matter, stating the nature of his interest, the reasons for such request, and the issues of fact or law raised by said post-effective amendment to the application which he desires to controvert; or he may request that he be notified if the Commission should order a hearing thereon. Any such request should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request should be served personally or by mail upon the applicant at the above-stated address, and proof of service (by affidavit or, in case of an attorney at law, by certificate) should be filed with the request. At any time after said date, the application, as amended by said post-effective amendment or as it may be further amended, may be granted as provided in Rule 23 of the general rules and regulations promulgated under the Act, or the Commission may grant exemption from such rules as provided Rules in 20(a) and 100 thereof or take such other action as it may deem appropriate. Persons who request a hearing or advice as to whether a hearing is ordered will receive any notices and orders issued in this matter, including the date of the hearing (if ordered) and any postponements thereof.

For the Commission, by the Division of Corporate Regulations, pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

[FR Doc. 77-35450 Filed 12-12-77; 8:45 am]

[8010-01]

[Rel. No. 20293; 70-5936]

MIDDLE SOUTH UTILITIES, INC., AND ARKANSAS-MISSOURI POWER CO.

Post-effective Amendment Regarding Issuance and Sale of Short-term Notes by Subsidiary Company and Acquisition Thereof by Holding Company

DECEMBER 2, 1977.

Notice is hereby given that Arkansas-Missouri Power Co. ("Ark-Mo"), 405 West Park Street, Blytheville, Ark. 72315, a subsidiary company of Middle South Utilities, Inc. ("Middle South"), 225 Baronne Street, New Orleans, La. 70112, a registered holding company, and Middle South have filed with this Commission a post-effective amendment to the application-declaration in this proceeding pursuant to sections 6(a), 7, 9(a), and 10 of the Public Utility Holding Company Act of 1935 ("Act") regarding the following proposed transactions. All interested persons are referred to the amended application-declaration, which is summarized below, for a complete statement of the proposed transactions.

By order in this proceeding dated December 28, 1976 (HCAR No. 19826), Ark-Mo was authorized to issue and sell to Middle South from time to time through December 31, 1977, and Middle South was authorized to acquire, up to $2,100,000 of Ark-Mo's unsecured short-term promissory notes of a maturity of not more than 12 months. Presently $2,100,000 of such notes are outstanding, with a maturity of December 31, 1977.

Ark-Mo now proposes to extend such $2,100,000 of short-term borrowings for 1 year. The proposed notes will be

in the form of unsecured promissory notes payable not more than 12 months from the date of issuance (and in any event maturing not later than December 31, 1978) and will bear interest at a rate per annum equivalent to ¼ of 1 percent above the commercial loan rate in effect at the Manufacturers Hanover Trust Co. from time to time. The notes will, at the option of Ark-Mo, be prepayable in whole or in part at any time without premium or penalty. The net proceeds to be received by Ark-Mo from the issuance and sale of the notes proposed will be applied to the payment at maturity of Ark-Mo's presently outstanding borrowings from Middle South. It is stated that Ark-Mo presently intends to repay the notes from the proceeds of permanent financing or from funds otherwise available to Ark-Mo from its operations.

It is stated that no State commission and no Federal commission, other than this Commission, has jurisdiction over the proposed transactions and that no special or separate expenses are expected to be incurred.

Notice is further given, that any interested person may, not later than December 28, 1977, request in writing that a hearing be held on such matter, stating the nature of his interest, the reasons for such request, and the issues of fact or law raised by said post-effective amendment to the application-declaration which he desires to controvert; or he may request that he be notified if the Commission should order a hearing thereon. Any such request should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request should be served personally or by mail upon the applicants-declarants at the above-stated addresses, and proof of service (by affidavit or, in case of an attorney-at-law, by certificate) should be filed with the request. At any time after said date, the application-declaration, as now amended or as it may further amended, may be granted and permitted to become effective as provided in Rule 23 of the general rules and regulations promulgated unde the Act, or the Commission may grant exemption from such rules as provided in Rules 20(a) and 100 thereof or take such other action as it may deem appropriate. Persons who request a hearing or advice as to whether a hearing is ordered will receive any notices and orders issued in this matter, including the date of the hearing (if ordered) and any postponements thereof.

For the Commission, by the Division of Corporate Regulation, pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

[FR Doc. 77-35449 Filed 12-12-77; 8:45 am]

[8010-01]

[Rel. No. 20288; 70-6096]

MIDDLE SOUTH UTILITIES, INC.

Proposed Issue and Sale of Common Stock by Holding Company; Competitive Bidding

DECEMBER 2, 1977.

Notice is hereby given that Middle South Utilities, Inc. ("Middle South"), 280 Park Avenue, New York, N.Y. 10017, a registered holding company, has filed a declaration and an amendment thereto with this Commission pursuant to the Public Utility Holding Company Act of 1935 ("Act") designating sections 6(a) and 7 of the Act and Rule 50 promulgated thereunder as applicable to the proposed transaction. All interested persons are referred to the declaration, which is summarized below, for a complete statement of the proposed transaction.

Middle South proposes to issue and sell subject to the competitive bidding requirements of Rule 50, up to 8,500,000 additional authorized but unissued shares of its Common Stock, $5 par value ("Additional Common Stock") through a sale to underwriters or investment bankers who will agree to make a prompt public offering thereof.

Middle South is planning to raise approximately $153,000,000 in net proceeds from said sale of Additional Common Stock. The net proceeds to be derived from sale of the common stock will be applied toward repayment of then outstanding bank loans made to Middle South pursuant to the Credit Agreement between Middle South and various commercial banks, dated as of June 30, 1977 and filed pursuant to Rule 24 in File No. 70-6010. The amount of such bank loans presently estimated to be outstanding at the time of the sale is $168,000,000.

The fees and expenses incurred or to be incurred in connection with the proposed transaction are to be filed by amendment. It is stated that no State commission and no Federal commission, other than this Commission, has jurisdiction over the proposed transaction.

Middle South states that the sale of the additional Common Stock may require the assistance of underwriters if market conditions at the time of the offering of the securities are unfavorable. Accordingly, Middle South may amend this declaration to seek an exemption from Rule 50 so that it may offer the Additional Common Stock through a negotiated public offering.

Notice is further given that any interested person may, not later than December 28, 1977, request in writing that a hearing be held on such matter, stating the nature of his interest, the reasons for such request, and the issues of fact or law raised by the filing which he desires to controvert; or he may request that he be notified if the Commission should order a hearing thereon. Any such request should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request should be served personally or by mail upon the declarant at the above stated address, and proof of service (by affidavit or, in case of an attorney-at-law, by certificate) should be filed with the request. At any time after said date, the declaration, as filed or as it may be amended, may be granted and permitted to become effective as provided in Rule 23 of the general rules and regulations promulgated under the Act, or the Commission may grant exemption from such rules as provided in Rules 20(a) and 100 thereof or take such other action as it may deem appropriate. Persons who request a hearing or advice as to whether a hearing is ordered will receive any notices or orders issued in this matter, including the date of the hearing (if ordered), and any postponements thereof.

For the Commission, by the Division of Corporate Regulation, pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

[FR Doc. 77-35451 Filed 12-12-77; 8:45 am]

[8010-01]

[Release No. 34-14232; File No. SR-MSE-77-37]

MIDWEST STOCK EXCHANGE, INC.

Self-Regulatory Organizations; Proposed Rule Change

Pursuant to section 19(b)(1) of the Securities Exchange Act of 1934, 15 U.S.C. 78s(b)(1), as amended by Pub. L. No. 94-29, 16 (June 4, 1975), notice is hereby given that on October 27, 1977, the above-mentioned self-regulatory organization filed with the Securities and Exchange Commission a proposed rule change as follows:

EXCHANGE'S STATEMENT OF THE TERMS OF SUBSTANCE OF THE PROPOSED RULE CHANGE

Article XLI, Rule 4 is hereby amended as follows:

Additions Italicized [*Deletions Bracketed*].

Whenever the Exchange determines that an underlying stock previously approved for Exchange option transactions does not meet the then current requirements necessary to maintain approval or for any other reason should no longer be approved, the Exchange shall not open for trading any additional series of options of the class covering that underlying stock *and may thereafter prohibit any opening*

purchase transactions in series of options of that class previously opened, to the extent it shall deem such action necessary or appropriate; provided, however, that where exceptional circumstances have caused the non-compliance of an underlying security with subsections (v) *and* (*vi*), of Section (a) of Interpretation .01 [of] *or* Section (b) or (c) of Interpretation .01 hereunder the Board may, in the interest of maintaining a fair and orderly market or for the protection of investors, open additional series of option contracts of the class covering the subject underlying security. *When all option contracts in respect of an underlying security that is no longer approved have expired, the Exchange may make application to the Securities and Exchange Commission to strike from trading and listing all such option contracts.*

EXCHANGE'S STATEMENT OF BASIS AND PURPOSE

The basis and purpose of the foregoing proposed rule change is as follows:

The purpose of this rule change is to make technical changes to the Midwest Stock Exchange Rules so as to obtain uniformity with the rules of other option exchanges.

Section 6(b)(5) of the Securities Exchange Act of 1934 ("the Act"), in pertinent part, requires that the Exchange's rules be designed to protect investors and the public interest. The Exchange believes that it is consistent with this section of the Act to set forth specific, objective criteria to be used to initially select securities for options trading as well as to determine when the Exchange's approval for options trading should be withdrawn from an underlying security.

Comments were neither solicited nor received by the Midwest Stock Exchange, Inc.

The Midwest Stock Exchange, Inc., believes that no burdens have been placed on competition.

On or before January 12, 1978, or within such longer period (i) as the Commission may designate up to 90 days of such date if it finds such longer period to be appropriate and publishes its reasons for so finding, or (ii) as to which the above-mentioned self-regulatory organization consents, the Commission will:

(A) By order approve such proposed rule change, or

(B) Institute proceedings to determine whether the proposed rule change should be disapproved.

Interested persons are invited to submit written data, views and arguments concerning the foregoing. Persons desiring to make written submissions should file 6 copies thereof with the Secretary of the Commission, Securities and Exchange Commission, Washington, D.C. 20549. Copies of the filing with respect to the foregoing and of all written submissions will be available for inspection and copying in the Public Reference Room, 1100 L Street NW., Washington, D.C. Copies of such filing will also be available for inspection and copying at the principal office of the above-mentioned self-regulatory organization. All submissions should refer to the file number referenced in the caption above and should be submitted on or before January 3, 1978.

For the Commission by the Division of Market Regulation, pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

DECEMBER 5, 1977.

[FR Doc.77-35440 Filed 12-12-77; 8:45 am]

[8010-01]

[Release No. 14226; SR-NYSE-77-27]

NEW YORK STOCK EXCHANGE, INC.

Order Approving Proposed Rule Change

DECEMBER 5, 1977.

On October 11, 1977, the New York Stock Exchange, Inc., 11 Wall Street, New York, N.Y. 10005, filed with the Commission, pursuant to section 19(b) of the Securities Exchange Act of 1934 (the "Act"), as amended by the Securities Act Amendments of 1975, and Rule 19b-4 thereunder, copies of a proposed rule change. The proposed rule change amends its Rule 343 to incorporate into the rule standards under which members or member organizations may share office space with securities related individuals and organizations whether members or non-members.

Notice of the proposed rule change together with the terms of substance of the proposed rule change was given by publication of a Commission Release (Securities Exchange Act Release No. 14060 (October 18, 1977)) and by publication in the FEDERAL REGISTER (42 FR 56555 (October 26, 1977)).

The Commission finds that the proposed rule change is consistent with the requirements of the Act and the rules and regulations thereunder applicable to national securities exchanges, and in particular, the requirements of section 6 and the rules and regulations thereunder.

It is therefore ordered, Pursuant to section 19(b)(2) of the Act, that the above-mentioned proposed rule change be, and it hereby is, approved.

For the Commission by the Division of Market Regulation pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

[FR Doc. 77-35452 Filed 12-12-77; 8:45 am]

[8010-01]

[Rel. No. 20292; 70-5987]

PENNSYLVANIA ELECTRIC CO.

Filing of Post-Effective Amendment Regarding Issue and Sale of Short-Term Notes to Banks

DECEMBER 2, 1977.

Notice is hereby given that Pennsylvania Electric Co. ("Penelec"), 1001 Broad Street, Johnstown, Pa. 15907, an electric utility subsidiary company of General Public Utilities Corp. ("GPU"), a registered holding company, has filed with this Commission a post-effective amendment to its application previously filed in this proceeding pursuant to the Public Utility Holding Company Act of 1935 ("Act"), designating section 6(b) of the Act as applicable to the proposed transaction. All interested persons are referred to the application, as now amended, which is summarized below, for a complete statement of the proposed transaction.

By order dated April 13, 1977 (HCAR No. 19983), the Commission authorized Penelec, for the period ending December 31, 1977, to issue or renew notes of a maturity of 9 months or less, evidencing short-term bank borrowings provided that the aggregate principal amount of such notes to be outstanding at any one time shall not exceed $92,000,000, subject to certain reductions.

Penelec now requests authorization for an extension of time through December 31, 1978, to issue or renew the aforesaid notes. It is also requested that the aggregate principal amount of such notes to be outstanding at any one time be revised so that such aggregate amount shall not exceed the lesser of (A) $87,000,000, or (B) the amount permitted by Penelec's Articles of Incorporation provided, that said aggregate principal amount shall be reduced to $63,000,000 upon the consummation of the transfers of ownership interests in certain nuclear generating stations as described in a separate application docketed in File No. 70-5951.

It is stated that the banks generally require compensating balances ranging from a minimum of 10 percent of the line of credit to a maximum of 10 percent of the line plus 10 percent of the loan outstanding. Assuming a 7¾ percent prime rate and a 20 percent compensating balance, the effective interest rate to be paid by Penelec would be 9.68 percent.

Penelec proposes to use the proceeds of the short-term loans to provide funds for its short-term working capital requirements, including repayment of other short-term borrowings, and to provide a temporary source of funds for construction expenditures. Penelec states that it now has short-

term notes outstanding in an aggregate principal amount of $46,305,000. The cost of Penelec's 1978 construction program is approximately $99,503,000.

Any fees and expenses to be incurred in connection with the proposed transaction will be supplied by amendment. It is stated that no State commission and no Federal commission, other than this Commission, has jurisdiction over the proposed transaction.

Notice is further given that any interested person may, not later than December 28, 1977, request in writing that a hearing be held on such matter, stating the nature of his interest, the reasons for such request, and the issues of fact or law raised by said post-effective amendment to the application which he desires to controvert; or he may request that he be notified if the Commission should order a hearing thereon. Any such request should be addressed: Secretary, Securities and Exchange Commission, Washington, D.C. 20549. A copy of such request should be served personally or by mail upon the applicant at the above-stated address, and proof of service (by affidavit or, in case of an attorney-at-law, by certificate) should be filed with the request. At any time after said date, the application, as amended by said post-effective amendment or as it may be further amended, may be granted as provided in Rule 23 of the general rules and regulations promulgated under the Act, or the Commission may grant exemption from such rules as provided in Rules 20(a) and 100 thereof or take such other action as it may deem appropriate. Persons who request a hearing or advice as to whether a hearing is ordered will receive any notices and orders issued in this matter, including the date of the hearing (if ordered) and any postponements thereof.

For the Commission, by the Division of Corporate Regulation, pursuant to delegated authority.

GEORGE A. FITZSIMMONS,
Secretary.

[FR Doc. 77-35453 Filed 12-12-77; 8:45 am]

[8320-01]

VETERANS ADMINISTRATION

WHEELCHAIRS FOR DISABLED VETERANS

Proposed Functional Standards for Wheelchairs, Self-Propelled, Folding, Multipurpose

Notice is hereby given of the proposed publication of the VA Functional Standards for self-propelled, folding, multipurpose wheelchairs, to provide an evaluation base and to insure a functional wheelchair which is safe, comfortable and durable.

The functional standards provide detailed information as to the Scope, Classification, Limitations, Requirements (Specifications) and Testing Criteria pertaining to self-propelled, folding, multipurpose wheelchairs.

Interested persons are invited to submit written comments regarding the Functional Standards to the following office. Testing equipment and techniques may also be viewed at the same site.

Director, VA Prosthetics Center, 252 Seventh Avenue, New York, N.Y. 10001.

All relevant comments received before January 12, 1978, will be considered with a view toward revision of the Functional Standards prior to publication.

Effective date: It is proposed that all self-propelled wheelchairs meet the described final VA Functional Standards by February 1, 1978.

Approved: December 7, 1977.

MAX CLELAND,
Administrator.

PROPOSED FUNCTIONAL STANDARDS FOR WHEELCHAIRS, SELF-PROPELLED, FOLDING, MULTIPURPOSE

1.0 *Scope, Classification, and Limitations.*

1.1 *Scope.* These standards relate to mechanical devices which are capable of supporting the occupant in a seated position with no part of his or her anatomy in contact with the floor, and which are capable of being propelled by the occupant.

1.2 *Classification.* These wheelchairs shall be of one grade and one type, and shall be appropriate for use on smooth surfaces, level ground, and moderate slopes; and for all types of users who are deemed by a competent medical authority, to be unable to ambulate more efficently by means of other orthopedic aids.

1.3 *Limitations.* These standards establish acceptable levels of safety, comfort, function, and durability for multipurpose wheelchairs. The specifications set forth the minimum requirements to meet these standards with respect to design, construction, dimensions, resistance to wear and deformation, adjustability, operating characteristics, and ease of operation. These standards do not limit the prescription of wheelchairs featuring variations of the type described herein nor the materials or construction, provided that the functional requirements specified are met.

2.0 *Applicable Reference and Specifications.* The following specifications and standards of the issue in effect on date of invitation for bids, form a part of this specification.

FEDERAL

2.1 *QQ-C-320.*—Chromium Plating (Electrodeposited).

2.2 *QQ-N-290.*—Nickel Plating (Electrodeposited).

2.3 *QQ-S-766.*—Steel Corrosion-Resisting, Plates, Sheets, and Structural Shapes.

2.4 *CC-A-700.*—Artificial Leather Upholstery (Synthetic Resin Coated).

2.5 *CCC-C-419.*—Cloth, Cotton, Duck, Unbleached, Plied-Yarns (Army and Numbered).

2.6 *Federal Standard Number 123.* Marking for Domestic Shipping (Civilian Agencies).

2.7 *D.O.T. M.V. SAFETY STANDARD 302.* Fabric Flammability.

3.0 *Requirements.*

3.1 *General.* The wheelchairs covered by these specifications shall be capable of folding as a complete unit without requiring the removal of any integral component.

3.2 *Component.* A wheelchair shall include: (a) a supporting structure consisting of a backrest, a seat, armrests, and footplates; (b) a propulsion system consisting of wheels (or other devices that provide a similar function), a drive mechanism, brakes, and locks; and (c) a folding mechanism.

3.2.1 *Supporting Structure: Stability.*

3.2.1.1 *Standard.* The supporting structure shall not topple (rotate backward or forward about the wheel axes nor rotate sideways) in normal use as described in 1.2 above.

3.2.1.2 *Specifications.* The wheelchair shall remain stable in the anterior-posterior and medial-lateral directions with a 200 lb. (91 kg) seated occupant during movement on level ground and on, or across, slopes of 16 percent (9 deg.).

Rationale. With each propulsion stroke the occupant applies a force to the chair's backrest. This produces a clockwise moment (when viewed from the left) about the drive wheel axles. To prevent toppling, this moment must be resisted by a counterclockwise moment of greater magnitude which is produced by the vertical projection of the center of mass (CM) of the total system acting forward of the drive wheel axles. In general the shorter the horizontal distance and the higher the CM location relative to the drive wheel axles (resistance moment arm), the smaller the clockwise toppling moment that can be resisted.

3.2.1.3 *Test No. 1.* (Static Test.) The wheel chair must resist toppling on a surface with a 9 deg. slope. The wheelchair shall be loaded with a 200 lb. (91kg) test load and positioned on the 9 deg. slope with the front of the chair pointed upslope and locks on the drive wheels engaged. The standard 200 lb. (91 kg) test load shall consist of a rigid 14 in. (35 cm) cube with its center of gravity (CG) at the intersection of the anterior-posterior and medial-lateral planes at a height of 4 in. (10 cm) above the bottom surface. It shall be covered with a 0.5 in. (1¼ cm) thick layer of 2 lb./ft.^{3} (32 kg/cm^3) density, 30 durometer, foam rubber or an anthropometric 95th percentile dummy with movable joints such as the Sierra automotive test dummy in compliance with DOT, part 572.

3.2.2. *Supporting Structure: Adjustability.*

3.2.2.1 *Standard.* Certain components of the supporting structure shall be avilable in a range of dimensions conforming to anthropometric standards for the human body; dimensional variation may be provided by adjustability of components or by prescription order.

3.2.2.2 *Specifications.* The dimensions of the seat shall accommodate the appropriate anthropometric dimensions of legs, seats, and backs of 95 percent of the normal adult male population.

3.2.2.2.1. *Seat Width.* Chairs designed for general use shall be available in a range from 14 in. (35 cm) t0 20 in. (51 cm) in 1 in. (2½ cm) increments.

3.2.2.2.2. *Seat Length.* The depth of the seat shall be not less than 16 in. (40 cm).

3.2.2.2.3. *Seat Height.* The height of the forward edge of the wheelchair seat from the floor level shall not be greater than 20 in. (51 cm).

3.2.2.2.4. *Seat Incline.* The seat shall incline downward toward the rear not less than 4 deg. nor more than 8 deg. with respect to a horizontal reference..

3.2.2.2.5 *Backrest Width.* The back of the chair shall be the same width as the seat or greater..

3.2.2.2.6 *Backrest Height.* The upper edge of the backrest shall not be less than 12 in. (30 cm) above the center of the seat..

3.2.2.2.7 *Backrest Incline.* The backrest shall incline not less than 10 deg. to the rear from the vertical reference..

3.2.2.2.8 *Leg Rest Length.* Leg rests shall be adjustable through a range of 14 in. (35 cm) to 18 in. (46 cm) when measured from the footplate to the surface of the forward edge of the seat. In providing this range the footplate assembly shall not interfere with the wheelchair's ability to clear a 2.5 in. (6 cm) high obstacle..

3.2.2.2.9 *Footplate Depth.* At least two sizes of footplates shall be available. They may be of two specific sizes, i.e., 6 in. (15 cm) and 8 in. (20 cm), or they may be adjustable to provide these dimensions.

3.2.2.2.10 *Footplate Width. Footplates shall provide a bearing surface for the shoe of not less than 6 in. (15 cm) in width..*

3.2.2.2.11 *Footplate Inclination.* Footplates shall incline downward toward the rear of the chair not less than 5 deg. with respect to a horizontal reference line without preventing an occupant from maintaining a 90 deg. angle between shank and foot (10 deg. plantar flexion or dorsiflexion).

Rationale. The maximum lengths and widths specified are intended to comfortably accommodate the body members of a clothed 95 percentile occupant. Inclinations specified are intended to prevent slipping out of the chair or off chair components..

3.2.2.3. *Test No. 2.* (nondestructive Mechanical Test.) The gross weight of the chair, including all basic accessories such as footplates and armrests, shall not exceed 48 lb. (22 kg). The seat width, when measured from the edges of the upholstery shall not be less than 14 in. (36 cm) at its narrowest point, nor more than 20 in. (51 cm) wide when measured between the inside walls of the skirtguards of the armrests at mid-depth of the seat. The seat shall not be less than 16 in. (14 cm) deep as measured between the front and rear edges of the upholstery at mid-width in the chair. When measured with a liquid level on a 16 in. (41 cm) by 10 in. (25 cm) strip of rigid material placed on the seat, the seat shall be inclined between 4 deg. and 8 deg. rearward.

The backrest shall be at least as wide as the seat. The top edge of the backrest shall be at least 12 in. (30 cm) above the maximum height of the seat when measured at the rear edge of the upholstery. The backrest shall slope backward from the seat not less than 10 deg. as measured with a liquid level at the top edge of the backrest and on a 16 in. (41 cm) by 10 in. (25 cm) strip of rigid material held against the backrest.

The leg rests shall be adjustable from a minimum length of 14 in. (36 cm) to not less than 18 in. (46 cm) when measured perpendicularly from the upper surface of the footplate at a point 3 in. (7.5 cm) forward of its rear edge to a flat 16 in. (41 cm) by 10 in. (25 cm) rectangle resting on and extending to the edge of the seat. Footplates shall slope rearward by a minimum of 5 deg. when measured with a liquid level. The lowest point of the foot support assembly shall permit clearance of obstacles 2.5 in. (6 cm) in height.

3.2.3 *Upholstery.*

3.2.3.1 *Standard.* Upholstery shall be comfortable and present no safety hazards.

3.2.3.2. *Specifications.* Upholstery shall be flexible and shall be non-absorbent when attached, or be capable of being removed easily for laundering. It shall resist flame 2½ in. (6 cm) per minute maximum spread, scuffing, abrasion, splitting, and tearing. It shall be color-fast and non-irritating.

Rationale. The safety and comfort of the user must be protected.

3.2.3.3. *Test No. 3.* Two 4 in. (10 cm) by 14 in. (35 cm) samples of upholstery material provided by the wheelchair manufacturer will be tested to determine its resistance to flame, to food and grease stains, and its laundering and/or cleansing characteristics.

3.2.4 *Propulsion System.*

3.2.4.1 *Drive Mechanism.*

3.2.4.1.1 *Specifications.* Rims, bars, or other devices driven by the occupant shall be of uniformly finished smooth material with non-staining, non-splintering, grasping surfaces. They shall be firmly linked to drive wheels with no unwanted relative motion between them. They shall be replaceable independently of the drive wheels. They shall be positioned so that the occupant is capable of propelling the chair without touching any other component.

3.2.4.2 *Drive Wheels.*

3.2.4.2.1 *Specifications.* The wheels shall not rotate in more than one plane (flutter wobble) when the chair, loaded with a 200 lb. (91 kg) test load is propelled. The replacement of unsealed wheel bearings shall not require the replacement of any other major component. Sealed wheel bearings, the replacement of which also requires the replacement of a wheel or other major components shall be guaranteed for a minimum life of one (1) year normal use under a 200 lb. (91 kg) test load. Axles shall not extend beyond wheel hubs and shall be covered by dust caps.

3.2.4.2.2 *Test No. 4.* One year of normal use shall be simulated by driving a chair 360 hours with a 200 lb. (91 kg) anthropometric dummy on a series of drums that provide a surface velocity of 5 mph (8 kpg) and an alternating surface angulation of 9 deg.: both drum slope to the right, inward, to the left and outward. The chair shall be driven on a 6 in. (15 cm) curb drop simulator with the anthropometric dummy for 1,800 even drops and 1,800 out of phase (180 deg.) drops.

3.2.4.2.3 *Test No. 5.* With the chair supported on its lower frame members, check the wobble of the drive wheels using a displacement indicator. Remove the supports and apply the 200 lb. (91 kg) test load. While pushing the chair, check the wobble with the displacement indicator. The difference between the first and second reading is the wobble due to the payload: .0625 in. (1.5 mm) is the maximum acceptable wobble.

3.2.4.3. *Casters.*

3.2.4.3.1 *Specification.* Casters shall swivel 360 deg. in both directions. Casters shall be firmly seated in the wheelchair frame and be positively attached. The casters shall not rotate in more than one plane (flutter) when loaded, as in the drive wheel test.

3.2.4.3.2 *Test No. 6.* Inspect and measure the caster wheels after Test No. 5.

3.2.4.4.1 *Standard.* Tires shall be of a non-marking, resilient material, either solid, pneumatic or filled. The compressibility of the drive wheel tires and caster tires shall be such that adequate tire surface area remains in contact with the ground to insure proper traction and braking.

3.2.4.4.2 *Specifications.* Pneumatic tires should retain nominal pressure under dynamic loading conditions when measured after one (1) month normal use. One (1) month use shall be simulated by ½ Drive Wheels Test No. 4. Solid tires shall not gap more than .0625 in. (1.5 mm) at the joint under dynamic loading conditions. Tires shall not roll up on the wheel rim under normal loads that are applied perpendicularly to the normal line of wheel progression. When the chair is loaded with a 200 lb. (91 kg) load the contact surface between each tire and the ground shall not be less than .75 sq. in. (4 sq. cm); the contact surface between the caster wheel tires and the ground shall not be less than 0.5 sq. in. (3 sq. cm) per tire.

3.2.4.4.3 *Test No. 7.* (Solid Tire Test.) With the wheel loaded with a 200 lb. (91 kg) test load, a 50 lb. (23 kg) force is applied to the tire at a point not more than 1 in. (2.5 cm) from the joint tangent to the tire surface, in a direction away from the tire-butt joint. Gapping at the joint under these conditions shall not exceed .0625 in. (1.5 mm).

3.2.4.4.4 *Test No. 8.* When the wheelchair is loaded with a 200 lb. (91 kg) test load is on a sloping plane of 10 deg. the tire shall not roll off the rim.

3.2.4.4.5 *Test No. 9.* Tires are marked with a soft crayon and the wheelchair loaded with a 200 lb. (91 kg) test load is placed on a sheet of paper. Upon removal of the chair, the area of the tire imprint on the paper is measured. A drive wheel tire mark shall not be less than .75 sq. in. (4.84 sq. cm); a caster wheel tire mark shall not be less than 0.5 sq. in. 3.23 sq. cm).

3.2.4.5 *Brakes and Locks.*

3.2.4.5.1 *Standard.* Each wheelchair shall be equipped with a device to prevent drive wheel rotation.

3.2.4.5.2 *Specifications.* When set to prevent wheel rotation these devices shall not permit the chair, loaded with a 200 lb. (91 kg) load to move on a slope of 16 percent (9 deg.). These devices shall be one hand operated from both sides of the chair. Brakes may be applied independently to each wheel or they may be designed to brake both wheels by operating either or both of the handles. The handles shall extend upward to at least seat level and be located in a convenient position. Each wheelchair shall provide a braking feature through adjustment of the wheel lock or by any other device that retards the velocity of wheel rotation. Operation and installation shall meet the requirements for wheel locks above.

Rationale. The safety of the user and his or her control of the chair requires the ability to stop and remain stationary even on an incline.

3.2.4.5.3 *Test No. 10.* Locks shall prevent wheel rotation when the wheelchair is loaded with a 200 lb. (91 kg) test load and positioned on a 9 deg. slope with the front of the chair pointed down-slope. Wheel movement with the locking device engaged shall be considered a failure.

3.2.4.6 *Folding Mechanism.*

3.2.4.6.1 *Standard.* The chair shall be capable of being folded or opened easily in one operation and without removing any parts of the chair. The chair shall be capable of being pushed and pulled when folded.

3.2.4.6.2 *Specifications.* The width of the folded chair shall not exceed 12 in. (30 cm). The force to fold the chair shall not exceed 15 lb. (66 N).

Rationale. To allow for efficient storage and to permit transportation in auto trunks, near passenger compartments, etc.

3.2.4.6.3 *Test No. 11.* Measure width of folded chair.

3.2.4.6.4 *Test No. 12.* Measure force required to fold chair. The average of five readings shall not exceed 15 lb. (66 N).

3.2.5 *Function.* These devices shall conform to standards of safety, comfort, maneuverability and ease of operation as specified below:

3.2.5.1 *Safety.*

3.2.5.1.1 *Standard.* The wheelchair will comply with all requirements of this standard without subjecting the occupant to potential danger or injury.

3.2.5.1.2 *Specifications.*

3.2.5.1.2.1 *Handles.* Coverings for handles or other devices for pushing or tilting wheelchairs shall be permanently attached and not readily removable without the aid of tools. This does not apply to levers or other tilting aids designed to be stepped on. Covers for these components shall be of a material with a high coefficient friction (non-skid).

3.2.5.1.2.2 *Footplate Surfaces.* Footplates shall be capable of being moved simply and quickly by the chair occupant or by an attendant to permit direct wheelchair entry and sustain the test loads of Test No. (3.2.4.2.2) with the anthropometric dummy.

3.2.5.1.2.3. *Skirtguards.* Two skirtguards shall be provided to prevent contact between hands or clothing and parts of the wheel, and to prevent dirt and other objects from being deposited on the occupant. Clearance between the skirtguards and the drive wheels shall not be more than 1 in. (2.5 cm).

Rationale. This amount of clearance insures that the wheelchair is as narrow as possible.

3.2.5.1.2.4 *Projections.* All projections shall be covered with or be fabricated from a resilient material.

3.2.5.1.2.5 *Component Locks.* All removable components such as armrests, legrests, and footrests shall be equipped with positive locks.

3.2.5.1.2.6 *Stability.* The wheelchair shall remain stable during the normal physical routines of the occupant, such as during transfer activities, reaching average work height areas, and reaching the floor with the hand.

Rationale. The safety of the user requires the system to remain stabled at all times.

3.2.5.1.3 *Test No. 13.* Measurement and inspection for stability.

3.2.5.2 *Comfort.*

3.2.5.2.1 *Standard.* The occupant shall be maintained in a comfortable upright sitting position.

3.2.5.2.2 *Specifications.*

3.2.5.2.2.1 *Seat.* The gap between the seat and backrest shall not exceed 2 in. (5 cm) with an occupant seated in the chair.

3.2.5.2.2.2 *Armrests.* Each chair shall be equipped with armrests. They should not interfere with the occupant's arm motion during propulsion. Their length should not interfere with, or preclude, a close approach to tables or desks.

Removable pads shall be provided with the armrests. The combined height of the armrest from the seat shall be such that the occupant's elbow can rest comfortably without having to drop or elevate the shoulder. Width of armrest pads shall not interfere with transfer activities nor hinder propulsion of the chair by the occupant.

3.2.5.2.2.3 *Shock Absorption.* Each chair shall be designed to absorb the impacts of curb descents, obstacle clearances, and the effects of uneven surfaces by means of shock absorbers, frame design and construction, balloon tires, or by any other effective means. The backrest shall be flexible and conform to body contours. Caster wheels shall not come in contact with the occupant's heels when the chair is operated. The backrest uprights shall not interfere with movements required to propel the wheelchair. The occupant's thighs shall be adequately suported, i.e., the posterior surface of the thighs shall remain in contact with the seat when the feet are placed on the footplates. The chair shall provide a means to prevent the occupant's feet from sliding backwards off the footplates when the chair is tilted backwards, as when ascending or descending curbs.

Rationale. The safety and comfort of the user must be protected.

3.2.5.2.3 *Test No. 14.* Inspection and observation for compliance.

3.2.5.3 *Maneuverability.*

3.2.5.3.1 *Standard.* The chair shall be capable of climbing and descending curbs and stairs and traversing door saddles either when operated by the occupant or with the aid of an attendant.

The chair shall permit an occupant to reach the floor with his or her hand and to reach the average work height areas.

3.2.5.3.2 *Specifications.* The wheelchair shall be capable of being propelled by the occupant through a door opening 28 in. (71 cm) wide. The chair shall be capable of being turned 180 deg. in a corridor 48 in. (122 cm) wide.

Rationale. VA construction requirements for wheelchair homes.

3.2.5.3.3 *Test No. 15.* Trials of turning 180 deg. in an area 48 in. (122 cm) wide, and through a 28 in. (71 cm) opening.

3.2.5.4 *Ease of Operation.*

3.2.5.4.1 *Standard.* No accessories or other encumbrances shall be mounted on the wheelchair in a manner to interfere with or prevent transfer activities. Each wheelchair shall be provided with a means for propelling and maneuvering the chair by a person other than the occupant. This device shall be attached to the frame at a height that allows the person propelling the chair to walk comfortably in an erect manner.

3.2.5.4.2 *Specifications.* The wheelchair shall have a maximum weight of 48 lb. (22 kg) exclusive of special features for portability and for loading into a car by the occupant or an aid.

The force to initiate motion shall not exceed 5 lb. (22 N) with a 200 lb. (91 kg) load.

The wheelchair shall be capable of being folded with one hand. The force to fold the wheelchair shall not exceed 15 lb. (66 N).

3.2.5.4.3 *Test No. 16.* The wheelchair is loaded with the 200 lb. (91 kg) load. One end of a light cable which passes over a pulley is attached to the wheelchair at its center of gravity and the other end is connected to a weight. The weight used to produce a continuous movement of 12 in. (30 cm) is recorded. The average of five such tests shall not exceed 5 lb. (22 N).

3.2.6 *Structural Durability.*

3.2.6.1 *Standard.* The supporting structure, propulsion system, and folding mechanism shall be of materials and construction which do not deform permanently under the stress of normal usage.

3.2.6.2 *Specifications.* These structures shall withstand loads with energies of 125 ft/lb. (170 J) applied 3,600 times without permanent deformation.

Rationale. Based on the idea that a "worst condition" of the normal use is found in curb descent. A 200 lb. (91 kg) occupant descending a 6 in. (15 cm) curb subjects a 50 lb. (23 kg) chair to impact loads with energies of approximately 125 ft./lb. (170 J).

3.2.6.3 *Test No. 17.* Check the supporting structure, propulsion system and folding mechanism for straightness, squareness, and alignment. Measure and record any deviations i.e., bends in cross frame. The wheelchair, carrying the 200 lb. (91 kg) test load, is cycled as in Test No. 4 (3.2.4.2.2)

The wheelchair is unweighted and the supporting structure, propulsion system folding mechanism, upholstery, and fastenings are reinspected and remeasured for evidence of permanent deformation after 900, 1,800, and 3,600 cycles. Changes in the dimensions, shape, or operation of the component parts of the wheelchair are considered failures.

4.0 *Instructions.* Each chair shall be provided with an illustrated description of the assembly operation and care of the device together with a list of component parts.

5.0 *Quality Control.* Each contract unit shall be subjected to appropriate quality control measures by the manufaturer or distributor prior to delivery, to insure compliance with these specifications. Each unit will be inspected at the Supply Depot or Receiving Station.

5.1 *Sampling, Inspection, and Test Procedures.*

5.1.1 *Inspection.* Every device (100 percent of sample) will be visually inspected for complete assembly, finish, workmanship, and condition, and checked for operability.

5.1.2 *Testing.* At least one unit each year will be purchased on the open market and subjected to appropriate testing by the VA Prosthetics Center, New York.

[FR Doc. 77-35496 Filed 12-12-77; 8:45 am]

[7035-01]

INTERSTATE COMMERCE COMMISSION

[Notice No. 267]

MOTOR CARRIER TRANSFER PROCEEDINGS

DECEMBER 13, 1977.

Application filed for temporary authority under Section 210a(b) in connection with transfer application under Section 212(b) and Transfer Rules, 49 CFR Part 1132:

No. MC-FC 77442. By application filed December 5, 1977, SULLIVAN MOVING AND STORAGE, INC., 228 S. Saint Clair Street, Toledo, Ohio 43602, seeks temporary authority to transfer the operating rights of Bowling Green Transfer, Inc., 530 S. Maple Street, Bowling Green, Ohio 43402, under section 210a(b). The transfer to Sullivan Moving and Storage, Inc., of the operating rights of Bowling Green Transfer, Inc., is presently pending.

By the Commission.

H. G. HOMME, Jr.
Acting Secretary.

[FR Doc. 77-35561 Filed 12-12-77; 8:45 am]

[7035-01]

[No. 36727]

IDAHO INTRASTATE FREIGHT RATES AND CHARGES—1977

Petition for Investigation of Intrastate Freight Rates and Charges Within the State of Idaho

By joint petition authorized under section 13(3) of the Interstate Commerce Act, filed October 12, 1977, petitioners, six common carriers by railroad[1] subject to Part I of the Interstate Commerce Act, and also operating in intrastate commerce in the State of Idaho, request that this Commission institute an investigation of their Idaho intrastate freight rates and charges, under sections 13 and 15a of the Interstate Commerce Act, wherein they will seek an order authorizing them to increase such rates and charges in the same amounts approved for interstate application by this Commission in Ex Parte No. 336.

By application filed April 26, 1977, with the Idaho Public Utilities Commission, petitioners sought to make the increases granted in Ex Parte No. 336 applicable on Idaho intrastate traffic. Said Commission denied the application by order dated September 2, 1977.

Petitioners contend that present interstate freight rates from, to, and within Idaho are just and reasonable and that the proposed intrastate rates will not exceed a just and reasonable level; that transportation conditions for intrastate traffic in Idaho are not more favorable than for intrastate traffic; that traffic moving under present Idaho intrastate rail freight rates and charges fails to provide its fair share of earning; and, that the present Idaho intrastate rail freight rates and charges create undue and unreasonable advantage, preference, and prejudice between persons and localities in intrastate commerce within Idaho and interstate and foreign commerce, and result in undue, unreasonable, and unjust discrimination against and an undue burden of interstate commerce in violation of sections 13 and 15a of the Interstate Commerce Act, among others to the extent that they do not include the increases authorized in Ex Parte No. 336.

Under section 13 of the Interstate Commerce Act, this Commission may institute an investigation, into the lawfulness of intrastate rail freight rates and charges for the purpose of adjusting such rates and charges to those charged on similar traffic moving in interstate or foreign commerce. This Commission may act not withstanding the laws or constitution of any State.

Therefore, *it is ordered:*

The petition is granted. An investigation, under section 13 and 15a of the Interstate Commerce Act, is instituted to determine whether the Idaho intrastate rail freight rates in any respect cause any unjust discrimination against or any undue burden on interstate or foreign commerce, or cause undue or unreasonable advantage, preference, or prejudice as between interstate or foreign commerce, or are otherwise unlawful, by reason of the failure of such rates and charges to include the full increases authorized for interstate application by this Commission in Ex Parte No. 336. The investigation shall also determine if any rates or charges, or maximum or minimum charges, or both, shall be prescribed to remove any unlawful advantage, preference, discrimination, undue burden, or other violation of law, found to exist.

All common carriers by railroad operating in the State of Idaho subject to the jurisdiction of this Commission are made respondents in this proceeding.

All persons who wish to actively participate in this proceeding and to file and receive copies of pleadings shall make known that fact by notifying the Office of Proceedings, room 5342, Interstate Commerce Commission, Washington, D.C., 20423, on or before December 28, 1977. Although individual participation is not precluded, to conserve time and to avoid unnecessary expense, persons having common interests should endeavor to consolidate their presentations to the greatest extent possible. The Commission desires participation of only those who intend to take an active part in the proceeding.

As soon as practicable after the date of indicating a desire to participate in the proceeding has passed, the Commission will serve a list of names and addresses of all persons upon whom service of all pleadings must be made and that thereafter this proceeding will be assigned for oral hearing or handling under modified procedure.

A copy of this order shall be served upon each of the petitioners and respondents herein. The State of Idaho shall be notified of the proceeding by sending copies of this order of the instant petition by certified mail to the Governor of the State of Idaho and the Idaho Public Utitities Commission. Further notice of this proceeding shall be given to the public by depositing a copy of this order in the Office of the Secretary of the Interstate Commerce Commission, at Washington, D.C., and by filling a copy with the Director, Office of the Federal Register, for publication in the FEDERAL REGISTER.

This is not a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969.

Decided December 5, 1977.

By the Commission, Commissioner Murphy.

H. G. HOMME, Jr.,
Acting Secretary.

[FR Doc. 77-35558 Filed 12-12-77; 8:45 am]

[1] Burlington Northern Inc., Camas Prairie Railroad Company, The Chicago, Milwaukee, St. Paul and Pacific Railroad Company, Spokane International Railroad Company, Union Pacific Railroad Company, and Washington, Idaho and Montana Railway.

[7035-01]

FOURTH SECTION APPLICATION(S) FOR RELIEF

DECEMBER 8, 1977.

An application, as summarized below, has been filed requesting relief from the requirements of section 4 of the Interstate Commerce Act to permit common carriers named or described in the application to maintain higher rates and charges at intermediate points than those sought to be established at more distant points.

Protests to the granting of an application must be prepared in accordance with Rule 40 of the General Rules of Practice (49 CFR 1100.40) and filed on or before December 28, 1977.

FSA No. 43476—Joint Water-Rail Container Rates—Hapag-Lloyd Ag. Filed by Hapag-Lloyd Ag, (No. 1), for itself and interested rail carriers. Rates on general commodities, between ports in the Far East, Southeast Asia and other world ports, and rail terminals on the U.S. Atlantic and Gulf Coast Seaboards.

Grounds for relief—Water competition.

By the Commission.

H. G. HOMME, Jr.,
Acting Secretary.

[FR Doc. 77-35559 Filed 12-12-77; 8:45 am]

[7035-01]

[No. 36745]

BUS TERMINAL OF THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY

Petition for Investigation

AGENCY: Interstate Commerce Commission.

ACTION: Notice of request for investigation.

SUMMARY: Public comment is invited upon the request by bus companies and individuals for an investigation into the conditions surrounding the use of the mid-Manhattan Bus Terminal for interstate motor bus operations.

FOR FURTHER INFORMATION CONTACT:

Mrs. Janice M. Rosenak, Deputy Director, Section of Rates, Interstate Commerce Commission, Washington, D.C. 20423, 202-275-7693.

SUPPLEMENTARY INFORMATION: Petitioning motor bus carriers, Trailways, Inc., Safeway Trails, Inc., Trailways of New England, Inc., American Bus Lines, Inc., and Continental Edwards Motor Transit Co., as well as numerous individuals working near or using the mid-Manhattan Bus Terminal have requested that an investigation be instituted. These petitioners request that a full inquiry be made into the manner and method by which motor bus operators serving New York City are compelled to use this terminal and the facilities of the Port Authority of New York and New Jersey. Petitioners assert that fees paid to the Port Authority for use of the terminal are too high and are extortionate in nature and that the facilities are unsafe. The problems associated with the terminal allegedly threaten the continuation of adequate motor bus service.

Among the issues raised by petitioners are (1) the impact of the method and manner of the terminal's operations upon the interstate motor bus service, (2) the propriety of restrictions limiting motor bus terminal operations to the Port Authority's facility, (3) the charges paid by petitioners for the use of the facility and burdens those charges place upon petitioners financial outlook, (4) the Commission's jurisdiction, and (5) the appropriate relief to be considered.

Interested parties are invited to comment upon the matters raised by the request for investigation. Comments should be addressed to Acting Secretary Homme, Interstate Commerce Commission, 12th and Constitution Avenues, Washington, D.C. 20423. Where possible, an original and six copies should be sent and should make reference to the above-entitled Docket No. 36745. Comments should be filed on or before January 12, 1978.

H. G. HOMME, Jr.,
Acting Secretary.

[FR Doc. 77-35563 12-12-77; 8:45 am]

sunshine act meetings

This section of the FEDERAL REGISTER contains notices of meetings published under the "Government in the Sunshine Act" (Pub. L. 94-409), 5 U.S.C. 552b(e)(3).

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[6351-01]

1

AGENCY HOLDING THE MEETING: Commodity Futures Trading Commission.

FEDERAL REGISTER CITATION OF PREVIOUS ANNOUNCEMENT: Friday, December 9, 1977 (42 FR 62247).

PREVIOUSLY ANNOUNCED TIME AND DATE OF THE MEETING: 10 a.m., December 13, 1977.

CHANGES IN THE MEETING: Proposed regulation 1.38a (spread trading) discussion has been canceled.

[S-2029-77 Filed 12-9-77; 10:06 am]

[6570-06]

2

AGENCY HOLDING THE MEETING: Equal Employment Opportunity Commission.

TIME AND DATE: 9:30 a.m. (Eastern Time), Thursday, December 15, 1977.

PLACE: Chairman's Conference Room No. 5240, on the fifth floor of the Columbia Plaza Office Building, 2401 E Street NW., Washington, D.C. 20506.

STATUS: Parts of the meeting will be open to the public, and parts will be closed to the public.

MATTERS TO BE CONSIDERED: Part open to the public:

(1) *Freedom of Information Act Appeal No. 77-9-FOIA-195,* concerning a request by the National Steelworkers Rank and File Committee for the 1975 and 1976 Employment Survey (EEO-1) reports of the nine major steel companies who are parties to the steel industry consent decree.

(2) *Guidelines on Remedial and Affirmative Action.*

Parts closed to the public:

(1) *Litigation Authorization; General Counsel Recommendations:* Matters closed to the public under Sec. 1612.13(a) of the Commission's regulations (42 FR 13830, March 14, 1977).

(2) *Proposed Commission Decisions.*

NOTE.—Any matter not discussed or concluded may be carried over to a later meeting.

CONTACT PERSON FOR MORE INFORMATION:

Marie D. Wilson, Executive Officer, Executive Secretariat, 202-634-6748.

This notice issued December 8, 1977.

[S-2032-77 Filed 12-9-77; 2:16 pm]

[6570-06]

3

AGENCY HOLDING THE MEETING: Equal Employment Opportunity Commission.

FEDERAL REGISTER CITATION OF PREVIOUS ANNOUNCEMENT: S-1960-77; 42 FR 61356, December 2, 1977.

PREVIOUSLY ANNOUNCED TIME AND DATE OF MEETING: 9:30 a.m. (Eastern Time), Tuesday, December 6, 1977.

CHANGES IN THE MEETING:

Date and Time of Meeting

Postponed until 9 a.m. (Eastern Time), Thursday, December 8, 1977.

Status of Meeting

Parts of the meeting starting at 9 a.m. will be closed to the public and parts of the meeting starting at 10 a.m. will be open to the public.

Agenda

Addition to Closed Portion: Proposed Commission Decision, Proposed Guidelines on Remedial and Affirmative Action; *Addition of Open Portion:* Proposed Guidelines on Remedial and Affirmative Action; Apprenticeship Regulations; Draft letter to the Secretary of Labor Commenting on Proposed Amendments.

A majority of the entire membership of the Commission determined by recorded vote that the business of the Commission required these changes and that no earlier announcment was possible.

The vote was as follows:

In favor of change: Eleanor Holmes Norton, Chair, Ethel Bent Walsh, Commissioner, Daniel E. Leach, Commissioner; *Opposed:* None.

CONTACT PERSON FOR MORE INFORMATION:

Marie D. Wilson, Executive Officer, Executive Secretariat at 202-634-6748.

This notice issued December 8, 1977.

[S-2033-77 Filed 12-9-77; 2:16 pm]

[6712-01]

4

FEDERAL COMMUNICATIONS COMMISSION.

TIME AND DATE: Follows 9:30 a.m., Open Commission Meeting, Thursday, December 15, 1977.

PLACE: Room 856, 1919 M Street NW., Washington, D.C.

STATUS: Special Open Commission Meeting.

MATTERS TO BE CONSIDERED:

Agenda, Item Nos., and Subject

Cable Television—1—Cable television network nonduplication protection against television stations available off the air in the cable community (Third Report and Order, Docket No. 19995).

2—Petition for Waiver, filed by Quinebaug Valley Cablevision, Inc., operator of a cable television system at Southbridge, Mass.; and Opposition to Petition for Waiver, filed by Springfield Television Broadcasting Corporation (WWLP, NBC, Channel 22), Springfield, Mass.

3—Petition for Waiver of Nonduplication Exclusivity Requirements as Demanded filed on behalf of Community Service, Inc., operator of a cable television system at Frankfort, Ky.; and Request for Order to Show Cause filed on behalf of Starr WTVQ-TV, Inc.

4—Request for Declaratory Ruling and Petition for Waiver filed by Capitol Cabletelevision Corp., operator of cable television systems at Charleston, S.C., and Dunbar, W. Va.; and Request for Special Relief filed by Gateway Communications, Inc. (WOWK-TV, ABC, Channel 13), Huntington, W. Va.

5—Petition(s) for Special Relief filed by Hornell Television Service, Inc., operator of a cable television system at Hornell, N.Y.; and Opposition to Petition for Special Relief filed by WENY, Inc. (WENY-TV, ABC, Channel 36), Elmira, N.Y.

6—Petition for Special Relief filed by Avenue TV Cable Service, Inc., opera-

tor of a cable television system at Ventura, Calif.; and Opposition to Petition for Special Relief filed by Key Television, Inc. (KEYT, ABC, Channel 3), Santa Barbara, Calif.

CONTACT PERSON FOR MORE INFORMATION:

Samuel M. Sharkey, FCC Public Information Officer, 202-632-7260.

Issued: December 8, 1977.

[S-2039-77 Filed 12-9-77; 3:43 pm]

[6712-01]

5

FEDERAL COMMUNICATIONS COMMISSION.

TIME AND DATE: 9:30 a.m., Thursday, December 15, 1977.

PLACE: Room 856, 1919 M Street NW., Washington, D.C.

STATUS: Open Commission Meeting.

MATTER TO BE CONSIDERED:

Agenda, Item Nos., and Subject

General—1—Amendment of Part 15 of the Commission's rules to prohibit manufacture of UHF receivers, after May 1, 1979, with noise figures in excess of 14 dB (Docket No. 21010).

Safety and Special—1—Request for waiver of Rule 83.132(a)(2) to allow specified ship stations to transmit data on radiotelephone frequencies.

Common Carrier—1—Amendment of Section 68.2 of the Commission's rules to extend the Grandfather Dates of the Telephone Equipment Registration Program.

Cable Television—1—Petitions for stay of the Commission decision in Vanhu, Inc. (Seattle, Wash.), filed by United Community Antenna Systems, Inc., and Tele-Vue Systems, Inc. and KIRO, Inc's objections.

Renewal—1—Submission of technical data in the WPWC (Quantico, Va.) 1975 renewal application of Happy Broadcasting Co., Inc.

2—Appeal of staff letter denying inquiry into employment practices of 295 broadcast licensees.

Aural—1—Applications for construction permits for new broadcast stations in California filed by Baker-Smith Communications Co. (Burbank), and A.W.A.R.E. Communicators, Inc., Lotus Communications Corp., Foothill Broadcasting Corp. (Pasadena).

2—Petition for reconsideration of earlier Commission action (Carroll-Harrison Broadcasting, Inc., FCC 76-1115, FCC 2d —— 39 RR 2d 279 released December 10, 1976), denying the applicant's request for waiver of section 73.207.

3—Petition for reconsideration filed December 1976 by Independent Music Broadcasters, Inc., WYOR-FM, Coral Cables, Fla., opposing the Commission action of October 27, 1976.

Television—1—Petition for Order to Show Cause, filed by The Klix Corp. (KNVT(TV), Twin Falls, Idaho), to revoke the construction permit of KTVB's translator station, K57AP (Twin Falls).

Broadcast—1—Notice of Inquiry into various matters concerning subscription television; and petition for waiver of Section 73.644(b) of the Commission's rules relating to technical characteristics of STV operation.

Complaints and Compliance—1—Application, filed by the licensee of WMTR, for review of the Broadcast Bureau's order assessing a forfeiture for repeated violations of the Commission's rules.

CONTACT PERSON FOR MORE INFORMATION:

Samuel M. Sharkey, FCC Public Information Officer, 202-632-7260.

Issued: December 8, 1977.

[S-2040-77 Filed 12-9-77; 3:43 pm]

[6712-01]

6

FEDERAL COMMUNICATIONS COMMISSION.

TIME AND DATE: 9:30 am., Thursday, December 8, 1977.

PLACE: Room 856, 1919 M Street NW., Washington, D.C.

STATUS: Open Commission Meeting.

MATTER TO BE CONSIDERED:

Agenda, Item Nos., and Subject

Assignment of License and Transfer of Control—3—Two petitions to deny the applications for voluntary assignment of licenses of stations WRUN and WGKW (FM), Utica, N.Y.

The prompt and orderly conduct of Commission business requires that less than 7-days notice be given.

CONTACT PERSON FOR MORE INFORMATION:

Samuel M. Sharkey, FCC Public Information Officer, telephone number 202-632-7260.

Issued: December 7, 1977.

[S-2041-77 Filed 12-9-77; 3:43 pm]

[6712-01]

7

FEDERAL COMMUNICATIONS COMMISSION.

PREVIOUSLY ANNOUNCED TIME AND DATE OF MEETING: 9:30 a.m., Thursday, December 8, 1977.

PLACE: Room 856, 1919 M Street NW., Washington, D.C.

STATUS: Open Commission Meeting.

CHANGES IN THE MEETING: The following agenda item should be deleted and the time has been changed to 10 a.m.

Agenda, Item No., and Subject

Common Carrier—1—Modification of procedures in Docket No. 20814, investigation into AT&T's Multi-Schedule Private Line (MPL) tariff.

The prompt and orderly conduct of Commission business requires that less than 7-days notice be given.

CONTACT PERSON FOR MORE INFORMATION:

Samuel M. Sharkey, FCC Public Information Officer, telephone number 202-632-7260.

Issued: December 7, 1977; December 8, 1977.

[S-2042-77 Filed 12-9-77; 3:43 pm]

[6712-01]

8

FEDERAL COMMUNICATIONS COMMISSION.

PREVIOUSLY ANNOUNCED TIME AND DATE OF MEETING: Follows 9:30 a.m., Open Meeting, Thursday, December 8, 1977.

PLACE: Room 856, 1919 M Street NW., Washington, D.C.

STATUS: Closed Commission Meeting.

CHANGES IN THE MEETING: The following agenda item should be deleted and the time has been changed. The open meeting will commence at 10 a.m., and will be followed by the closed meeting.

Agenda, Item No., and Subject

Hearing—1—Briefs filed pursuant to Commission's Memorandum Opinion and Order accepting a late waiver of hearing in the San Diego, Calif., proceeding (Docket No. 20130).

The prompt and orderly conduct of Commission business requires that less than 7-days notice be given.

CONTACT PERSON FOR MORE INFORMATION:

Samuel M. Sharkey, FCC Public Information Officer, 202-632-7260.

Issued: December 7, 1977; December 8, 1977.

[S-2043-77 Filed 12-9-77; 3:43 pm]

[6712-01]

9

FEDERAL COMMUNICATIONS COMMISSION.

TIME AND DATE: Follows the Special Open Meeting, Thursday, December 15, 1977.

PLACE: Room 856, 1919 M Street NW., Washington, D.C.

STATUS: Closed Commission Meeting.

MATTERS TO BE CONSIDERED:

Agenda, Item Nos., and Subject

Hearing—1—Certification to the Commission of three procedural questions by Ad-

ministrative Law Judge David I. Kraushaar in the Media, Pennsylvania proceeding (Docket Nos. 20567-20569).

2—Petition for extraordinary relief in the J.B. Broadcasting of Baltimore, Ltd., Baltimore, Md., (Docket No. 21012).

3—Petition for extraordinary relief and motion to waiver Commission's rules so that the petition may be considered on its merits in the Lansing, Mich. AM-FM-TV, license renewal proceeding (Docket No. 20014).

CONTACT PERSON FOR MORE INFORMATION:

Samuel M. Sharkey, FCC Public Information Officer, telephone number 202-632-7260.

Issued: December 8, 1977.

[S-2044-77 Filed 12-9-77; 3:43 pm]

[6714-01]

10

FEDERAL DEPOSIT INSURANCE CORPORATION.

TIME AND DATE: 11 a.m., December 16, 1977.

PLACE: Board Room, 6th Floor, FDIC Building, 550 17th Street NW., Washington, D.C.

STATUS: Open.

MATTERS TO BE CONSIDERED:

Disposition of minutes of previous meetings.

Applications for Federal deposit insurance:

Flora Bank & Trust, a proposed new bank to be located at 1010 West North Avenue, Flora, Ill., for Federal deposit insurance.

The Permanent Savings Bank, located in Niagara Falls, N.Y., for Federal deposit insurance coincident with the conversion of the Niagara Permanent Savings and Loan Association into a mutual savings bank.

Citizens State Bank, a proposed new bank to be located at 1710 Grant Street, Roma, Tex. for Federal deposit insurance.

Heritage Bank, a proposed new bank to be located at the intersection of Fifth and Adams Streets, Camas, Wash., for Federal deposit insurance.

Valley Bank and Trust Company, a proposed new bank to be located on U.S. Routes 19 and 21, Green Valley (P.O. Bluefield), W. Va., for Federal deposit insurance.

St. Francis State Bank, a proposed new bank to be located at 3719 South Kinnickinnic Avenue, St. Francis, Wis., for Federal deposit insurance.

First Wyoming Bank-Gillette, a proposed new bank to be located at 701 Douglas Highway, Gillette, Wyo., for Federal deposit insurance.

Application for Federal deposit insurance and for consent to establish a branch (detached facility): Bank of Los Alamos, a proposed new bank to be located at 974 17th Street, Community Center, Los Alamos, N. Mex., for Federal deposit insurance and for consent to establish a branch (detached facility) to be located 35 feet southeast of the main office.

Application for consent to establish remote service facilities (electronic branches): Niagara County Savings Bank, Niagara Falls, N.Y., for consent to establish remote service facilities (electronic branches) in Sattler's Department Store, Boulevard Mall, Niagara Falls Boulevard, Amherst, N.Y.; in The Sample, Inc., Eastern Hills Mall, 4545 Transit Road, Clarence, N.Y.; in The Sample, Inc., Summit Park Mall, 6929 Williams Road, Westfield, N.Y.; and in Bells Supermarket, 5800 South Transit Road, Lockport, N.Y.

Request for an extension of time in which to establish a branch: The Arizona Bank, Phoenix, Ariz., for an extension of time to May 1, 1978 in which to establish a branch at the southeast corner of Hayden Road and Via Ventura, Scottsdale, Ariz.

Requests for reports on the competitive factors involved in proposed mergers, purchase and assumption transactions, or consolidations:

Request by the Comptroller of the Currency for a report on the competitive factors involved in the proposed merger of American Bank of Rock Island, Rock Island, Ill., with First National Bank of Rock Island, Rock Island, Ill.

Request by the Comptroller of the Currency for a report on the competitive factors involved in the proposed merger of Zions First National Bank, Salt Lake City, Utah; Richfield Commercial and Savings Bank, Richfield, Utah, and First State Bank, Salina, Utah.

Recommendations regarding liquidation of a bank's assets acquired by the Corporation in its capacity as receiver, liquidator, or liquidating agent of those assets:

Case No. 43,295-L—Lyons State Bank, Lyons, Wis.

Case No. 43,310-L—The Hamilton Bank and Trust Co., Atlanta, Ga.

Recommendations with respect to payment for legal services rendered and expenses incurred in connection with receivership and liquidation activities:

Bronson, Bronson & McKinnon, San Francisco, Calif., in connection with the receivership of United States National Bank, San Diego, Calif.

Bronson, Bronson & McKinnon, San Francisco, Calif., in connection with the liquidation of First State Bank of Northern California, San Leandro, Calif. (Two memorandum.)

Morgan, Lewis & Bockius, Philadelphia, Pa., in connection with the liquidation of assets acquired by the Corporation from Farmers Bank of the State of Delaware, Dover, Dela.

Chapman and Cutler, Chicago, Ill., in connection with the liquidation of State Bank of Clearing, Chicago, Ill. (Two memorandums.)

Sidley & Austin, Chicago, Ill., in connection with the liquidation of State Bank of Clearing, Chicago, Ill.

Foreman, Dyess, Prewett, Rosenberg & Henderson, Houston, Tex. in connection with the liquidation of International City Bank and Trust Company, New Orleans, La.

Lenle, Kelleher, Kohlmeyer & Matthews, New Orleans, La., in connection with the liquidation of International City Bank and Trust Company, New Orleans, La.

Sullivan & Worcester, Boston, Mass., in connection with the liquidation of the New Boston Bank and Trust Company, Boston, Mass.

Sullivan & Worcester, Boston, Mass., in connection with the receivership of Surety Bank and Trust Company, Wakefield, Mass.

Kaye, Scholer, Fieran, Hays & Handler, New York, N.Y., in connection with the liquidation of the Bank of Bloomfield, Bloomfield, N.J.

Kaye, Scholer, Fieran, Hays & Handler, New York, N.Y., in connection with the receivership of American Bank & Trust Co., New York, N.Y.

Casey, Lane & Mittendorf, New York, N.Y., in connection with the liquidation of Franklin National Bank, New York, N.Y.

Kaye, Scholer, Fierman, Hays & Handler, New York, N.Y., in connection with the liquidation of Franklin National Bank, New York, N.Y.

Lasser, Lasser, Sarokin and Hochman, West Orange, N.J., in connection with the liquidation of Franklin National Bank, New York, N.Y.

Taback & Hays, Jericho, N.Y., in connection with the liquidation of Franklin National Bank, New York, N.Y.

Morgan, Lewis & Bockius, Philadelphia, Pa., in connection with the liquidation of Centennial Bank, Philadelphia, Pa.

Hansell, Post, Brandon & Dorsey, Atlanta, Ga., in connection with the liquidation of the Hamilton National Bank of Chattanooga, Chattanooga, Tenn.

Miller & Martin, Chattanooga, Tenn., in connection with the liquidation of the Hamilton National Bank of Chattanooga, Chattanooga, Tenn.

Strasburger & Price, Dallas, Tex., in connection with the liquidation of the Hamilton National Bank of Chattanooga, Chattanooga, Tenn.

Meredith, Donnell & Edmonds, Corpus Christi, Tex., in connection with the receivership of Citizens State Bank, Carrizo Springs, Tex.

Fulbright & Jaworski, Houston, Tex., in connection with the receivership of Franklin Bank, Houston, Tex.

Meredith, Donnell & Edmonds, Corpus Christi, Tex., in connection with the liquidation of First State Bank & Trust Co., Rio Grande City, Tex.

Gibbs, Roper, Loots & Williams, Milwaukee, Wis., in connection with the liquidation of American City Bank & Trust Co., National Association, Milwaukee, Wis.

Recommendations with respect to the amendment of Corporation rules and regulations:

Memorandum and resolution proposing the final adoption of an amendment to Part 329 of the Corporation's rules and regulations, entitled "Interest on Deposits," to reduce from 2 to 1

percent the interest rate differential on loans secured by time or savings deposits.

Memorandum and resolution proposing the publication for comment of amendments to section 337.3 of the Corporation's rules and regulations, relating to "insider" transactions.

Memorandum and resolution proposing the final adoption of an amendment to Part 339 of the Corporation's rules and regulations, entitled "Loans in Areas Having Special Flood Hazards," so as to clarify the sample notices insured State nonmember banks may use when advising borrowers of the availability of Federal disaster relief assistance for improved real estate or mobile homes located or to be located in designated flood-prone areas.

Memorandum and resolution proposing the amendment of Part 341 of the Corporation's rules and regulations, entitled "Regulation of Transfer Agents," so as to revise Schedule B to Form TA-1, amend the instructions thereto, and temporarily extend the filing deadline for the schedule from January 30, 1978 to April 3, 1978.

Resolution updating delegations of authority in connection with the signing and delivery of checks drawn against funds on deposit by the Corporation.

Appeals, pursuant to the Freedom of Information Act, from the Corporation's earlier denial or partial denial of requests for records.

Memorand um proposing the relocation of the Richmond Regional Office.

Resolution revising the current time-in-grade qualifications requirements for positions classified in the GC-570 (Financial Institution Examining) series for persons serving at the Grades 15-18 level.

Memorandum proposing the revision of Corporation Circular 2600.1, entitled "FDIC Employees Advisory Councils," so as to reflect organizational changes occurring during 1977.

Memorandum proposing the approval of a contract for personal services in connection with the development of guidelines for electronic data processing and electronic funds transfer security.

Reports of committees and officers:

Report of the Executive Secretary regarding his transmittal of "no significant effect" competitive factor reports.

Minutes of the actions approved by the Committee on Liquidations, Loans and Purchases of Assets pursuant to authority delegated by the Board of Directors.

Reports of security transactions authorized by the Chairman.

Reports of the Director of the Division of Bank Supervision with respect to applications or requests approved by him and the various Regional Directors pursuant to authority delegated by the Board of Directors.

The meeting will be held in the Board Room on the sixth floor of the FDIC Building located at 550—17th Street NW., Washington, D.C.

CONTACT PERSON FOR MORE INFORMATION:

Alan R. Miller, Executive Secretary, 202-389-4446.

[S-2030-77 Filed 12-9-77; 2:16 pm]

[6714-01]

11

FEDERAL DEPOSIT INSURANCE CORPORATION.

TIME AND DATE: 10:30 a.m., December 16, 1977.

PLACE: Room 6135, FDIC Building, 550-17th Street NW., Washington, D.C.

STATUS: Closed.

MATTERS TO BE CONSIDERED:

Application for consent to establish a branch: Colonial Trust Co., Nashua, N.H., for consent to establish a branch at the intersection of Northeastern Boulevard and Congress Street, Nashua, N.H.

Applications or requests pursuant to section 19 of the Federal Deposit Insurance Act for the Corporation's consent to service of persons convicted of an offense involving dishonesty or a breach of trust as directors, officers, or employees of insured banks: Names of persons and of banks authorized to be exempt from disclosure pursuant to the provisions of subsection (c)(6) of the "Government in the Sunshine Act" (5 U.S.C. 552b(c)(6)).

Request for financial assistance pursuant to section 13(c) of the Federal Deposit Insurance Act: Name and location of bank authorized to be exempt from disclosure pursuant to subsections (c)(8) and (c)(9)(A)(ii) of the "Government in the Sunshine Act" (5 U.S.C. 552b(c)(8), (c)(9)(A)(ii)).

Application for Federal deposit insurance, for consent to merge and to a purchase and assumption transaction, and for consent to establish branches: The NAB Bank & Trust Co., Stratford, Conn. (in organization), for Federal deposit insurance; for consent to merge under its charter with the North American Bank and Trust Co., Wolcott, Conn., also an insured State nonmember bank; for consent to purchase the assets of and assure the liability to pay deposits made in the Bank of Stratford, Stratford, Conn., also an insured State nonmember bank; and for consent to establish four branches, all transactions to be effected under the title of "The North American Bank & Trust company."

Application for consent to a purchase and assumption transaction and for consent to establish branches: Princeton Bank and Trust Co., Princeton, N.J., an insured State nonmember bank, for consent to purchase the assets of and assume the liability to pay deposits made in Mid-Jersey National Bank, Woodbridge Township (P.O. Woodbridge), N.J., and for consent to establish the four offices of the latter bank as branches of the resulting bank.

Applications for consent to merge and establish branches:

The Chartered Bank of London, San Francisco, Calif., an insured State nonmember bank, for consent to merge under its charter and title with Commercial and Farmers National Bank, Oxnard, Calif., and for consent to establish the 16 offices of the latter bank as branches of the resulting bank.

Community Bank of Seminole, Seminole, Fla., an insured State nonmember bank, for consent to merge under its charter, and with the title of "Community Bank of Pinellas County," with Community Bank of St. Petersburg, St. Petersburg, Fla.; Community Bank of Largo, Largo, Fla.; Community Bank of Northside, St. Petersburg, Fla.; Community Bank of Clearwater, Clearwater, Fla.' Community Bank of Countryside, Clearwater, Fla.; and Community Bank of Redington, Redington Shores, Fla., and for consent to establish the 12 existing offices of the other six banks as branches of the resultant bank.

Request for revision of a condition previously imposed in connection with the approval of an application for consent to merge: The Mississippi Bank, Jackson, Miss., for revision of a condition previously imposed in connection with the approval of the bank's application for consent to merge with The First National Bank of Canton, Canton, Miss.

Recommendations regarding the liquidation of assets acquired by the corporation in its capacity as receiver, liquidator, or liquidating agent of those assets:

Case No. 43,286-SR—Sharpstown State bank, Houston, Tex.

Case No. 43,296-L—Northern Ohio Bank, Cleveland, Ohio.

Case No. 43,297—Banco Economias, San Genaro, P.R.

Case No. 43,298-L—American Bank & Trust, Orangeburg, S.C.

Case No. 43,299-NR—U.S. National Bank, San Diego, Calif.

Case No. 43,301-L—Franklin National Bank, New York, N.Y.

Case No. 43,302-L—State Bank of Clearing, Chicago, Ill.

Case No. 43,303-L—American Bank & Trust, Orangeburg, S.C.

Case No. 43,304-L—International City Bank and Trust Co., New Orleans, La.

Case No. 43,305-L—Franklin National Bank, New York, N.Y.

Case No. 43,307-L—Franklin National Bank, New York, N.Y.
Case No. 43,308-SR—Surety Bank and Trust Co., Wakefield, Mass.
Case No. 43,309-NR—U.S. National Bank, San Diego, Calif.
Case No. 43,311-L—American City Bank & Trust Co., National Association, Milwaukee, Wis.
Case No. 43,318-SR—American Bank & Trust Co., New York, N.Y.
Case No. 43,320-L—The Monroe Bank and Trust Co., Monroe, Conn.
Memorandum re The Peoples Bank (in liquidation), Willcox, Ariz.
Memorandum re U.S. National Bank (in receivership), San Diego, Calif.

Recommendations with respect to the initiation or termination of cease-and-desist proceedings or termination-of-insurance proceedings against certain insured banks: Names and locations of banks authorized to be exempt from disclosure pursuant to the provisions of subsections (c)(8) and (c)(9)(A)(ii) of the "Government in the Sunshine Act" (5 U.S.C. 552b (c)(8) and (c)(9)(A)(ii)).

Personnel actions regarding appointments, promotions, administrative pay increases, reassignments, retirements, separations, removals, etc.: Names of employees authorized to be exempt from disclosure pursuant to the provisions of subsections (c)(2) and (c)(6) of the "Government in the Sunshine Act" (5 U.S.C. 552b (c)(2) and (c)(6)).

The meeting will be held in room 6135 of the FDIC Building located at 550 17th Street NW., Washington, D.C.

CONTACT PERSON FOR MORE INFORMATION:

Alan R. Miller, Executive Secretary, 202-389-4446.

[S-2031-77 Filed 12-9-77; 2:16 pm]

[6720-01]

12

AGENCY HOLDING THE MEETING: Federal Home Loan Bank Board.

TIME AND DATE: 10 a.m., December 15, 1977.

PLACE: 320 First Street NW., Room 630, Washington, D.C.

STATUS: Open Meeting.

CONTACT PERSON FOR MORE INFORMATION:

Mr. Robert Marshall 202-376-3012.

MATTERS TO BE CONSIDERED:
Satellite Office Application—South Gate Federal Savings and Loan Association, Newport, Ky.
Limited Facility Application—Berkeley Federal Savings and Loan Association of New Jersey, Millburn, N.J.
Consideration of Sale of Certificate of Sheriff's Sale—Cold Storage Warehouse, 4021 South Normal Avenue, Chicago, Ill.
Consideration of Amendments to Part 500 Relating to Organization and Channeling of Functions.
Satellite Facility Application—Charleston Federal Savings and Loan Association, Charleston, W. Va.
Consideration of 90 and 95 percent Loan Limits.
Consideration of Implementation of the Housing and Community Development Act of 1977 (Farm Loans and Line-of-Credit Loans).

ANNOUNCEMENT IS BEING MADE AT THE EARLIEST PRACTICABLE TIME.

No. 107, December 7, 1977.

[S-2034-77 Filed 12-9-77; 2:40 pm]

[6720-01]

13

AGENCY HOLDING THE MEETING: Federal Home Loan Bank Board.

TIME AND DATE: At the conclusion of the open meeting to be held at 10 a.m., December 15, 1977.

PLACE: 320 First Street, Room 630, Washington, D.C.

STATUS: Closed Meeting.

CONTACT PERSON FOR MORE INFORMATION:

Mr. Robert Marshall 202-376-3012.

MATTERS TO BE CONSIDERED:
Consideration of Proposed 1978 Budget of the Office of Neighborhood Reinvestment.
Consideration of FSLIC Assessments for fiscal year 1978.

ANNOUNCEMENT IS BEING MADE AT THE EARLIEST PRACTICABLE TIME.

No. 108, December 9, 1977.

[S-2035-77 Filed 12-9-77; 2:40 pm]

[6720-01]

14

AGENCY HOLDING THE MEETING: Federal Home Loan Bank Board.

FEDERAL REGISTER CITATION OF PREVIOUS ANNOUNCEMENT: Vol. 42, No. 234, Page 61704, December 6, 1977.

PREVIOUSLY ANNOUNCED TIME AND DATE OF MEETING: 9:30 a.m., December 9, 1978.

PLACE: 320 First Street NW., room 630, Washington, D.C.

STATUS: Open Meeting.

CONTACT PERSON FOR MORE INFORMATION:

Mr. Robert Marshall 202-376-3012.

CHANGES IN THE MEETING: The following item has been withdrawn from the agenda for the open meeting.
Service Corporation Activity Application—First Federal Savings and Loan Association of Chicago, Chicago, Ill.

No. 109, December 9, 1977.

[S-2036-77 Filed 12-9-77; 2:40 pm]

[6730-01]

15

AGENCY HOLDING THE MEETING: Federal Maritime Commission.

FEDERAL REGISTER CITATION OF PREVIOUS ANNOUNCEMENT: December 9, 1977, 42 FR 62248.

PREVIOUSLY ANNOUNCED TIME AND DATE OF THE MEETING: December 14, 1977, 10 a.m.

CHANGES IN THE MEETING: Addition of the following item to the open session:

8. Agreement No. 7680-36: Modification of the American West African Freight Conference to establish intermodal authority.

[S-2037-77 Filed 12-9-77; 3:06 pm]

[6750-01]

16

AGENCY HOLDING THE MEETING: Federal Trade Commission.

TIME AND DATE: 2 p.m., Thursday, December 15, 1977.

PLACE: Room 532 (open); Room 540 (closed), Federal Trade Commission Building, 6th Street and Pennsylvania Avenue NW., Washington, D.C. 20580.

STATUS: Parts of this meeting will be open to the public. The rest of the meeting will be closed to public.

MATTERS TO BE CONSIDERED:

Portions open to Public: (1) Oral argument in Fruehauf Corporation, Docket No. 8972.

Portions closed to the Public: (2) Executive Session for consideration of disposition in Fruehauf Corporation, Docket 8972, immediately following oral argument.

CONTACT PERSON FOR MORE INFORMATION:

Wilbur T. Weaver, Recorded Message: 202-523-3806.

[S-2038-77 Filed 12-9-77; 3:43pm]

federal register

TUESDAY, DECEMBER 13, 1977
PART II

DEPARTMENT OF THE INTERIOR

Office of Surface Mining Reclamation and Enforcement

■

SURFACE MINING RECLAMATION AND ENFORCEMENT PROVISIONS

[4310-05]

Title 30—Mineral Resources

CHAPTER VII—OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT, DEPARTMENT OF THE INTERIOR

SURFACE MINING RECLAMATION AND ENFORCEMENT PROVISIONS

Final Rules

AGENCY: Office of Surface Mining Reclamation and Enforcement, Department of the Interior.

ACTION: Final rules.

SUMMARY: The regulations in this chapter set out the Department of the Interior's Surface Mining Reclamation and Enforcement program as required by the Surface Mining Control and Reclamation Act of 1977 (Act). The Act requires that the Secretary of the Interior publish initial environmental protection regulations that are applicable to all coal mining operations regulated by the States until a State has an approved regulatory program or a Federal regulatory program is implemented in that State.

EFFECTIVE DATE: December 13, 1977.

ADDRESSES: Director, Office of Surface Mining Reclamation and Enforcement, Department of the Interior, Washington, D.C. 20240, 202-343-4237.

FOR FURTHER INFORMATION CONTACT:

Paul Reeves, 202-343-4237.

SUPPLEMENTARY INFORMATION: The Surface Mining Control and Reclamation Act of 1977 (the Act), Pub. L. 95-87, requires the Secretary of the Interior to publish initial environmental protection regulations that are applicable to all coal mining operations on lands that are regulated by the States until a State has an approved regulatory program or a Federal regulatory program is implemented in that State. These regulations were developed in consultation with the Environmental Protection Agency, the Department of Agriculture and the Corps of Engineers. The Act also requires the Secretary to implement a Federal enforcement program by February 3, 1978, which lasts for the duration of the initial program in each State. Regulations for Federal financial assistance to States for reimbursement of incremental enforcement costs during the initial regulatory program and for development, administration and enforcement of permanent State regulatory programs for the control of surface coal mining and reclamation operations are also required by the Act. A brief discussion of the major parts in the regulations follows.

Part 700 is a general statement of the scope, objectives and applicability of these regulations. It also states the responsibilities of the Secretary, the Director and the States and defines terms used throughout the chapter. The authority of the Secretary, the Director of the Office of Surface Mining Reclamation and Enforcement (OSM or the Office) and other governmental bodies is described, their responsibilities distinguished and the Federal-State delegation of duties described.

Part 710 introduces the initial regulatory program and includes definitions, a statement of applicability and provisions for the special exemption for small operators.

Part 715 contains the general initial performance standards and includes regulations governing the operator's general obligation to comply with the initial standards requiring restoration of disturbed areas to suitable postmining use, backfilling and grading, off-site disposal of spoil and waste materials, topsoil handling, protection of the hydrologic system, construction, inspection and maintenance of dams, use of explosives, and revegetation.

Part 716 contains the special initial performance standards and includes regulations governing steep slope mining, prime farmlands, mountaintop removal, special bituminous coal mines, anthracite coal mines and Alaska coal mining operations.

Part 717 contains initial performance standards for underground mines and includes regulations governing the operator's general obligation to comply with the initial standards requiring signs and markers, backfilling and grading, protection of the hydrologic system, construction, inspection and maintenance of dams, topsoil handling and revegetation.

Part 718 contains procedures for adoption of State laws and regulations when they prescribe more stringent standards of performance than the general or special performance standards of this chapter provide.

Part 720 sets forth the regulations governing enforcement activities to be carried out by the States during the initial regulatory program.

Part 721 provides for Federal inspections on the basis of (1) at least two consecutive State inspection reports indicating a violation; (2) information provided by a State or person indicating a violation; (3) random inspections of each operation at least once each six months; and (4) the Secretary's own initiative.

Part 722 sets out the general procedures governing issuance by Federal inspectors of orders of cessation, notices of violation and orders to show cause why a permit should not be suspended or revoked.

Part 723 contains the regulations governing the assessment of civil penalties and prescribes the use of a mandatory point system in determining the amount of the penalty.

Part 725 sets forth the policies and procedures for reimsbursements to States for the incremental costs of enforcing performance standards during the initial regulatory program.

Part 740 sets forth the policies and procedures for grants to States to develop, administer and enforce approved State programs for the control of surface coal mining and reclamation.

Part 795 provides for financial and other assistance to eligible small coal mine operators in determining the hydrologic consequences of mining and reclamation. The analyses are to be performed by qualified public and private laboratories and paid for by the regulatory authority.

Part 830 provides a procedure for dealing with acts of job discrimination due to exercise of rights under the Act.

CONCURRENCES

Section 501(a)(B) of the Act requires that the written concurrence of the Administrator of the Environmental Protection Agency be obtained with respect to regulations relating to air or water quality standards promulgated under the Federal Water Pollution Control Act and the Clean Air Act. By letter dated November 18, 1977, the Administrator of the Environmental Protection Agency has concurred with these regulations for the initial regulatory program.

Section 510(d)(1) of the Act states that the regulatory authority shall follow certain procedures in granting permits to mine on prime farmland. Among those procedures is a requirement that the permit shall be issued "pursuant to regulations issued hereunder by the Secretary of the Interior with the concurrence of the Secretary of Agriculture * * *." Specifications for soil removal, storage, replacement and reconstruction for prime farmland have been developed by the Secretary of Agriculture in accordance with § 515(b)(7) and are included herein. By letter dated November 16, 1977, the Secretary of Agriculture has concurred with the prime farmland provisions in these regulations.

Section 515(f) of the Act requires that regulations pertaining to coal mine waste piles and dams be promulgated with the written concurrence of the Chief of Engineers of the Corps of Engineers. By letter dated November 30, 1977, the Chief of Engineers has concurred with such regulations.

BACKGROUND

In anticipation of enactment, the Department of the Interior organized a task force composed of more than 90 people from nearly 20 Federal agencies to prepare for the initial regulatory program. Since its creation in April 1977, the task force has maintained a working relationship with the National Governors' Conference. Several general and workshop meetings with State officials were held. After public notice, general informational meetings were held in Washington, D.C. on August 9 and 10, 1977, for the public. Early task force drafts of the regulations were given wide circulation to the States and the public prior to publication of the proposed regulations. Numerous comments were received and were considered by the task force.

The Surface Mining Control and Reclamation Act of 1977 was signed into law on August 3, 1977. Proposed rules implementing the Act were published in the FEDERAL REGISTER on September 7, 1977 (42 FR 44920). Public hearings on the proposed rules were held on September 20-22, 1977, in Washington, D.C.,

Charleston, W. Va., St. Louis, Mo., and Denver, Colo. At the close of the comment period on October 7, 1977, over 300 commenters had submitted written comments, many of which were very lengthy. The transcripts of the public hearings, all written comments, many technical studies and manuals and generally accepted engineering practice have been considered in the development of these final regulations. A document that identifies the major technical publications, studies and manuals relied upon in developing these regulations has been prepared by the task force.

Comments pertaining to each part of this chapter or each section of the performance standards have been summarized and are stated below. In this way it is hoped that the public will understand the response to each comment and will therefore have a better understanding of the bases and purposes of the final regulations. General comments are treated below first, followed by specific comments directed to particular parts or sections of the regulations.

GENERAL COMMENTS

1. Several commenters objected that the public was not given enough time to adequately respond to the proposed regulations. The Act requires that the final rules for the initial program be published within 90 days of enactment. As a result of this statutory mandate, it was necessary to limit the comment period to the 30 days prescribed by the Act. Despite the relatively short comment period, public participation has been extensive and has covered nearly every aspect of the proposed regulations. Due to the enormous volume of comments to be considered and time required for review and concurrence by other agencies, it was impossible to extend the comment period and still adhere closely to the statutory deadline.

2. Many commenters objected to the absence of an economic impact analysis accompanying the regulations. The Office relied on a study compiled by the Congressional Budget Office, found in the April 22, 1977, Report of the Committee on Interior and Insular Affairs, House of Representatives. The Committee concluded that enactment of H.R. 2, will have virtually no inflationary impact on the American economy. Since the regulations closely comport with the Act, an economic impact analysis was not deemed necessary for the initial program. However, an economic impact analysis will be prepared for the permanent program regulations.

3. Several commenters objected that the regulations were unreasonably inflexible. These commenters argued that the proposed regulations did not adequately take account of regional differences. In response to this objection, a number of sections allow the regulatory authority the flexibility to approve alternative methods of compliance. However, the underlying policy to ensure a fair and generally applicable set of standards for all mining operations remains intact. Further, uniform standards ensure consistent enforcement and avoid conflicting interpretations of the regulations in different regions.

4. Several commenters expressed the fear that many mining operations would be forced to close as a result of what was believed to be overly strict regulations. These regulations fairly interpret the intent of Congress and the Act.

5. A number of commenters argued that existing State regulations are sufficient to ensure the purposes of the Act and therefore Federal regulations are unnecessary. This view was not accepted. A specific intent of the Act was to provide minimum uniform standards to regulate surface mining.

PART 700—GENERAL

1. Sections 700.1 and 700.2 state the scope and objectives of the final regulations. Several commenters objected to the absence of an objective to balance the environmental protection standards with coal production goals. Section 102 of the Act lists 13 purposes, one of which is to "(f) assure that the coal supply * * * is provided and strike a balance between protection of the environment and agricultural productivity and the Nation's need for coal as an essential source of energy." This purpose and the 12 other purposes listed in § 102 of the Act are indisputably the goals of the Act and the program administered by the Office of Surface Mining Reclamation and Enforcement.

Section 700.2 of these regulations states the four broad objectives of Chapter VII to establish a regulatory program to implement the Act. Therefore, this suggestion was not accepted.

(2) Section 700.4(b) was added to the regulations to further define the role of the Director in relationship to the management of Federal land resources as a result of administering these regulations. This section is necessary to comply with the provisions of other laws which place responsibility in other Federal agencies for supervising the postmining use of Federal lands.

3. Several commenters suggested changes in the definitions of "Indian lands" and "surface coal mining operations" in § 700.5. The proposed definitions have been retained to remain consistent with the Act.

4. Although the term "permit" was defined, the proposed rules did not contain a definition of the term "permittee." A definition of "permittee" has been added to correct this omission.

5. Several commenters noted that the definition of "state lands" conflicted with the commonly held meaning and was confusing. Accordingly, the term was deleted in the final regulations and the phrase, "operations on lands regulated by a state" was substituted.

6. The definition of "ton" found in § 837.5 of the Abandoned Mine Reclamation Fund regulations has been included in § 700.5 and is applicable throughout the chapter.

7. Several commenters suggested defining other terms such as "mining area," "mine property," "permit area," "renewal permit" and "interim regulatory authority." These suggestions were not accepted since many of the terms would overlap other definitions creating confusion, and others have commonly accepted meanings in the mining industry.

8. Several commenters requested that a definition of "professional specialist" be added to include registered land surveyors as well as registered professional engineers. This suggestion is rejected because § 515 of the Act specifically requires that various duties be performed by registered professional engineers. Where the Act does not specify that the work be performed by a registered professional engineer, the regulations have been revised to permit some flexibility while maintaining high professional standards in the performance of the work.

9. Section 700.5 provides guidance for the proper interpretation of the key phrase "significant, imminent environmental harm." It is important to keep in mind that this section is not a true definition because in each instance the key words of both the phrase and the regulations are very general. Merely substituting one general word for another is not satisfactory as a definition.

Commenters objected that the concept of "reasonable time" in paragraph (b) of the definition of "significant, imminent environmental harm to land, air or water resources" was vague. The paragraph has been clarified so that the "reasonable time" is the same "reasonable time" used in § 521(a)(3) of the Act. Thus, the environmental harm is imminent if it is occurring or if it may reasonably be expected to occur if the violation, condition or practice remains uncorrected until the end of the "reasonable time" for abatement referred to in § 521(a)(3). Further, if the harm may not reasonably be expected to occur before the end of such "reasonable time," it is not imminent. In such a case, a notice of violation under § 521(a)(3), rather than a cessation order under § 521(a)(2), would be appropriate.

An example may further clarify this point. Twenty days may be a "reasonable time" for abatement of a particular spoil violation under normal operating conditions. If within that time "significant environmental harm" may reasonably be expected to occur from that mishandled spoil, then the "significant, environmental harm" is imminent, and a shorter time for abatement will be required. If, on the other hand, a significant environmental harm may not reasonably be expected to occur, then the normal abatement time would be allowed under § 521(a)(3).

Comments were received that the definition of "significant" in paragraph (a) was improper in several respects. It was argued that the definition could result in the ordinary practices of mining being found to create a "significant, imminent environmental harm". While this definition and the statutory phrase itself could be so interpreted in unusual circumstances such as areas of unusual topography or geology where soil stability cannot be achieved, the proper interpre-

tation of the statutory phrase and the definition in the regulations does not normally encompass mining practices in conformity with the Act and these regulations.

Comment was also received that the use of the word "appreciable" in the regulations is inconsistent with the word "significant" in the Act. By the use of the word "appreciable" the meaning of the statutory word "significant" is not prejudged in any particular factual setting. It is anticipated that practice and enforcement proceedings will eventually elaborate the meaning of this critical phrase.

10. Section 700.13 contains procedures for prior notice of citizen suits. Comments were received that OSM should require the notice to include the time and location of the alleged violation. The comments were accepted. Of course, all the complainant is required to do is to give the information available to him.

11. A comment was received that notification to a State under § 700.13 should be to the Governor rather than the State regulatory authority. This comment was rejected because notice should be given to the agency most familiar with the circumstances.

12. Section 700.15, Computation of Time, was inserted to clarify the method of computing deadlines set out in various parts of the regulations.

PART 710—INITIAL REGULATORY PROGRAM

Parts 710–725 contain the initial regulatory program regulations. Parts 700, 740 and 830 are included in this publication for reasons of convenience and ease of administration. The standards and procedures of the initial regulatory program should not be confused with the standards and procedures that will be promulgated for the permanent regulatory program. The initial regulatory program represents a phasing-in of the full standards and procedures of the permanent program consistent with the intent of Congress. The initial regulatory program standards do not implement the provisions of the Act in its entirety and will not prejudice the development of any standard in the permanent regulatory program. Permanent regulatory program standards will cover the full range of standards and procedures required by the Act and may vary from those of the initial regulatory program depending on the requirements of the Act and experience gained during the initial program.

1. One commenter suggested that § 710.4(b) be revised to require a State to issue permits and perform other duties during the initial program only if an adequate State staff exists. This suggestion is not accepted since it has no basis in the Act. Section 502 of the Act requires that if a State regulates surface coal mining operations, such operations must comply with the Act and regulations.

2. The requirements of § 522(e) of the Act which prohibit mining on certain lands and were effective upon enactment have been referenced in § 710.4(b).

3. Commenters suggested that proposed definitions be changed or definitions be added to § 710.5. In response to these comments, definitions were added for terms that have been added or for technical terms that comment indicated required definitions. Those terms are: "essential hydrologic functions", "flood irrigation", "subirrigation", "valley fill and head-of-hollow fill" and "waste". A number of other definitions were modified in the interest of improving clarity. For example, "settling pond" was changed to "sedimentation pond". The definition of the term "safety factor" was incorporated here and deleted from § 715.18(b). The principal sources of technical definitions were American Geological Institute, Glossary of Geology, 1972; American Society of Civil Engineers, Nomenclature for Hydraulics, 1962; U.S. Bureau of Mines, Dictionary of Mining, Mineral, and Related Terms, 1968; Bituminous Coal Institute, Glossary of Current and Common Bituminous Coal Mining Terms, 1947; Soil Science Society of America, Glossary of Soil Science Terms, 1970; and Soil Conservation Society of America, Resource Conservation Glossary, 1976. Numerous alternative definitions that were suggested were largely from standard reference works or made slight modifications that did not represent a substantive improvement or alleviate confusion.

4. Section 710.11 sets forth the general obligations under the Act of those mining coal, describes the application of those obligations on May 4, 1978, and for the application of those standards to certain structures and facilities. Numerous comments were received on this section, almost all addressing paragraph (d)(2) granting the limited extension of time beyond May 4, 1978, for pre-existing non-conforming structures and facilities.

A comment was received suggesting that paragraph (a) be changed to clarify that the interim standards do not apply in States in which only "collateral" regulation of mining occurs. As examples of such "collateral" regulation, the commenter cited minimum wage laws and water quality control. Regulation by the State minimum wage law does not constitute regulation in a State so as to make the interim standards applicable. However, regulation of water quality relating to mining does in fact constitute regulation of mining in a State so as to make all the initial standards applicable in that State. Under § 502 of the Act any regulation in a State within the scope of any of the initial performance standards is regulation that triggers the application of the Federal initial performance standards within that State.

5. A number of comments were received that the Act provided no legal basis for an extension beyond May 4, 1978, for complying with the performance standards. These comments suggested that the extension in § 710.11(d)(2) should be deleted. A number of other commenters suggested the extension be expanded. Extensions were suggested as follows: (1) for the life of the structure or facility, (2) for as long as they meet State and Federal water quality standards and effluent limitations and have been approved by the regulatory authority, (3) for the life of the structure, if the regulatory authority determines that reconstruction would cause environmental harm, (4) for the life of the structure, if the regulatory authority determines that the structure or facility will not constitute an imminent danger to the health or safety of the public or a significant, imminent environmental harm, and (5) as long as a "good faith" effort to correct the problem is being made. After careful consideration of these comments and the Act and its legislative history, no change in the regulations has been made.

Section 710.11(d)(2) allows a limited exemption in specified circumstances. It is not a blanket invitation to delay the reconstruction of pre-existing structures and facilities. Structures and facilities which can be reconstructed by May 4, 1978, must be reconstructed by that date. Given the length of time between enactment of the Act and the May 4 deadline, the vast majority of the reconstruction can be accomplished by May 4, 1978.

In order to qualify for an extension, the operator must show that using his best effort and all resources available he cannot complete reconstruction by May 4, 1978. He must then submit a plan for reconstruction designed by a professional engineer. The requirement that a professional engineer design the plan is appropriate because it is anticipated that extensions will be justified for only the largest and most complex reconstruction jobs. The work on such a job must start as soon as possible after the issuance of these regulations. The Department believes this narrow approach is required by the Act. The 1974 surface mine reclamation bill contained a limited impossibility defense when it was introduced on the House floor and when it went to the Conference Committee. The Conference Committee deleted this defense, and it was never again inserted into the bill. Moreover, the nine-month (longer for small operators) delay in imposition of the initial performance standards is the time that Congress gave for the adjustment of existing mining practices and pre-existing structures and facilities. On the other hand, the Secretary has the duty, within the constraints of the Act, to resolve practical problems on a case-by-case basis. Thus, the regulations provide a limited extension of time in demontrated cases of impossibility.

6. Comments were received that § 710.11(d)(2) should be changed by explicitly requiring the operator to make a showing that a "good faith" attempt had been made to accomplish the reconstruction by May 4, 1978. No change was made as a result of this comment because, as explained above, the regulation already requires the appropriate showing.

7. A commenter suggested that the phrase "physically impossible" be clarified. This was not done because decisions will need to be made on a case-by-case basis, after considering all relevant facts.

8. A commenter requested clarification of the phrase "preexisting facilities and structures" in § 710.11. It is impossible to give a definitive list. However, under present interpretation, sedimentation ponds, haul roads, off-site spoil storage facilities including head-of-hollow fills, and slurry ponds or waste impoundments are included. Facilities and structures not serving active mining areas after May 4, 1978, need not be reconstructed. An example is existing sedimentation ponds draining watersheds in which coal removal has ended, even though reclamation is continuing.

9. Section 710.12 provides for applications for and approval of exemptions for small operators as set forth in § 502 of the Act. Several comments were received that the Act does not allow for a process of applications and Secretarial grants of the small operator exemption, but rather, creates the exemption by operation of law. Although the exemption is created by law, the Secretary is not prohibited from adopting an application and approval process. Failure to provide an application and approval process would lead to impossible enforcement problems in the field. It would be extremely difficult for an inspector to enforce standards until all claims of right to exemption were investigated and resolved. Such an investigation would be practically impossible inasmuch as most of the critical facts of interlocking ownership and coal production are beyond the inspector's reach. Therefore, the only effective and rational way to exercise the Department's obligations under the Act was to adopt an application and approval process.

10. Several comments were received that the Act does not allow the attribution of coal produced by other mines owned or controlled by the applicant. This argument is not accepted. The Act grants the exemption to "operators" not "operations", and the legislative history makes it clear that in determining eligibility all the various patterns of ownership are to be investigated so as to base the determination on the total production and resources of the applicant.

11. A comment was received that the procedures for obtaining an exemption were too complex for some small operators. It is believed that this is not the case, and the Office will continue to assist any operator who seeks advice.

12. A commenter requested that the definition of "permittee" be changed to incorporate the idea that there had been no change in ownership after May 2, 1977, so as to prevent the sale or transfer of a permittee's business organization from a large operator to a small operator in order to qualify for the exemption. This idea was accepted in part. Section 710.12(c)(2)(iii) was adopted to achieve that result for substantial changes in ownership, except for changes due to death of an owner.

13. A comment was received that § 710.12 should require that a small operator's mine be in operation prior to August 3, 1977. No changes were made as a result of this comment because the regulations interpret § 502(c) of the Act to also exempt operations which had permits but did not mine prior to August 3, 1977.

14. Comments were made that there should be a filing deadline for applications for the exemption in order to allow orderly consideration of the applications. This comment was accepted, and a filing date of February 3, 1978, was included.

15. Comments were received that attribution should be based on ownership as well as control of coal production. This comment was accepted. Ownership is a clear and measurable indication of economic benefit from the production.

16. Commenters suggested that a method should exist for the revocation of an exemption if it was erroneously granted or production during the year exceeded 100,000 tons. Language was added to make this explicit.

17. Comments were received that the regulations should grant exemptions only to mines operating under valid permits and should not allow exemptions to those who mined in 1976 without permits. No change was made as a result of this comment because the proper test under the Act is whether or not the current permit was issued prior to August 3, 1977.

PART 715—GENERAL PERFORMANCE STANDARDS

NOTE.—The general performance standards in this part are applicable during the initial regulatory program. They are based on the standards referenced in § 502(b) of the Act and include requirements which are necessary to meet those standards. Other performance standards in § 515(b) of the Act have been used as a guide whenever possible in developing the standards to fully implement the initial program.

1. Several commenters objected to the requirement in § 715.11(b) for all authorizations to permittees to be maintained at or near the mine site. They suggested that only the permit and related documents be made available at the site or at a central company office. These suggestions were not accepted. The Act requires compliance with applicable State and Federal laws and regulations, thus availability of other permits and related documents is essential in determining compliance with the Act. In order to ensure effective and efficient enforcement it is necessary for permits and related documents to be readily available to State and Federal officials in the course of their on-site inspections. However, the phrase "at or near the mine site" is intended to include offices in nearby towns.

2. Commenters objected to the scale requirements of the maps required by § 715.11(c) as being unreasonable. In response to these objections, the scale requirement was changed to 1:6,000 (1 inch equals 500 feet) or larger scale. This scale is consistent with the smallest map scale for mine maps required by the Mining Enforcement and Safety Administration (30 CFR 77.1200).

3. Many commenters suggested that a 30-day deadline for submittal of certified mine maps required by § 715.11(c) would overtax the available engineers and surveyors. The deadline is extended to 60 days in the final regulations to accommodate the anticipated increase in demand for engineers and surveyors.

4. A few commenters questioned the meaning of the phrase "where any element of the operations is regulated by a State" in § 715.11(a). The phrase is rooted in § 502(a) of the Act and is intended to be a general statement of applicability consistent with § 710.11 of these regulations. The performance standards apply to coal mining operations currently regulated by a State under other State or Federal statutes, including the Federal Water Pollution Control Act and State laws governing mining.

Section 715.12 *Signs and markers.*

1. Section 715.12, signs and markers, specifies requirements for identifying and warning signs and for markers of permit perimeters and buffer zones within the permit area. The marking of permit boundaries, blasting areas, and other special activity areas where caution must be exercised by the permittee and other personnel is common in many States. In response to the many comments received, these regulations are simplified in the interest of consistency with State rules during the initial program.

The regulations seek to balance the desire to reduce cost and bother to the permittee against the need for ample identification in the interest of citizen participation, inspection by the regulatory authority, employee guidance and protection of the public. Proper marking of perimeters and working areas will be particularly valuable in preventing equipment operators from inadvertently entering areas not authorized for disturbance and should help eliminate arguments over location of perimeters. Many commenters objected to the number of markers required and the specificity of spacing requirements. Others generally supported the proposed regulation in the interest of citizen monitoring of coal mining operations. A third principal group of commenters generally argued for giving greater latitude to regulatory authorities in sign and marker requirements.

2. Commenters objected to the requirement in § 715.12(b) that identification numbers of other authorizations to mine be shown on the grounds that if all such numbers were shown signs would be very large. In response, that section has been revised to require only the current mining and reclamation permit number issued by the regulatory authority applying to the posted permit.

3. There was general agreement among commenters that more latitude should be allowed in the type of markers and minimum spacing for perimeter markers. Section 715.12(c) has been modified to provide for markers as deemed appropriate by the regulatory authority. Many commenters questioned the practicability of maintaining markers after May 3, 1978, in an active pit showing the boundary of coal mined. This requirement has been deleted in view of the

availability of a certified map as required in § 715.11(c).

4. Comments on buffer zone markers, § 715.12(d), were similar to those on perimeter markers, mainly arguing for greater flexibility in type and minimum spacing. This requirement has been revised to make it consistent with those relating to perimeter markers. Further, it should be noted that the requirement for buffer zone markers does not preclude mining through streams where specifically approved by the regulatory authority under the controlled conditions established by § 715.17.

5. A number of commenters suggested that blasting signs should only be required at the blasting areas. This suggestion was rejected on the grounds that all persons entering a property where blasting is carried on should be informed of the potential hazards.

6. Many commenters objected to the requirement in § 715.12(f) for topsoil markers because topsoil storage areas are well known to employees and disturbance of topsoil storage areas is not currently a significant problem. These comments were rejected because these regulations require more care in topsoil handling and storage than has previously been the practice, and the requirement represents a minor burden to the operator. Markers, rather than specific signs, will be required.

Section 715.13 *Postmining use of land.* Section 715.13, Postmining use of land, establishes criteria and procedures to determine the postmining use of the land. An achievable postmining land use within a permit area is essential to achieving the purposes of the Act. The regulations are intended to supplement existing land planning capabilities of States and local governments.

1. Comments objecting to the word "promptly" in paragraph (a) have resulted in a change to "in a timely manner." The Act clearly intends for reclamation work to be carried out as an integral part of the mining operation. Section 515(b)(16) of the Act requires that under the permanent program reclamation efforts must proceed "as contemporaneously as practicable." The words, "in a timely manner" are intended to fulfill the intent of the Act without going as far as the permanent program requirement.

2. Some commenters suggested that a higher and better use cannot be the objective of reclamation. These comments were not accepted. Section 515(b)(2) of the Act requires that this objective be met when the land is not returned to its premining use. A higher and better use determination based on the landowner input and local capability of the land for a higher or better use is paramount in reclaiming mined lands when the land is not returned to its premining condition.

3. Commenters suggested that areas within a region should be referenced as a means of approving a postmining land use even if such use is not necessarily compatible with those of the immediately surrounding area. The intent of the proposed regulations was to allow consideration of land uses in areas of similar terrain and climate within the surrounding region. In considering a wider area, many differing postmining land uses could come into play thereby not restricting the landowner and the regulatory authority to a set of predetermined uses for the land where, for example, homesite development is needed. Regardless of the reference area used, it is essential that the postmining use be compatible with the immediately adjacent areas. Changes have been made in § 715.13(b) to incorporate reference to the surrounding area.

Under § 715.13(b)(3), the historic use of the land must be considered in certain circumstances. Historic use should usually be determined by reference to the dominant use during the preceding 20 years, or longer period if the dominant use cannot be determined for that 20 year period.

4. Comments suggesting that the permittee should not be held responsible for inadequate reclamation of lands by other mine operators implies that the standard for determining the postmining land use is the use of the land immediately before the current mining. Section 515(b)(2) makes clear that the intent of the Act is for lands to be restored to the capability of supporting uses which it could support prior to any mining. The regulations require that such lands be returned to the highest and best use possible that is compatible with surrounding areas. Since much of the land that previously had been mined was left in extremely poor condition and the Act does not intend this use to be the basis for determining the postmining land use, it is intended that lands that previously had been mined will have a postmining use that is equal to or higher or better than it was before any mining occurred. This objective will be based on land uses in the surrounding area.

5. Commenters noted that the proposed regulations did not allow impoundments of water to remain in the postmining land use. It is recognized that such impoundments may be a beneficial part of the postmining use and should be permitted. The regulations have been changed to include impoundments of water in the categories of alternative land uses.

6. Some commenters objected to the requirement in § 715.13(d)(6) that plans be designed by "a registered professional engineer, or other professional, who is knowledgeable about the proposed land-use category * * *". The intention was to insure that the plans are designed by a competent person in accordance with high professional standards. The regulations have been changed slightly to permit some flexibility but maintain the high standard by also allowing the design to be made under the supervision of the professional person.

7. Other comments objecting to the requirement in § 715.13(d) (4) and (5) for letters of commitment have been considered. Some clarifying language has been added, but the basic intent of the regulations remains that firm assurances must be given before approval of the mining application that the postmining use will be successfully completed. Such assurances are necessary to show that there is "reasonable likelihood" of the proposed use being achieved as required by § 515(b)(2) of the Act.

Section 715.14 *Backfilling and grading.*

1. A few commenters argued that permittees should be allowed to distribute box cut spoils on other than the mined area and grade these spoils to blend in with the surrounding original contour. This type of operation is permissible under the regulations if: (1) it conforms to the other requirements such as topsoil removal and grading of the mined area to approximate original contour; (2) the box cut spoils are also graded to approximate original contour or to the lowest practicable grade; (3) the reclamation achieves an ecologically sound land use compatible with the surrounding region, and (4) other provisions pertaining to spoil handling in all types of mines are met.

Section 515(b)(3) of the Act requires that operations be conducted in a manner that restores the approximate original contour of the land except in mountaintop removal operations or in operations involving thick or thin overburden. Section 515(b)(3) of the Act requires any excess overburden to be graded and compacted (where advisable) to attain the lowest grade possible but not exceeding the angle of repose of the spoil. However, the natural angle of repose of certain types of natural materials may be too steep to control erosion and increases in total suspended solids. Thus, the postmining slopes are likely to be reduced below the angle of repose in many situations. The disposal of excess material is addressed in § 715.15.

Box cut spoils should be limited in amount and in land area affected and should be graded to blend into the surrounding terrain. The concept of approximate original contour allows return of all spoils to a mined area even when the result is a higher elevation that blends with the surrounding terrain.

2. Several commenters suggested that the proposed regulations so restricted disturbance of land above the highwall as to restrict the construction of support facilities above the highwall. Since the purpose of the standard was to minimize the area disturbed and not to limit the placement of support facilities in other than steep slope mining (where § 515(d)(3) of the Act further limits the disturbance of land above the top of the highwall), the section has been revised to allow construction of mine support facilities above the highwall. This change is necessitated by the use of the term highwall in area mining as well as in steep slope situations.

3. A large number of comments reflected confusion with the determination and use of slope measurements. Several commenters argued that the section was overly restrictive in requiring a return to specific slopes rather than to the approximate original contour as defined in § 710.5. Many commenters expressed uncertainty as to the meaning of "average natural slope" and "average maximum natural slope". Some commenters indicated that attempts to describe natural slopes over a large area by use of a single average slope would be difficult.

In view of the confusion generated by the proposed regulations, the sections dealing with slope measurements have been revised to remove the word "average". The regulations require that the reclaimed areas must be graded to slopes equal to or less than "approximate premining slopes", which are those slopes determined by the regulatory authority to be stable slopes that provide a land surface capable of supporting the approved postmining land use. The term "approximate premining slopes" is meant to indicate that such slopes must be selected according to the following criteria: (1) they do not appreciably exceed the maximum slopes measured for the premining surface; (2) they may be less steep than the natural slopes by that amount necessary to prevent slides, erosion and water pollution, to provide adequate drainage, to cover all acid forming and other toxic materials, to permit revegetation, and to achieve the approved postmining land use.

The "final graded slope", that measured after mining and grading, is not necessarily a uniform slope but is often an overall average slope. Therefore, terraces, roads and diversion ditches may be included within the slope measurement path provided the overall final graded slope meets the criteria set out above. Long, uniform, uninterrupted slopes are not generally desirable since they tend to erode more readily than do rolling, nonuniform slopes. Therefore, §§ 715.14(a)(2) and 715.14(a)(3) have been revised accordingly.

The final regulations also reflect the fact that premining slope measurements must take into account natural variations in slopes. In many cases it would be appropriate for the permittee to develop accurate topographic maps for an area prior to any mining and to develop an overlay of the proposed postmining topography where that topography blends in with the surrounding terrain, reestablishes the surface drainage system, and serves the approved postmining land use. Then the final graded slopes will be specifically defined on the approved postmining topographic contour maps, where they may be reviewed as a whole.

4. A few commenters noted that measurement of final graded slopes after topsoil had been replaced would require another removal of the topsoil prior to regrading if the slopes did not meet the criteria of this section. This comment has been accepted and the section revised.

5. A number of commenters recommended that the regulations allow the use of topographic maps, aerial photography, and other photogrammetric methods to measure premining and postmining slopes. Such methods are appropriate only when the topographic maps and photographically-produced maps are of sufficient accuracy to ensure adequate measurements. Thus, while maps and photographs may be used in addition to or in place of field measurements, the maps and photographs must be established as accurate by the permittee. Commonly used professional engineering practices are suitable for slope measurements. While the word "surveyed" has been deleted in the final version of the regulation to make clear that other means may suffice for slope measurement, surveys may still be required by the regulatory authority.

6. Several commenters argued that any restrictions on terraces exceeded the rulemaking authority under the Act. This comment is not accepted. Terraces should have a well-defined role in supporting the approved postmining land use and should not simply be left because a permittee decides that regrading is onerous. If improperly constructed, such terraces may impound water, provide unnecessary access to fragile areas, and cause an aesthetic blight on slopes.

7. Commenters noted the desirability of allowing terraces on slopes less than 20 degrees to break up runoff over long and otherwise uninterrupted slopes. Although the practice of constructing diversion ditches in the form of small terraces on moderate slopes is not uncommon, it is not appropriate to leave wide terraces on any slopes unless the access afforded by such terraces is supportive of the approved postming land use.

8. Additional commenters stated that the 20 foot terrace width and the terrace face slope of $1v:2h$ (50 percent) were so restrictive as to preclude mining on steep slopes since the prescribed width was unreasonably small and the regraded slope would make it impossible to achieve the approximate original contour in steep terrains. The absolute limit on terrace faces (the outslope of the terrace bench) has been modified to allow the alternative use of a stability calculation recommended by a number of commenters. However, since stability factors can change according to the method of calculation, all calculations are to be based on commonly accepted professional engineering practices. If it becomes necessary to specify methods, the Department will do so. Width limitations have been retained in order that terraces will not serve as access roads unless special consideration is given to retention or construction of roads to support the postmining land use and the roads are included in the approved postmining land use plan.

The definition of approximate original contour in the Act supports the concept of not restricting terraces to steep slopes so long as the terrace is not used as an inappropriate substitute for construction of lower grades. Thus the distinction between grading on steep and moderate slopes has been discarded. The need to restrict terraces to those situations where such level breaks in the terrain are truly necessary must be emphasized. Smaller diversion ditches are often more suitable than terraces to achieve these purposes. Further, the terraces discussed in the regulation are those to be left after mining and regrading are completed. During operation of the mine steeper outslopes and wider benches may be temporarily constructed if they are safe and in compliance with the Act and regulations.

9. The term "cut-and-fill terrace" was unclear to a number of commenters. Cut terraces are those formed by excavation into undisturbed strata while fill terraces are those formed by placing and compacting earth materials.

10. A limited number of comments recommended retention of portions of the highwall. The recommendation was not accepted since the Act and the legislative history indicate that no highwalls are to be left after mining is completed. Highwall elimination is mandated in § 515(b)(3) of the Act as is attainment of the "lowest practicable grade" in cases of inadequate overburden to fully grade to approximate original contour. Return to the "appropriate original contour" to "cover completely the highwall" is required in § 515(d) of the Act for steep slope areas.

11. One commenter noted the need to ensure that regraded drainage areas be returned to stable conditions. It is the intent of this section, § 715.17 and § 715.20 to require that disturbed watersheds, including all areas disturbed by temporary diversion, be reclaimed to conditions that approximate premining hydrologic conditions with minimal change in water flow and water quality.

12. A number of commenters proposed that spoil placement on the downslope of areas with slopes less than 20 degrees should be prohibited or controlled. Section 515(d) of the Act and § 716.2 of the regulations allow the regulatory authority to apply steep slope controls to slopes less than 20 degrees. Such controls would include prohibition of placement of spoil on the downslope.

13. Some commenters suggested that the criteria specified in § 515(d)(4) of the Act for determination of "any lesser slope" as a steep slope should be related to the region or State rather than to the "surrounding area". In § 515(d) of the Act, the term "region or State" is used. The intent of the section is to provide the regulatory authority a basis for selecting lower slopes that complement the land use, blend in with surrounding terrain and minimize erosion in highly erodible soils. In light of this, the proposed phrase is retained since it appears to better suit the site-specific requirements important to identifying lesser slopes. In response to comments, the word "geology" has been added to the factors to be considered when determining less steep slopes.

14. The terrace section has been revised to add the criteria of stability and minimization of erosion to the proposed

paragraph. It is recognized that the stability provided by a bench is not truly mass stability but rather temporary drainage and erosional stability. One commenter recommended that culverts be allowed temporarily for vehicular traffic. This comment again points out that many people view terraces as a means of access rather than for temporary control of erosion. Such measures as the use of terraces to control drainage are permitted when approved by the regulatory authority.

15. A number of recommendations were received to add a section that addressed the backfilling and grading requirements for previously mined lands. The commenters suggested that such a section was necessary to address the problem of grading to approximate original contour when much of the previous mining deposited spoil and wastes on the downslope and insufficient material is available for grading. Commenters indicated that in such cases it would be desirable to encourage remining of poorly reclaimed areas since the current regulations would ensure an improvement of land quality, and perhaps water quality, over and above that left by the previous mining. Arguments for an additional section have merit in view of one of the purposes of the Act, to promote the reclamation of mined areas left without adequate reclamation. The regulations have been revised to reflect the reality that sufficient spoil or topsoil may not be available to achieve postmining conditions which meet all the land configuration and revegetation requirements. Such operations are required to retain all overburden and spoil material on the bench and to grade completely to eliminate the highwall and maintain a stable slope. The entire mining area must be stabilized and revegetated. The provision has been added to § 715.14(b)(1).

16. Several commenters argued that the proposed mountaintop removal provisions would permit midwestern operations to remove an entire coal seam from a hill and not return the land to the approximate original contour. Such changes in land form and use are allowed only when the provisions of § 515(c) of the Act are met. In accordance with the Act, the paragraph has been amended to indicate that the exception is given only in cases where certain land planning requirements and stringent performance standards are met. It may be authorized in lieu of the approximate original contour.

17. Comments were received indicating that in mountaintop removal operations the slopes were too restrictive. Other commenters objected that the static safety factor of 1.5 was an uncertain measure of mass stability. The safety factor is an appropriate measure of mass stability that has been accepted by the Corps of Engineers, MESA, and other agencies. Greater slopes may be used if the safety factor is achieved and erosional stability is assured. Regulatory authorities may specify higher safety factors when necessary, and permittees will be responsible for design and construction that provides more stability.

18. Extensive comments indicated concern over the apparent restrictions on large impoundments in § 715.14(e). In view of the numerous comments in favor of such impoundments, the Department has taken guidance from the Act for review of proposals for impoundments and placed the language of § 515(b)(8) of the Act in § 715.17 because it involves hydrologic criteria. Further reference is made to large impoundments both in this section and in § 715.13 of this part. The revised portion makes clear that it will be necessary to grade areas involved in such impoundments to an appropriate contour and that all highwalls must be eliminated. Section 715.17(l) includes water quality and other criteria that must be met. It also makes clear, as a few commenters pointed out, that acid-forming and toxic-forming materials cannot be inundated by waters in these impoundments without first independently meeting the requirements for burial or neutralization of paragraph (j) of this section.

19. Comments received on the proposal for small depressions generally expressed the concern that the one cubic yard limitation was overly restrictive. Since a paragraph addressing permanent impoundments is now incorporated in the regulations, the limit remains appropriate to distinguish between surface manipulations that assist with revegetation and erosion control by impounding small amounts of water in confined areas and those impoundments that may adversely affect the area and which must therefore receive special consideration by the regulatory authority. Contour furrowing, chiselling, and other normal agricultural methods of manipulating the surface are permitted even if the long linear furrow exceeds 1 cubic yard in size. This section does not refer to depressions that may be caused by subsidence of underground mines. Subsidence will be addressed in the permanent regulatory program.

20. Several comments related to § 715.14(f)–(h) dealing with thin and thick overburden. A few commenters suggested the word "transport" be deleted to avoid movement of material such as first cut spoils back into the mine area. It is appropriate to indicate that materials may have to be transported to achieve backfilling and grading.

21. Some concern was expressed over the distinction between thin and thick overburden. In particular, reviewers were concerned that not all operations meeting the criteria for thick and thin overburden needed a modification of the requirement to achieve the approximate original contour. The regulations have been revised to require that whether thin or thick overburden conditions exist, operations must achieve approximate original contour whenever possible.

22. A number of commenters indicated that the angle of repose is not always stable. It is recognized that the average angle of repose of earth material is not always stable in terms of erosion. Thus, a minor change in wording has been made to clarify that the objective is mass and erosion stability. The word "reshaping" has been changed to the phrase "grading or backfilling" to conform to the Act. A few commenters said the $1v:2h$ (50 percent) slope requirement for highwall slopes in areas of thin overburden was too steep and recommended $1v:3h$. Regulatory authorities are encouraged to require more stringent grades wherever necessary.

23. One commenter recommended substitution of the phrase "postmining land use" for "ecologically sound land use". Since the latter phrase is from the Act, and implies more than "postmining land use", it has been retained. In response to a request to permit offsite disposal of spoil, it is noted that such disposal is governed by § 715.15 and may be done only when the disposal area is under the appropriate control of the regulatory authority.

24. Many requests were received to increase the 6-inch criterion for regrading rills and gullies to 12 inches, to delete the requirement entirely, or to provide substitute language indicating regrading would be required when the gully was of sufficient size to preclude successful establishment of the postmining land use. Other commenters sought assurance that regrading would not be the only means of satisfying the requirement. Many argued that returning to regrade would increase erosion. In view of the difficulty of distinguishing between a natural rill or shallow channel through which overland flow is conducted, the requirement is revised to 9 inches which is an acceptable measure of difference between small rills and gullies requiring stabilization. However, the regulatory authority may reduce the size criterion where shallower gullies are disruptive to the postmining land use or if they cause excessive erosion and sedimentation. The value of 9 inches has been successfully used in at least one State to distinguish between those erosional features requiring repair and features that approximate natural drainage channels in highland (divide) areas. The intent of the provision is to allow stabilization through means other than regrading if such methods promise equal or better results. Thus the use of straw, or the use of small equipment to fill and regrade in a manner that disturbs little additional area may be permissible. This intent has been clarified by changing the title of this section to *Regrading or stabilizing rills and gullies*. Rills and gullies formed along disturbed and reclaimed drainage ways will be permitted if vegetation has first been established.

25. Several commenters suggested that the treatment and burial requirements of § 715.14(j)(1) were duplicative since treatment to neutralize potential toxicity did not necessarily have to be followed by burial. The regulation has been modified to require treatment to neutralize when necessary. Materials that are adequately treated need not be buried. Others commented that treatment was

difficult and burial should suffice. Still others commented that burial with impermeable materials would not permit compliance with the requirement of § 715.17 to restore the approximate premining recharge capacity. The two requirements are compatible in most instances.

26. Substantial comment related to the specific burial depth for acid-forming, toxic-forming or combustible materials. Recommendations ranged from the deletion of a specific value to substitution of a depth of 10 feet. A number of commenters cited a report that concluded that 2 feet was an adequate burial depth. However, investigation of that conclusion indicated that burial at 2 feet represented a minimum amount of material over coal wastes and had not been tested for success over time. Review of State requirements indicates that 4 feet is usually considered adequate to cover toxic or acid-forming materials. There is limited research which shows 4 feet to be inadequate to prevent upward migration of salts in the semi-arid to arid climates or to protect deep rooting plants which are part of the revegetation plan. The regulation has been revised slightly to reduce the amount to 4 feet. A qualifying phrase has been placed in the regulation to address thicker amounts where necessary to guard against salt migration and against exposure by erosion and to provide an adequate plant growth substrata. Minor editing has been done to facilitate references to the minimization of water pollution while addressing the covering of wastes.

27. A number of commenters suggested that coal preparation wastes or coal conversion facility wastes should be excluded from consideration in this paragraph of the regulation. Concern was expressed that the regulation might require routine treatment and burial of such materials. This is not the case unless such materials are used in backfilling and grading operations conducted on a mined site. Thus, the proposed requirements to analyze, and treat or bury such wastes is appropriate. Existing analyses and permits showing proof of compliance with the requirements of this section would be acceptable demonstrations for the purposes of paragraph (j)(3) (as proposed) as a few commenters recommended. It is necessary to ensure that waste disposal in mine areas are handled in a manner that does not adversely affect the hydrologic balance, especially as the balance relates to water quality. Thus, wastes have not been deleted from this section.

28. In response to several comments, the purposes of covering acid-forming and toxic-forming materials have been clarified to conform to § 510(b)(10) of the Act. Water contact with toxic producing deposits must be prevented as must sustained combustion, and adverse effects on vegetation must be minimized. Thus, impoundments may not be used to neutralize acid-forming or toxic-forming materials by inundation.

29. Commenters on proposed § 715.14 (k) on grading along the contour felt that the use of bulldozers running perpendicular to the slope created sufficient cleat marks to retain water and minimize erosion and topsoil slippage. Such treatments are valid on steep slopes where contour furrowing is not possible. However, contour furrowing is preferred if physically safe. In accord with recommendations received, the requirement to obtain approval from the regulatory authority is deleted. The permittee is allowed to use an alternative method of operation if he can show (1) that work along the contour would be hazardous to equipment operators and (2) that erosion is minimized.

3. Several commenters suggested that a section be added on keeping regrading operations current. The requirement to insure that all reclamation efforts proceed as contemporaneously as practicable with the surface coal mining operations is part of the permanent regulatory program under § 515(b)(16) of the Act and has not been included in the initial regulations. However, State requirements still apply and the provision of § 715.13(a) to restore disturbed areas in a timely manner must be complied with.

31. A reviewer noted that the section should address the need to return the topography to total stability in the erosional sense. That requirement is embodied in the definition of approximate original contour and § 715.17 on hydrologic balance.

32. One comment included a query as to the meaning of the phrase "unacceptably steep" slopes used in § 715.14 (a)(2). The measure of unacceptability is to be related as a minimum to the requirements of this part regarding land use, postmining slopes, erosion, and revegetation.

Section 715.15 *Excess spoil and wastes.* Comments on this section were directed at three principal issues the reviewers felt had not been adequately resolved. Those issues are the applicability of the proposed section to operations other than steep slope and mountaintop removal operations during the initial regulatory program, the inclusion of coal refuse in the proposed regulations, and details contained in the regulations regarding the valley or head-of-hollow fills.

1. Commenters suggested that during the initial program the regulation of excess spoil placement should be limited to mountaintop removal operations under the terms of the Act. Proper placement of excess spoil is critical to achieving the environmental protection standards that are a part of the initial regulatory program specified in § 502(c) of the Act. If excess materials are improperly placed across drainage channels and provide inadequate drainage and stability, disturbance to the hydrologic balance may be great. The legislative history of the Act does not indicate that excess spoil regulations are to be divided into mountaintop or steep slope areas and other areas of more moderate slopes. Therefore, in order to properly implement § 515(b)(10) of the Act, excess spoils must be regulated in the initial program, regardless of their origin. Further, excess wastes and spoils are also regulated under § 515(b)(3) of the Act. Thus, the initial program must provide regulatory control over their placement.

2. A large number of commenters recommended that waste materials be defined and removed from the section because they believe waste material handling is regulated separately in the permanent program. The commenters further recommended that disposal of waste materials and preparation plant refuse be subject to MESA regulations in 30 CFR 77.214 and 77.215, indicating in their comments that various sections of the Act "require" incorporation by reference of existing regulations. These recommendations are accepted in part, and wastes have been deleted from § 715.15 (a). The initial regulatory program still only regulates toxic-forming and acid-forming wastes and proper reclamation of wastes produced from coal preparation facilities where they are used in backfilling or grading of mined areas, placed in impoundments or used in construction of dams. However, complete controls over placement of mine wastes, tailings, coal processing wastes, and other wastes excess to achieving the approximate original contour will not be addressed until the permanent regulatory program with the exception that they are not allowed in valley or head-of-hollow fills. A definition of wastes that are to be controlled under the provisions of this part has been added to § 710.5. This prohibition is necessary to keep such materials out of drainage channels in situations other than those covered in § 715.18.

3. Commenters reviewing § 715.15 were dissatisfied with the detailed nature of the regulations, preferring instead regulations that set objectives or final quantitative standards. The comments addressed § 715.15 as a whole but were particularly directed at paragraph (b), valley and head-of-hollow fills. Specifications for rock underdrains and the 4-foot thickness of individual lifts were objected to. Many commenters referred to consultant studies, a number of which were provided to the Department. Most commenters wanted the flexibility to be able to meet objectives by designing structures suitable to their specific sites.

The Department has reviewed the studies and plans submitted and consulted with those who have made studies of head-of-hollow fills and has determined that:

(a) Main underdrains are safe when they are sized, at a minimum, to the proposed criteria.

(b) Head-of-hollow fills should be constructed to keep water out of the system since significant drainage into the fills will ultimately cause clogging of drains. When upstream drainage is directed into a fill constructed with a drain through the entire height of the fill, the stream gradient may increase through the upstream portion of the fill and decrease in the downstream portion. If there is an area where the gradient is decreased, the sediment transport capacity will also be decreased resulting in settling of fines within the drain. More

importantly, if water infiltrates into the fill, and then flows toward the rock drain, sediment in proximity to the rock drain will be moved to clog the drain. Obviously, the more water transported into the drain, the greater likelihood for clogging. Therefore underdrains are generally for emergency, not routine, use.

(c) To meet the requirement of placement in a controlled manner for concurrent compaction, spoil must be placed in lifts, or reworked to form lifts that provide for visual inspection for voids, inspection for intrusion of improperly sized material into drains, and for compaction.

The regulations are adequately supported by ongoing studies. Detailed regulations specifying the method of construction are necessary if completed head-of-hollow fills are to meet all the requirements of the Act and regulations. It should be noted that brief inspections of large fills cannot begin to serve as proof of long-term stability. Such proof will come only with time and further inspections.

4. Paragraphs (a) and (b) of § 715.15 have been reorganized in order to avoid cross references between paragraphs and to attempt to have the requirements follow a time sequence. A few of the specific paragraphs moved are discussed later in this section.

5. Comments were received regarding the minimum size of the underdrain and the restrictions on the size of rock in the underdrain. No alternative sizes were offered. The recommendations were to delete the table and rely on site specific engineering designs, or to add the alternative of allowing the permittee to submit engineering data that substantiate an alternative underdrain system provides adequate drainage to attain a minimum static stability safety factor of 1.5. Other commenters provided similar recommendations for language such as allowing an alternative of "sound engineering practice" or using "recognized hydraulic and hydrologic criteria," and using safety factors of 1.5 for static conditions and 1.0 for earthquake loading. A few commenters recommended that the rock core be constructed through the entire fill, in an attempt to drain the upstream water through the rock core and the fill. One commenter recommended that all types of materials are acceptable for use in drains.

The rock drain criteria in the proposed regulations do represent the sound engineering practice currently found to result in what appear to be stable, well-drained head-of-hollow fills. The methods used to obtain and place the materials are left to the permittee. The sizes specified are not particularly large considering the amount of material involved in the fill. While a larger core can be constructed, subsequent portions of the regulation forbid reliance on this core to transmit water from upstream drainage areas through the pile. As noted earlier, such practices tend to wash fine materials into and plug the rock drains which, in time, will lead toward failures unless remedial measures are taken. The rock drain criteria have been amended slightly to prohibit the use of acid-forming or toxic-forming materials in the rock drain as was recommended by a few commenters. Similarly, the concern expressed that shales may not be durable is addressed by the addition to the paragraph. Obviously, it is necessary to construct a rock drain that is expected to perform properly for as long as the fill is in place.

6. Many commenters indicated that the 4-foot lift requirement was excessive and represented a proposal that went far beyond normal regulations in specifying engineering methods. As in the case of underdrains, the recommended alternatives to specifying a 4-foot lift were principally those of allowing sound engineering practices to be applied on a site-by-site basis. Proposals for valley fills and head-of-hollow fills were submitted showing that a few operators wished to allow the end dump procedure of constructing valley fills. They felt the 4-foot lift requirement prevented this. One commenter requested that the end dump method be specifically prohibited. One commenter suggested that the fills be divided into structural components and fill components, each with a different stability safety factor.

The purpose in proposing the 4-foot lift was: (1) To ensure that spoil is transported and placed in a controlled manner for concurrent compaction in order to assure mass stability and to prevent mass movement, (2) to ensure that the rock underdrain was not contaminated by fines as occurs when fill materials are merely dumped in an uncontrolled manner, and (3) to provide for inspection and elimination of large voids. The 4-foot lift method requires either initial placement in lifts of approximately 4 feet thickness or redistribution of fill materials after placement in thicker lifts. Some compaction will be provided by the selective dumping procedures and the redistribution procedures. When directed by site specific designs to achieve proper stability, thinner lifts and additional compaction may be required. Large fills on otherwise undisturbed land have too great a potential for failure to allow for uncontrolled placement. The purpose of careful construction of valley and head-of-hollow fills is to produce a fill that will not require maintenance. Other such fills constructed for highways, railroads, and buildings are not only carefully engineered, but also watched and maintained for their lifetime. On the other hand, fills of spoil from coal mines are the long-term responsibility of the landowner who may not have equipment available for long-term maintenance or repair, and thus it is reasonable to establish the key design criteria for such fills. Permittees may use more stringent design criteria as well as differing types of procedures and equipment to achieve the drain size and to place fill in not more than 4-foot lifts. Material larger than 4 feet will be permitted, provided that such material does not constitute a significant percentage of the fill.

The lift section has been revised slightly to make clear that the function of construction in lifts is to avoid contamination of the rock drains, to prevent formation of voids, and to achieve the appropriate design density. The section has been further modified to insure that all excess spoil material will not be randomly placed.

The Department will continue to cooperate with industry, consultants, and Federal and State agencies to monitor the long-term stability of valley and head-of-hollow fills so as to refine the criteria for their construction. Further, the Department has the authority, under § 711 of the Act to concur with recommendations of regulatory agencies for departures in individual cases, on an experimental basis, from the performance standards of this chapter.

7. A few commenters either objected to the size limits for terraces or recommended the addition of an alternative allowing the regulatory authority discretion to approve design criteria that would produce fill terraces with a minimum static safety factor of 1.5. One commenter recommended that terraces be allowed only when approved by the regulatory authority. One commenter stated that terraces are not stabilizing features but rather assist with erosion control. One commenter stated that a $1v:2h$ slope could cause significant erosion problems and recommended that the slopes should be based on site specific calculations taking into account runoff and flow velocity instead. Another commenter proposed that permittee innovation be allowed. One commenter recommended use of a slope of $1v:5h$ for drainage.

The purposes of the dimensional limits on terraces were to create a reasonably accessible land form that supported post-mining land uses and to provide erosional stability. Since terraces themselves are not stabilizing features in terms of mass stability of the entire fill, application of stability safety factors to them should not be a substitute for determining the stability of the fill material as a whole. The recommendation to substitute a minimum factor of safety to control these terraces has not been accepted. Terraces are often used on valley fills and head-of-hollow fills to break up otherwise uninterrupted slopes. Nonetheless, terraces, and the other types of fills addressed in this section, should be reviewed for suitability by the regulatory authority so as to avoid construction in a manner incompatible with the post-mining land use approved under § 715.13.

8. Many comments were received regarding the proposed diversion of water from above and around head-of-hollow and valley fills. Commenters suggested that drainage need not be diverted away from the valley or head-of-hollow fill. Some pointed out that if water were diverted, additional disturbance of land would take place. A few commenters recommended requiring the underdrains to extend through the fill to the top and thus direct drainage to and through the rock core. Commenters pointed out that disposal sites near the ridge top of a val-

ley did not necessarily increase stability and were not necessary to reduce the drainage area upstream of the fill. One comment on paragraph (a) recommended that water should be allowed to infiltrate and percolate through fills so as to filter the water. One commenter asked that water be allowed to be impounded above the fill areas.

It is inappropriate to promote drainage through infiltration into a large fill area which is placed off the mined area, especially when the fill is located in an area that is naturally more susceptible to erosion than other areas such as a stream channel. Direction of water into head-of-hollow and valley fills can only result in future instability of the fill and will eventually clog the rock drain causing overland flow or will cause infiltration of runoff water into the pile followed by piping and outslope erosion along the face of the fill. Head-of-hollow sites are to be selected as high as possible in the drainage watershed to reduce the need for large diversions. It is correct that such areas may not be the most stable of all areas in the drainage channel. If stability considerations force the location of the fill down the stream channel such that a valley fill is required, the diversions must be relatively larger.

Infiltration of water through fills will not improve water quality. Impoundments of water above large fills could, if breached, cause serious infiltration and erosion problems if diversion structures are not adequate to handle the flow. In some instances, it may be appropriate for a regulatory authority to approve such impoundments. With the exception of adding some clarifying examples to paragraphs relating to siting of fills in the form of language obtained from the Act, the regulations have not been modified in regard to drainage requirements.

9. Comments on the $1v:2h$ slope requirements for outslopes of fills were generally directed at increasing the slope wherever a minimum static stability safety factor of 1.5 could be met or allowing a steeper slope where consistent with physical conditions, climate, or variables other specified variable. On the other hand, one commenter recommended that the slope be reduced to about $v:4h$ to prevent slides. Based upon the results to date of ongoing assessments of head-of-hollow and valley fills, it is believed that the proposed regulations appropriately specify the maximum slope permissible for such fills based on erosion, access, and secondary stability factors.

10. Some comments were received on the proposed § 715.15(a)(3) regarding the $1v:5.5h$ slope criteria for, as well as the use of, keyway cuts and rocktoe buttresses. Commenters indicated that the $1v:5.5h$ slope was too gentle to automatically require keyway cuts or rocktoe buttresses and that $1v:2h$ was a more appropriate criterion. A few commenters stated that keyway cuts did not necessarily add to stability and that bedrock could be quite deep on occasion. Others recommended substitution of the minimum static stability safety factor of 1.5 as the criterion. Another commenter stated that the keyway cuts and rocktoe buttresses were uneconomical.

The proposed slope is overly restrictive as an absolute requirement that rocktoe buttresses must be employed. However, there are inadequate data to show that a 1.5 factor of safety for stability will ensure both the mass stability and erosional stability of the fill or that such a factor can be translated into a land use evaluation. The slope value of $1v:2.8h$ in the final regulations was derived from the use of the word downslope in the Act in § 515(b)(2) and § 515(d) (steep slope). The keyway cuts and rocktoe buttresses were given as examples of methods, and the permittee was given the option of choosing other structures that would stabilize fills.

11. A major difficulty in the proposed regulations was identified by commenters since no definition of valley or head-of-hollow fill was provided. As a result, it was reasoned, what was basically a head-of-hollow fill could be constructed in compliance with paragraph (a) of the the proposed section and without regard for the requirements of paragraph (b). In order to clarify the intent of the section, definitions of "valley fill" and "head-of-hollow fill" have been added to § 700.5. The intent of the regulation is to require that all fills that encroach upon or obstruct any natural stream channel, other than those channels on highland areas such as natural rills and gullies, meet the requirements of § 715.15(b). Further, the proposed regulations inadvertently omitted the requirement for removal of organic material and topsoil, the requirement for rocktoe buttresses and the requirement for design by a registered professional engineer.

12. A few commenters recommended that the requirement to remove all organic material and to remove topsoil should be limited to removal of that necessary to ensure stability, and they recommended that variances to the requirement to remove organic material and topsoil should be granted in mountainous terrain. Variances to the requirement are not appropriate since organic material does not promote stability of the fill if it is left along the boundary between the fill and the natural surface. The Act also requires removal of topsoil in separate layers unless "other strata" are shown to be more suitable. To clarify the topsoil removal requirement, the reference to topsoil in § 715.15 has been amended to refer to § 715.16 to make clear that the "other strata" provisions of § 715.16 do apply to areas receiving fill material. However, the completed fill area is like any other mined area and must be topsoiled and revegetated in compliance with the regulations.

13. One commenter inquired as to what the criteria for approval of disposal areas by the regulatory authority were. The criteria include those standards listed in those sections following § 715.15 (a)(1) and (b)(1). These standards include considerations of stability, the existence of stream channels, the relationship of the disposal area to the mine area in terms of requirements for haul roads and resulting land disturbance. Clarifying language has been added to the final regulations.

14. One commenter recommended that "moderate slope" be defined as any slope less than about 9 percent. Stability, in this case, is related to a combination of slope, geologic climate and hydrologic conditions and therefore particular slope limitation has not been identified except that the steep slope concept has been used for toe stabilization.

15. A number of commenters recommended that compaction be required "as necessary." Compaction may not be required in cases involving selected materials placed on low slopes and graded to approximate original contour. In cases of valley and head-of-hollow fills, some compaction is necessary. The language of the proposed regulations has been slightly amended to reflect the fact that compaction is required to the degree necessary to assure mass stability and to prevent mass movement in the case of fills that do not encroach upon or obstruct drainage. Such language, in part, is compatible with § 515(b)(3) of the Act for fills in other than valleys and head-of-hollows. These latter fills must undergo the concurrent compaction appropriate for each site.

16. A few commenters indicated that the requirement for control of total suspended solids should be rephrased to minimize increases in accordance with § 515(a)(10) of the Act. The requirement has been rephrased to eliminate hydrologic requirements since all activities must comply with § 715.17 which adequately controls total suspended solids from disturbed areas.

17. A few commenters recommended that other qualified personnel in addition to the registered professional engineer should be authorized to provide certification. One commenter recommended that quarterly certification not be required. Certification of the design of the spoil disposal area by a registered professional engineer is required because of the engineering aspects of the design problem. Sections 715.15(a)(6) and (9), as proposed, have been modified in the final regulations to show that the registered professional engineer must provide certification of the design while inspections may be made and certified by registered engineers or other qualified professional specialists. The quarterly inspection requirements during construction have been reduced for fills other than valley and head-of-hollow fills.

Section 715.16 *Topsoil handling.*

1. Several commenters questioned whether the general requirement to remove the topsoil from areas to be mined meant that even topsoil on undisturbed lands must be removed. The section has been revised to clarify the intent to require topsoil removal prior to disturbance of an area. Thus, prior to operations listed in paragraph (a), topsoil must be removed.

2. Some commenters argued that in cases where removal of topsoil results in erosion that may cause air or water pollution, the regulatory authority should

not be allowed to limit the size of the area from which topsoil is removed. The size of the area must be considered as one variable that may be controlled to minimize disturbance to the hydrologic balance. Therefore, the requirement has been retained.

3. Several commenters suggested that § 715.16(a)(2) be clarified. One commenter argued that the requirement to separate and segregate soil horizons is beyond the scope of § 515(b)(5) of the Act. The final regulations require removal of at least the A-horizon or at least 6 inches of soil where the A-horizon is less than 6 inches thick. This is necessary for the land to be restored to a condition at least capable of supporting its premining use. The regulatory authority may require separation of the B-horizon if necessary to obtain soil productivity.

4. Pursuant to several comments, § 715.16(a)(3) has been added to provide guidance in obtaining soil productivity consistent with postmining land uses and to require adequate depth to ensure proper root development of vegetation. This is appropriate to be included under the mandate to maintain land capability and productivity.

5. Numerous commenters suggested selected overburden materials rather than all overburden should be recognized as permissible substitutes for topsoil. This suggestion was accepted and the section revised. Some commenters suggested that mixing topsoil and overburden sometimes produces a soil medium more suitable for land use capability and productivity than topsoil. This suggestion was adopted and the section modified to permit such mixing in proper cases. Alternative strata may be used when topsoil is either of inadequate quality or quantity.

6. Several commenters argued that if available topsoil is inadequate, the use of overburden should be allowed without being subject to all the analyses required by § 715.16(a)(4)(i). It is not the intent of the regulations to require the analyses to be performed again if they have been previously performed. With the exception of the potential acidity analysis, all measurements are necessary for soil analyses. Thus, with the deletion of acidity, all analyses must be represented in the supporting data submitted to the regulatory authority. Demonstrations of suitability may be based on previously performed analyses and field trials if they are adequate.

7. Numerous commenters argued that it is sometimes unnecessary to scarify regraded land before the topsoil is replaced to prevent slippage, and therefore the proposed regulation should be amended. Although such treatment is generally the most effective, the section has been changed to eliminate the need to scarify in all instances. However, measures necessary to eliminate slippage must be undertaken in all cases.

8. Several commenters suggested that topsoil should not be redistributed at a uniform thickness in all cases. They argued that topsoil should be redistributed in a manner that creates a thickness suitable for the approved postmining land use. This comment has been accepted and the section has been revised accordingly.

9. Commenters suggested that the fixed 30 day standard for additional protection of topsoil stockpiles did not provide sufficient flexibility for varying climatic and operational conditions. The suggestion has been accepted and the section revised. It is essential to minimize loss of the stored topsoil from erosion by providing continuing protection of the stockpiles, and thus initial placement must protect against wind and water erosion. For example, a vegetative cover may be required immediately after a portion of the topsoil pile is in place, if the growing season permits or if required for stability.

10. Several commenters suggested that § 715.16(a) should be modified to allow removal of topsoil that is in storage before redistribution occurs. Although the removal prohibition tends to protect the soil from contamination and destruction of soil texture, it is recognized that in some cases soil removal may be necessary. Therefore, the section has been revised to allow removal before redistribution if prior regulatory authority approval is obtained. However, such redistribution should be minimized since it should be possible to replace soil material on disturbed areas and to stockpile new soil to avoid excessive handling.

Section 715.17 *Protection of the hydrologic system.*

1. Many commenters were in disagreement with the level of detail proposed in the regulations. These commenters recommended the detail be deleted in favor of statements of objectives. In light of the testimony presented before Congress during deliberations over the Act, the requirements of the Act and State regulations on the subject, some details are required to ensure that all surface coal mining and reclamation operations are conducted in an environmentally acceptable manner. The fact that a standard can be met easily is not cause to delete it. Thus, national standards are set which may be easily met in some operations than in others. Further, State regulatory agencies can set more stringent standards to suit sitespecific situations.

2. Comments on the introductory paragraph to the hydrologic provisions consistently argued that the phrase "prevent long-term changes in the hydrologic balance" was not consistent with the Act. A few commenters pointed out that the definition of "hydrologic balance" in § 710.5 could be combined with the proposed requirements of § 715.17 to require a permittee to prevent long-term changes to precipitation and evaporation as well as changes brought about by operations not related to mining. In view of these comments, the language in the first paragraph of the hydrologic balance section has been modified to require that permittees plan and conduct operations in order to prevent adverse changes in the hydrologic balance as a result of their operations. Thus, the definition of hydrologic balance remains as that proposed, but changes in the hydrologic balance demonstrated to not be a result of the mining and reclamation operation are not the responsibility of the permittee under § 715.17.

The objective of this section is to have the permittee research and understand the hydrologic balance in the affected area as well as to understand the effect of mining on that balance so that operations are planned and conducted to minimize disturbances both on- and off-site. Since the hydrologic balance may be restored only after long periods of time, it is necessary for the permittee to project long-term trends toward restoring the balance. For example, ground water quality may deteriorate as water infiltrates spoils but such ground water will not be discharged until a gradient is reestablished towards points of discharge. It may take many years to reestablish the gradient. Thus the permittee must plan operations to control ground water quality and flow, to minimize the impact on the hydrologic balance, and to prevent adverse changes over the long term.

3. Commenters recommended the deletion of the references to the types of changes in the hydrologic system that were to be regulated. They argued that the introductory paragraph of § 715.17 should be limited to the specific language of the Act. However, to inform the permittee of his responsibilities, it is necessary to provide examples of those types of changes to the hydrologic system that are to be regulated. Section 515(b)(10)(G) of the Act provides adequate authority for establishing additional standards necessary to protect the hydrologic balance.

4. Many commenters addressed the relationship of the proposed quantitative limits on discharges to existing point source discharge standards promulgated by the EPA. Commenters proposed incorporation by reference of EPA's National Pollutant Discharge Elimination System (NPDES) regulations, arguing that § 702 of the Act does not allow more stringent standards, that the proposed standards lack technical justification, and that there should be only one set of regulations for water discharges from coal mines. Other commenters expressed strong support for the proposed limitations and, in several instances, recommended broadening the standards to include sulfate, total dissolved solids, settleable solids, alkalinity-acidity, selenium, zinc, sodium, and arsenic. Several commenters indicated disagreement with the proposed regulations in terms of the implied responsibility of permittees to treat discharges that contain concentrations in excess of required limits as a result of natural or manmade conditions existing upstream from the permit area.

The Department has discussed the pertinent regulations and statutes with the Environmental Protection Agency and has received that Agency's written concurrence with the sections of these regulations which relate to water quality standards promulgated under the authority of the Federal Water Pollution

Control Act as amended (33 U.S.C. §§ 1251–1378). Both agencies will strive to minimize duplicative efforts in standards setting, permit issuance, inspections, and enforcement. Therefore, these regulations incorporate those effluent limitations currently promulgated by the EPA and further refine the standards to meet the requirements of the Act to minimize disturbances to the prevailing hydrologic balance. Because the Surface Mining Control and Reclamation Act of 1977 is broadly intended to protect society and the environment from the adverse effects of coal mining, these regulations must address the complete set of impacts on the hydrologic system brought about by mining. This set consists of changes to all water flow and quality, and the location and role of water, regardless of how it may be affected by coal mining. Contrary to the claim of some commenters, § 702 of the Act does not prohibit more comprehensive or stringent standards when needed to carry out the purposes of the Act. The purpose of § 702 is to avoid weakening existing standards.

The extension of effluent limitations to discharges from disturbed areas after final grading is necessary to ensure protection of the hydrologic balance, including the quality and quantity of surface water, until reclamation is completed. There is no basis in the Act to distinguish between phases in mining and reclamation operations for the purpose of justifying less stringent requirements. Much work has been done by EPA to identify effluent limitations for coal mines, and it is believed that these limitations presently reflect an initial evaluation of the best technology currently available to prevent additional contributions of suspended solids to streamflow or to runoff outside the permit area. If, during the initial stages of reclamation, contaminants increase in runoff from a mine site, the Act provides a strong mandate to protect the hydrologic balance. If, on the other hand, contaminants decrease during reclamation, the permittee should have no problem in meeting the effluent limitations.

In developing the standards for discharges from the disturbed areas of a surface mining operation, various State regulatory agencies were consulted as to their practices and professional judgments concerning the extension of effluent limitations to discharges from lands that had been regraded and planted but which had not yet been released from bond obligations or other permit requirements. It was found that States extend effluent limitations or water quality criteria to all phases of coal mining and reclamation operations. The termination of such requirements is normally tied to release of further permittee responsibility for mining and reclamation and this is often at the time of final bond release. The effluent limitations will apply to all surface mining operations conducted within "disturbed areas" until such time as the requirements of this chapter are met for achieving successful reclamation.

It is recognized that additional field data are necessary before any additional quantitative water effluent limits which may be necessary to meet the requirements of the Act are established. The Office will cooperate with interested persons and agencies in obtaining these data as expeditiously as possible.

The proposed table for effluent limitations has been modified by adding one footnote which makes clear the intent to allow permittees to raise the pH of certain discharges to facilitate meeting the manganese standards. Since the higher pH will be quickly reduced by receiving waters, there will be no harm to water uses. In addition high concentrations of manganese will generally occur in areas where streams are not excessively alkaline, and thus adverse impacts from excessive alkalinity are not likely to occur. If this practice is found to have adverse impacts on water quality the standard will be changed.

5. A number of recommendations were made to better clarify footnote 1 of the table in § 715.17(a). The footnote has been revised to read "based on representative sampling" since it is impractical to further specify the number of samples or duration of sampling appropriate for each discharge. Sampling, as used in this context, refers to the process of acquiring an example of the effluent and is not to be interpreted in a statistical sense. Sample frequency can range from a single grab sample to a composite sample that extends over a number of hours depending on the discharge characteristics and the purpose of the sample. Enforcement actions can be brought on the basis of a single sample.

6. Several commenters asked that the terms "maximum allowable" and "consecutive discharge days" used in the table of effluent limitations in § 715.17(a) be clarified. "Maximum allowable" is to be determined from a representative sampling as discussed above which accurately represents the character of the discharge and the potential adverse effects of the discharge on the receiving waters and on use of the water both on-site and off-site. "Consecutive discharge days" is intended to provide a measurement of the actual impact of discharges rather than an average of discharge quality which may be reduced by having no discharge on certain days. The footnote reference to "representative sampling" again allows the actual sampling schedule to range from a single sample to continuous samples, whichever is necessary to accurately characterize the discharge.

7. Many commenters questioned the technical justification for the more restrictive total suspended solids standard for mines in the interior western United States. Other commenters supported this standard. It is recognized that the EPA has proposed more stringent effluent limitations for total suspended solids than those required by these regulations on September 19, 1977. While the proposed EPA limitations have not been formally adopted, the regulations in § 715.17 are technically defensible based on self-monitoring data reported to the EPA. Therefore, the footnote has not been changed. The self-monitoring data show that the industry can meet these requirements. As noted in the preamble to the proposed regulations, these controls on total suspended solids are necessary to minimize overall disturbances of the hydrologic balance in areas where erosion is extensive, water quality is critical, and soils are irreplaceable.

Commenters suggested other reasons for changing the proposed effluent limitations. Some comments stressed the desirability of a single permit. Some industry comments stated that EPA was adequately regulating point source discharges and that there was no basis in the Act for effluent limitations in OSM regulations. A number of commenters indicated a desire to allow States the flexibility to establish other standards. One commenter indicated the effluent limitations were unrealistic, and anther suggested that the effluent limitations should be mandatory only in the western United States. All comments have been considered. The regulations published today are supported by the discussion in previous paragraphs. Reduction of the number of permits is desirable whenever permissible.

It is the intent of the regulations to encourage monitoring only those parameters determined by the regulatory authority to be present in concentrations that may exceed the applicable Federal or State regulations. As an example, manganese is less often expected to occur in high concentrations in alkaline discharges. However, since manganese does occur in some alkaline discharges, and, in fact, may be more likely than iron, it is listed as an effluent limitation. It is the intent of the regulations to allow the permittee to provide data to the regulatory authority to show that manganese is naturally and consistently below the effluent limitations and to then allow the regulatory authority to reduce monitoring requirements for manganese to whatever frequency it deems necessary to ensure compliance.

8. Two commenters recommended that alternatives to discharges through settling ponds should be provided. This recommendation has not been accepted, but provisions dealing with diversions and sedimentation ponds have been revised to provide acceptable alternatives to large sedimentation ponds. The general requirement to discharge through ponds is retained in order to ensure that the standards of § 515(b)(10)(B) of the Act are met, and to facilitate monitoring of operations and the determination of reclamation success. One commenter asked if water pumped from a pit is a discharge subject to these regulations. These regulations apply to any water discharge from the mine pit.

9. Many comments were directed to the proposal in § 715.17(a)(1) to require treatment of runoff from precipitation events equal to and less than the 25-year 24-hour precipitation events. These comments generally recommend a reduction in the precipitation event to that of the 10-year 24-hour event, as required by the EPA, although other commenters suggested the use of other precipitation

events. Because more recent designs of water pollution control facilities have been based on a 10-year 24-hour event, the section has been revised. It should be noted that this requirement may be revised in the permanent regulatory program if it is found that the hydrologic balance is not adequately protected by stream dilution or other factors occurring at flows from larger storms. Retention of the current EPA requirement will however facilitate a "phase-in" period for mine operations.

10. In response to several comments, the regulaions require application of the effluent limitations only to discharges from the disturbed area and not to discharges from areas the permittee has not disturbed through mining and reclamation. The term "disturbed area" used in § 715.17 has been carefully defined to exclude areas in which the disturbance is limited to diversion ditches, sedimentation ponds, or access and haul roads when they are constructed, operated, and maintained in accordance with these regulations. Effluent limitations do not apply to discharges from undisturbed areas. However, permittees will be required to remove temporary structures in the "nondisturbed" areas and to reclaim the affected land.

11. A number of comments objected to the proposed provisions of § 715.17(a)(2). Several argued that the tonnage limit was too high. Others recommended that treatment facilities should be required where water discharges may violate applicable standards. One commenter suggested that manual treatment procedures be allowed as well as automatic devices. Automatic neutralization processes are necessary where discharges of acid water are likely. The requirement for automatic neutralization devices remains also for purposes of avoiding untreated discharges during nonworking hours. Manual systems are appropriate only for small and infrequent discharges as may occur from the disturbed area of small mines. However, the section has been revised to allow manual treatment if the regulatory authority finds that manual treatment will ensure consistent compliance with the applicable effluent limitations and with the water quality standards of the receiving stream.

12. A number of comments objected to the proposed requirements of § 715.17(b) for surface-water monitoring. Some commenters noted that the requirement for daily sampling exceeds current EPA standards. Other commenters suggested requiring samples at weekly or quarterly intervals. Some commenters proposed more stringent or different requirements than those proposed. These included recommendations that the ability to require lesser measurements be deleted, that the results be recorded, and that the permittee provide a description of the surface waters. Finally, other comments expressed unqualified support for the monitoring section.

Section 715.17(b) was intended to allow the regulatory authority sufficient latitude to approve and require monitoring standards according to the requirements of a specific discharge. Because the comments indicate that the intent of the monitoring section was unclear, this section has been revised. The final regulations clarify that monitoring requirements must be tailored to the discharge. A surplus of data will not serve any purpose. The section continues to require the permittee to prepare and implement a plan that adequately monitors all surface water discharges from the disturbed area. Discharges from mines which have highly variable concentrations of potential contaminants should be monitored on a daily basis. Similarly, discharges with highly variable flows must be routinely monitored. On the other hand, discharges which are shown to naturally have constant or low levels of contaminants may be monitored on a weekly, biweekly, or monthly basis.

Based on comments from reviewers, a paragraph has been added to the regulations to address monitoring requirements that will reflect the expected quality and quantity of surface water flow from a disturbed area after grading and stabilization. Commenters have argued that measurement of water quality and flow downstream of a water treatment facility such as a sedimentation pond will not necessarily reflect the postmining character of the flow. After revegetation it may be desirable, especially in the western States, to maintain total suspended solids concentrations equal to those measured prior to mining, but higher than those required by the effluent limitations, in order to lessen the potential for stream channel scour. Such scour is possible when the carrying capacity of discharged water is increased. The permittee is encouraged to monitor inflow to treatment facilities in order to measure the efficiency of the facilities and to ensure meeting the requirements regarding minimization of the disturbance to the prevailing hydrologic balance. Monitoring of undisturbed reference basins may also be useful for providing a basis for general comparison of water quantity and quality measured on the disturbed area.

13. Several commenters argued that monitoring requirements should be limited to discharges from the active pit. This comment has been rejected because of the statutory obligation to minimize adverse environmental impact from all phases of mining. Other commenters argued that use of the term "equipment" in § 715.17(b)(1) suggested an "in-stream" monitoring device requirement. It is recognized that the use of such devices is sometimes inappropriate. While in some cases staff guage readings can adequately measure small flows, recording flumes will be necessary at other locations. In-stream probes will be adequate only when analytical accuracy and precision requirements are met. Submissions of data will be no less frequent than 60 days after sample collection in order to adequately represent water quality and quantity to the regulatory authority.

14. Numerous commenters suggested that the requirement of § 715.17(c) for diverting and conveying overland flow away from the disturbed area was inappropriate. One commenter pointed out that in some cases diversions themselves can be more harmful to the environment than allowing overland flow to enter the disturbed area. Many recommended that the construction of diversions should be required at the discretion of the regulatory authority. A few commenters suggested that this requirement should be eliminated. Because diversions represent an important environmental protection tool, they are appropriately included in the regulations; however, diversions may not be required in all cases, and, therefore, the regulations have been revised. Use of diversions will be required where necessary to prevent water pollution. Diversions must be properly constructed so as to remain stable during runoff events. To further encourage the proper use of diversions, other portions of this section have undergone minor revisions.

15. A number of commenters argued that the requirement in § 715.17(c) to "prevent" acid and other toxic mine drainage should be modified since § 515(b)(10) of the Act requires only that disturbances to the prevailing hydrologic balance be minimized. In light of this, the regulations have been revised to directly correspond with § 515(b)(10)(B) of the Act.

16. Commenters recommended that the 10-year recurrence interval design criteria required by § 715.17(c)(1) for temporary diversions was inappropriate. Recurrence intervals of 1 year and 5 years were suggested as were other criteria. The requirement to safely pass the peak runoff from a 10-year precipitation event, or larger event where appropriate, is not unreasonable and represents an acceptable level of environmental protection and safety for temporary diversions of overland flow. Use of a recurrence interval unmodified by a time factor reflects the fact that runoff amounts can be larger from 6-hour storms occurring when the ground is frozen than the runoff amounts caused by a 12-hour storm after a summer drought. Depending upon the intensity, form, and duration of the precipitation, and the condition of soils, runoff may not increase directly with the size of the precipitation event.

17. Many commenters questioned the reasonableness of requiring that permanent diversions of overland flow be capable of safely passing the peak runoff from a precipitation event with a 100-year recurrence. Some recommended that a shorter recurrence interval be used or flexibility be maintained to cope with diverse conditions as long as diversion designs are approved by the regulatory authority. Permanent diversions are of sufficient long-term concern that a requirement to size such diversions to safely pass the peak runoff from a 100-year precipitation event, or larger event as necessary, is reasonable because of the measure of environmental protection and public safety this design provides.

One commenter suggested that a specific storm duration be attached to the 100-year precipitation event. Based on the long-term concerns associated with permanent diversions, the requirement to safely pass the peak runoff is again justified. It is recognized that the calculation of channel gradient, roughness, size, and routing to safely pass flows will be based on the premining capacity of the natural system to pass flows. The permittee will not be expected to divert flows in a manner that necessarily reduces natural flooding downstream.

Two commenters argued that permanent diversions of overland flow should not be allowed. Their recommendation was to assure that the design of the mine operation minimize the need for permanent diversions. Temporary diversions are preferable to permanent diversions in the vast majority of cases; thus, permanent diversions must be approved by the regulatory authority.

18. Some commenters argued that § 715.17(c)(3) was not consistent with the Act. In light of this, the section has been revised to more closely reflect the requirements of the Act with regard to additional contributions of suspended solids to streamflow and runoff outside the permit area. The intent of the requirement remains to minimize additional contributions of suspended sediment to the surface water system. Under § 715.17(b)(1)(iii) it may be necessary for the regulatory authority to require monitoring to determine seasonal variations in suspended solids prior to construction of a diversion or upstream from a diversion.

Section 715.17(c) is expanded to further delineate sediment-control and erosion-control measures that might be used with the overland flow diversion structures. One commenter suggested that in addition to total suspended solids, total dissolved solids in diverted overland flow should also be controlled. This suggestion is not accepted. The principal water quality parameter of concern with respect to such diversions is the total suspended solids, and if designed, constructed, and maintained properly such diversions do not represent a significant additional source of total dissolved solids.

19. Commenters recommended deleting any reference in § 715.17(c)(4) to required compliance with applicable water quality standards or effluent limitations as outlined in paragraph (a). The principal concern of the commenters was the appropriateness of applying effluent limitations to diverted but uncontaminated overland flow and also to the potential inequities of forcing a permittee to treat upstream water pollution for which the permittee is not responsible. This point is well made, and § 715.17(c)(4) is deleted.

20. Several commenters argued that in no case would it be advisable to divert surface water into underground mine workings in the interest of abating water pollution or eliminating public hazards resulting from underground mining. This comment is accepted, and § 715.17(n) has been addded to prohibit diversion of surface waters into underground mine workings. It is recognized that flooding of underground mines has the potential to reduce the formation of acid and the subsequent formation of iron and other metallic compounds. If such flooding is appropriate, adequate water can be obtained from sources other than another mine. The permittee has the responsibility of minimizing disturbances not only to water quality but also water flow and must comply with these requirements at the permit area.

21. A number of commenters indicated that no permanent diversions of intermittent or perennial streams should be allowed. There appears to be no adequate basis for establishing such a nationally applicable regulation to that effect, but the regulatory authority shall assess the appropriateness of such diversions and shall restrict them when necessary. Since the Department wishes to encourage the use of diversions of overland flow away from the disturbed area to the highest degree environmentally acceptable, ephemeral streams have been deleted from § 715.17(d)(1). Imposition of overly restrictive design criteria on temporary diversions of ephemeral streams is not compatible with the more important need to control discharges from the disturbed area.

22. Commenters objected to the requirement in § 715.17(d)(1)(i) to maintain the average stream gradient. Although it is not necessary to maintain the exact gradient of an entire stream channel, it is, however, necessary to reproduce the combination of the average gradient, channel configuration, channel roughness, and channel bank stability in order to minimize disturbances to the sediment transport process. In effect, the gradient must be reestablished to the degree necessary to allow natural fluvial processes to continue as one commenter recommended. Thus, the requirement to maintain the average stream gradient for diversions that are to remain in place after operations are completed was retained. Section 715.17(d) reflects the relationship between the channel gradient and control of total suspended solids by requiring maintenance of the gradient to the extent necessary to ensure compliance with the Act.

23. One commenter suggested that the design criteria for diversions proposed in § 715.17(d)(i), (ii) and (iii) were not appropriate for the western States since natural erosional processes there were sufficiently active to make such control unnecessarily strict. This comment is not accepted. Design criteria are equally appropriate for western mines where erosion potential is high. One reviewer indicated that control over total suspended solids given by Federal and State standards referred to in the proposed regulations should be adequate and that further statements relating to construction and operation of diversions is not necessary. Total suspended solids are not adequately addressed in all cases by existing regulations, nor did the Congress indicate such a belief. Therefore, control over total suspended solids in diversions is retained.

24. A number of comments were received on the 10-year and 100-year recurrence interval configurations proposed for temporary and permanent diversions, respectively. The terms "peak runoff" and "recurrence interval" are retained as opposed to specifying a time period since the intent of § 715.17(d)(1)(ii) is to design the diversion channels to safely pass maximum runoff amounts that may occur in one region perhaps as a 6-hour storm and other areas as a 24-hour storm. It will be necessary for a permittee to identify the peak runoff expected in a 10-year and 100-year period either from extrapolation of flow records or of rainfall records and accepted runoff estimates. The 10-year and 100-year intervals for design are retained since the 10-year limit is consistent with general practice and affords an effective level of environmental protection, and the 100-year period is generally accepted as a basis for design of permanent diversions of intermittent and small perennial streams. One recommendation to employ "prudent and sound engineering" as a substitute for design criteria was not adopted since the design criteria given by the regulations are minimal and sufficient incentives are available to promote additional prudent and sound engineering.

25. Numerous commenters objected to the appropriateness and dimensions of a buffer zone. Strong support for the requirement was voiced by some commenters. Many commenters expressed concern that the sign requirements for buffer zones would create a visual eyesore. Proposed § 715.17(d)(3) provided exceptions to buffer zones when mining in intermittent or perennial streams was approved by the regulatory authority. Thus, existing rights to mine coal as evidenced in approved permits will not be adversely affected. Sign requirements have been reassessed in this section and in § 715.12 by allowing a permittee to use means of marking buffer zones other than signs. The paragraph has been amended slightly to take into account the approval authority of the regulatory authority to specifically review and evaluate proposals to conduct any operations within 100 feet of a perennial or intermittent stream. Thus, if operations can be conducted within 100 feet of a stream in an environmentally acceptable manner, they may be approved. This concept does permit the use of erosion and drainage control measures near the stream channel if approved by the regulatory authority. These exemptions are necessary if the environmental impacts are to be minimized or prevented. The 100-foot limit is based on typical distances that should be maintained to protect stream channels from abnormal erosion. Site-by-site distance determinations would be impractical and very difficult to enforce.

26. A few commenters recommended that the provisions for protection of fish and wildlife habitat be strengthened. Fish and wildlife resources are pro-

tected by these regulations during the initial program. Additional measures will be considered for the permanent program under the authority of § 515(b)(24) of the Act.

27. The proposed regulations pertaining to criteria for settling ponds received considerable public comment. Many commenters felt that settling pond criteria should not be specified and that flexibility should be maintained with respect to requiring settling ponds and "credits" for the use of other sediment control technologies. The "credits" refer to demonstrations that alternative means of sediment control and pond design could be substituted. Sedimentation ponds represent the best technology currently available to control suspended solids as required in the Act. However, as addressed in the final regulations, the required sediment storage volume of 0.2 acre-feet for each acre disturbed within the upstream drainage area may be reduced in an amount equal to the sediment removed by alternate sediment management practices. Other comments questioned the requirement to construct settling ponds prior to any mining in a given drainage area. This requirement has been maintained based on the statutory requirement of § 515(b)(10)(B)(ii) of the Act. Sections 715.17(a) and 715.17(e) have been reorganized to clarify the required timing for construction of settling ponds. One commenter suggested that an exemption to the requirements of § 715.17(e) be granted for drainage areas less than 100 acres. Although no acreage limitation is specified, a small area exemption does appear in § 715.17(a). It is, however, unlikely that exemptions would be given for drainage areas as large as 100 acres. It is also unlikely that any single, contiguous permit area, regardless of size, would be allowed to use the exemption. Use of the exemption does not reduce requirements for compliance with the effluent limitations.

28. One commenter noted that confusion exists with regard to the application of § 715.17(e) to coal waste slurry ponds. The final regulations have sought to clearly specify the application of the criteria in § 715.17(e) to sediment control ponds. Coal waste slurry ponds are regulated by § 715.18; hence § 715.17(e) does not provide design criteria or operational requirements for coal waste slurry ponds. Disposal of coal waste slurry also is regulated by other provisions of this title which are the responsibility of the Mining Enforcement and Safety Administration.

29. With regard to § 715.17(e)(1), considerable comment was received that the storage volume requirements of sedimentation ponds were inflexible and arbitrary. A frequent comment was that settling pond sizing should be based on recognized design criteria approved by the regulatory authority and also on expected site-specific erosion rates. Although the storage volume requirement section has been revised in the final regulations, specific minimum storage volume requirements are necessary in order to minimize the disturbance to the hydrologic system, to provide the industry with specific minimum requirements for acceptable sediment control, and to facilitate determinations of compliance on the part of the regulatory authority. It may be necessary to apply better technology under site-specific conditions.

30. Numerous commenters suggested that the minimum storage volume of settling ponds as required by § 715.17(e) was excessive and that the summing of volumes to control drainage from the 10-year 24-hour precipitation event, plus 0.2 acre-feet of storage for each acre of upstream disturbed area, plus storage necessary to meet effluent standards, was inappropriate. Settling pond volume, which includes both a settling volume and a sediment storage volume, is appropriate for these regulations. As the regulations have been revised, a minimum pond surface area, a settling volume with a minimum retention time, and a sediment storage volume have been specified.

31. The requirement in the proposed regulations for additional settling pond storage as necessary to meet effluent standards has been deleted from § 715.17(e). However, discharges from settling ponds used to control runoff from the disturbed area must meet the effluent limitations specified in § 715.17(a). Numerous comments dealt with the appropriateness of the requirement for providing a sediment storage volume of 0.2 acre-feet for each disturbed acre within the upstream drainage area. Some commenters suggested that this specific sediment storage volume requirement be deleted entirely because it does not reflect regional diversity or best mining practices. Other commenters recommended specific changes in the sediment storage volume, in some cases inversely relating sediment storage volume to the steepness of slopes in the disturbed area.

The recommendations for other sediment storage volumes have been considered. However, it should be noted that no water quality data demonstrating an ability to meet the requirements of the Act was submitted to support recommendations for alternative sediment storage volumes. Further, results of a recent survey [1] indicate that settling ponds with other sediment storage volumes are not functioning in a manner consistent with the requirements of the Act. The study [2] which recommended a sediment storage volume of 0.2 acre-feet per upstream acre disturbed utilized settling ponds at surface coal mines not following current best mining practices. This sediment storage volume is considered to be valid and to represent a reasonable sediment storage volume to minimize disturbance of the hydrologic balance because reductions in the required sediment storage volume may be allowed where other sediment control measures are utilized. It is emphasized that the effectiveness of control measures must be demonstrated using water quality, quantity and other appropriate data. As in the case of other requirements for data prescribed in this part, the data may be derived from operations other than those under the control of the permittee.

The majority of comments supported the required settling volume equal to the volume of runoff from the drainage area above the settling pond that results from a 10-year 24-hour precipitation event. However, a number of comments also addressed the need for a specified detention time for drainage entering settling ponds. The requirement for providing one square foot of settling pond surface area for each 50 gallons per day of inflow from the 10-year 24-hour precipitation event is based upon the objective to settle out suspended particles greater than 0.01 mm in mean diameter. In addition, a retention time of at least 24 hours is needed to permit settling. The inflow rate may be calculated from runoff data while the detention time must be achieved by pond size, flow through characteristics of the pond, inlet and outlet locations and wind currents. As noted earlier, this design is effective, available and requires good control technology for the purposes of minimizing disturbances to the prevailing hydrologic balance. In addition, the regulations have been revised to reflect the ability to reduce the amount of runoff to be controlled in the drainage area above the settling pond by diverting runoff across the undisturbed area away from the disturbed area. Appropriate reductions in pond size based on the use of chemical treatment measures have also been allowed. A few commenters suggested that the 10-year 24-hour settling volume was not of sufficient size to meet the intent of the Act. Based on information available to the Department, this settling volume requirement appears reasonable and adequate to meet the statutory requirement that disturbance of the hydrologic balance be minimized. One commenter suggested that such settling ponds should be sealed, however, no information or operating experience suggest that all ponds of this type should be lined and sealed.

It is noteworthy that the revision of the sizing criteria for sedimentation ponds allows credits for both upstream reductions in sediment delivery and diversions of water from the upstream watershed. The 10-year 24-hour precipitation event runoff is compatible with the requirements of paragraph (a) and provides for consistency during the initial regulatory program. Since dam heights are generally limited by construction and safety considerations, the inflow rates and related area requirements to settle suspended material approximate those required to retain the runoff from a 10-year 24-hour precipitation event if no additional treatment other than settling is provided. The low

[1] Simpson, David G, U.S. Bureau of Mines, Morgantown, Pa., "West Virginia Evaluation Tour, Water Quality Committee Report," September 1977.

[2] Curtis, Willie R., "Sediment Yield from Strip Mine Watersheds in Eastern Kentucky," Second Research and Applied Technology Symposium on Mined Land Reclamation, National Coal Association, Louisville, Ky., October 1974.

dams effectively produce ponds with the larger area required to effect sedimentation.

32. Numerous comments were received, with respect to the requirement in § 715.17(e)(2) to provide spillways to safely discharge the peak runoff from a precipitation event with a 25-year recurrence interval, or larger event as specified by the regulatory authority. A number of commenters suggested that a 10-year precipitation event or larger event if specified by the regulatory authority was a more reasonable minimum precipitation event for spillway sizing. A few commenters suggested that spillway requirements for sedimentation ponds be deleted entirely from the regulations.

Spillway requirements are necessary because they represent an integral part of sedimentation ponds. The inclusion of spillway design criteria for settling ponds ensures a necessary degree of safety. The safe discharge of the peak runoff from a 25-year precipitation event through spillways is more appropriate than the 10-year precipitation event because it provides a more acceptable level of protection against failure. One commenter suggested that a spillway design which would safely pass the 40-year precipitation event would be advisable. When settling ponds are planned for lifetimes exceeding 25 years or where safety is of special concern, the regulatory authority should require that spillways be designed to safely pass larger precipitation events as appropriate.

A large number of commenters recommended that instead of placing requirements on an appropriate combination of principal and emergency spillways that such requirements apply to spillway "systems." This recommendation for more generic spillway language has been accepted, and the regulations have been revised accordingly. However, this modification has not been adopted for larger sedimentation ponds.

One commenter suggested that settling ponds less than 1 acre in surface area and less than 15 feet deep be exempted from the spillway design criteria. There is no basis for such an exemption and the importance of maintaining an acceptable level of safety outweighs such special exemptions. It should be noted that this portion of § 715.17(e) has been revised to require proper spillway location to maximize detention time and also to permit siphon-type pond dewatering methods or other methods as approved by the regulatory authority. These discharge structures must be designed to prevent slug-like discharges of suspended material.

33. Commenters suggested that the criteria for the MESA inspection requirement in 30 CFR 77.216-3 should apply to § 715.17(e) and that settling ponds with embankments of 20 feet or less in height and with volumes of less than 20 acre-feet, should not be inspected. MESA recommended that the inspection requirements of paragraph (e)(3) apply to all settling ponds, regardless of embankment heights or volume. In the interest of settling pond safety and on the basis of MESA's recommendation, § 715.17(e)(3) has been revised to require inspections of all settling ponds regardless of embankment heights or volume. Thus, no distinction remains between pond sizes in these regulations. It is essential to ensure that all ponds constructed to meet the requirements of the Act be constructed and operated in a safe manner from the standpoint both of environmental quality and safety.

34. Some commenters found § 715.17(e)(4) confusing. This paragraph has been clarified by requiring that pond removal be contingent upon appropriate compliance with the revegetation requirements of § 715.20 and the other paragraphs of § 715.17. Although all references to bonds in the proposed regulations were modified by the adjective "applicable," it is apparent that many reviewers misinterpreted the regulations as deriving authority from § 515(b)(20) of the Act. Since this section of the Act is not directly included in the initial regulatory program, the Department has taken steps to avoid further misinterpretation by deleting references to bonds.

A few commenters recommended that removal of settling ponds be mandatory. In the vast majority of cases, settling ponds should be removed when the disturbed areas are reclaimed and stabilized. However, it is recognized that some cases may exist where the environmental degradation that may result from removing a sedimentation pond as well as the land use opportunities supported by that pond may outweigh the environmental and safety implications of leaving the settling pond in place. When ponds are left, the provisions of § 715.17(k) for permanent impoundments must be met.

35. Numerous comments objected to the requirement of § 715.17(e)(5) for removal of sediment from a sedimentation pond where the volume of sediment accumulates to 50 percent of the required sediment storage volume. It is recognized that the 50 percent accumulation criterion for pond cleaning was conservative. However, some specified sediment accumulation criteria for cleaning should be required to ensure acceptable pond operation and maintenance practices. Therefore, the regulations have been revised to require sediment removal from settling ponds when the volume of sediment accumulates to 80 percent of the required sediment storage volume. This new criterion is thought to be more reasonable and is based on the assumption that adequate settling pond surface area and detention time will be retained as the pond fills. One commenter raised the concern that the sediment removal requirement would be applied to coal preparation plant slurry ponds. As noted previously, the criteria for slurry ponds are addressed by § 715.18. Another commenter suggested that sediment removed from settling ponds should be disposed of in a way that "minimizes" rather than prevents it from entering surface water, contaminating subsurface water, and causing adverse effects on infiltration, vegetation, or water quality. "Minimizes" is more appropriate given the language of § 515(b)(10) of the Act, but such material, if toxic, must be prevented from coming into contact with water.

36. Commenters objected to the requirement in § 715.17(e)(6) that discharges from sedimentation ponds must meet the water-quality and effluent requirements of paragraph (a) of this section. It is superfluous to require compliance with the requirements of paragraph (a) of this section twice. Therefore, § 715.17(e)(6) has been deleted. Discharges from those sedimentation ponds draining disturbed areas remain subject to the effluent limitations contained in paragraph (a).

37. A number of comments on § 715.17(e)(7) dealt with the appropriateness of including special design criteria for large settling ponds and also the compatibility of such criteria with MESA requirements for structures of this size. The size and capacity of such settling ponds is sufficiently large to warrant special design criteria. The proposed design criteria did in one instance conflict with MESA guidelines. Therefore, these regulations have been revised to incorporate the MESA requirement that a spillway for settling ponds of this larger size be designed to pass, at a minimum, the 100-year frequency, 6-hour duration storm. The permittee may be required to provide a spillway structure to pass a larger storm if specified by the regulatory authority. As noted previously, reviewers recommended that an "appropriate combination of principal and emergency spillways" should be replaced by an "appropriate spillway system." Such a modification conflicts with MESA requirements, which categorize spillways in a more restricted sense (e.g., a paved apron or overflow channel). Therefore, for large settling ponds, the proposed language is maintained.

38. One reviewer recommended that safety factors with quantitative values be deleted from § 715.17(e)(7). This portion of paragraph (e)(7) is not revised and still requires that ponds be designed and constructed with an acceptable safety factor of 1.5 to ensure embankment slope stability. One commenter recommended deleting paragraphs (iii) and (iv) of § 715.17(e)(7) which deals with minimum top width of embankments and seepage control, respectively, because such design criteria would be assured by the requirement for large ponds to be designed under the supervision of a registered professional engineer. Such elements of design criteria should be specified as necessary to set requirements for the industry and facilitate enforcement by the regulatory authority. One commenter recommended that the special settling pond design criteria of § 715.17(e)(7) should apply in all steep slope areas. Settling pond design criteria, as specified in paragraphs (e)(1) and (e)(2), are adequate to minimize disturbances to the hydrologic balance in steep slope operations.

39. Commenters objected to the unnecessary expense of requiring a registered professional engineer to supervise the design and construction of settling

ponds and to inspect and certify settling ponds after construction. In addition, the application of this requirement to all settling ponds was questioned. One commenter suggested that this requirement apply only to large settling ponds which MESA currently inspects. Another commenter recommended that the requirements apply only if the settling pond was larger than 1 acre in surafce area and greater than 15 feet deep. Another commenter suggested that in addition to the requirement for inspection and certification by a registered professional engineer, a requirement be added for inspection and certification by a land surveyor. The comments have been considered, and based on the requirement of § 515(b)(10)(B)(ii) of the Act, the regulation, as modified for clarity, is appropriate.

40. One comment was received on § 715.17(f). The commenter suggested that discharge structures be used where necessary. This was the intent of the section and the necessary clarifying language has been added.

41. Many commenters objected to the requirement of § 715.17(g) regarding burial and treatment of toxic spoil and waste material. Comments were also directed to the depth of nontoxic material to be used. A number of commenters recommended reduction from 5 feet to 2 feet of nontoxic material, a few recommended 3 feet, and some recommended deletion of the numerical standard and substitution of the phrase "sufficient cover." Numerous recommendations were made to increase the cover requirements from 5 feet to 8 and 10 feet based on western experience with upward salt migration. A few commenters noted that burial of material was also covered in § 715.14(j). Section 715.17(g)(1) is shortened by referring to § 715.14(j) for specific burial and treatment requirements. Within that other section the amount of cover has been specified as a minimum of 4 feet unless, a greater amount is required by the regulatory authority to prevent adverse upward migration of salts, to establish a deeper root zone to promote vegetation, to meet local requirements, or to protect the hydrologic balance.

42. A few commenters suggested that the word "prevented" in § 715.17(g) went beyond the intention of the Act to "minimize" disturbances. Accordingly, the regulation has been modified to indicate that drainage from acid- or toxic-forming wastes and spoil must be minimized. The word "prevent" is still used in a new subsection which paraphrases § 515(b)(10)(A)(i) of the Act since prevention of water contact is required.

43. Comments on proposed § 715.17(g)(1) indicated concern that materials that "were" actually toxic or otherwise harmful should be those subject to the requirements rather than those that "can" be toxic. It is necessary to treat and bury materials that may become toxic if not treated as well as those that are already toxic. The final regulations continue to express this need though the word "can" has been changed to "will" to reflect a need for an appropriate degree of certainty.

44. Many comments on the time limit proposed in § 715.17(g)(2) recommended that the requirement be deleted or that the time requirement was unreasonable for coal waste slurry ponds. The time frame is necessary whenever a danger of wind or water erosion exists. The regulations have been modified to recognize that coal waste slurry ponds will be covered in a somewhat different manner by requiring treatment or burial after filling of the slurry disposal area or when the area is no longer in active use.

45. A few reviewers of § 715.17(g)(3) recommended complete cementing of holes, deletion of the proviso for mixing, and deletion of the regulatory approval phrase. Cementing for the entire length of the hole is not justified in all cases and, thus, the regulatory authority should approve site-specific methods of plugging. No instances are known where mixing of ground waters through drill holes has improved water quality, and thus that proviso has been eliminated. One commenter asked that an exception be added to permit bore holes to be used for monitoring ground water. This use remains permissible under the discretionary powers of the regulatory authority.

46. Those few reviewers commenting on § 715.17(g)(4) were unanimous in their position that the statement, "other action as required by the regulatory authority," was too vague. However, this phrase is used in § 515(b)(10)(G) of the Act and remains in the regulations.

47. Numerous commenters objected to the reliance on infiltration rates as the measure of recharge capacity under § 715.17(h), pointing out that recharge capacity is a complex system comprised of a combination of precipitation, runoff, evaporation, infiltration, transmissibility, ground water storage, and water levels. Many alternatives were suggested. It is agreed that recharge is achieved through a complex set of variable hydrologic functions, most of which have been identified in many of the comments. Infiltration rate was initially chosen to provide an easy method of measuring a critical factor affecting recharge. Because recharge capacity is a function of many variables, the recommendations have been accepted to expand the definition. The ground water monitoring paragraphs of the section have been revised to reflect the monitoring requirements necessitated by the change. The reorganization of the ground water section addresses a number of the other comments made. Sections 715.17(i) and 715.17(k) are reorganized into § 715.17(h), entitled, "Ground Water."

Comments that recharge capacity should be restored only to the degree required by the postmining land use cannot be accepted since § 515(b)(10)(D) requires restoration of recharge capacity to approximate premining conditions and since changes in recharge could adversely affect areas off the mine site.

48. All comments received on the proposal to require selective placement of backfill materials indicated that the intent of the Department to require selective placement when necessary to reestablish a ground water system to approximate premining conditions was not clear. The wording of the proposed § 715.17(i) has therefore been revised as § 715.17(h)(2). Placement of spoils with draglines is generally known to recreate aquifers without special selection and thus is permitted to continue if otherwise in compliance with the regulations. However, random placement of spoils will not recreate relatively impermeable strata. In such cases where impermeable strata serve an important role in retarding water flow and supporting vegetation or separating aquifers they must be reformed and selective placement and treatment may be appropriately required. Aquifers with no value for vegetation, agriculture or other uses will not have to be reestablished. Where a major disruption in the regional ground water flow system adversely affecting water quality and flow may be caused by not selectively placing materials, then selective placement may be required.

The objective of this paragraph is to minimize disturbance to the hydrologic balance as that balance is reflected in the ground water system. This will be particularly important when mining may affect off-site areas as well as on-site areas. Changes in a ground water system caused by mining cannot be constrained only by the postmining use of the mined land or permit area as has been recommended by some. Rather the requirements should reflect the high potential for the on-site effects on ground water to affect off-site areas. If there are long-term effects on-site, there are likely to be equally long-term effects off-site. Mining of aquifers is not banned. Field data show that mined areas can often transmit water as well as premined areas.[a] Careful assessment of the role of aquifer systems is required, and careful recreation of such systems under certain circumstances may be required.

49. A number of commenters recommended strengthening proposed § 715.17(k) by deleting the apparent requirement to monitor ground water only when mining below the water table, adding specific analytical requirements for lead, sulfate, hardness, cadmium, copper, zinc, arsenic, and pH, or by requiring continuous monitoring when mining aquifers. Other commenters felt the requirements were unnecessary, or were useful only in alluvial valley floors, or should have provided for regional differences, or required environmentally unsound wells and would be an unrep-

[a] Rahn, P. H., 1976. "Potential of Coal Strip Mine Spoils as Aquifers in the Powder River Basin: Project Completion Report." Old West Regional Commission.

resentative method of monitoring. A few commented to the effect that monitoring should be discretionary. Others felt ground water monitoring should be mandatory.

Ground water monitoring will be necessary at many operations throughout the Nation, and the requirements are not regionalized. The regulations allow appropriate variations by the regulatory authority. The potential for adverse effects on water levels and water quality are high, and therefore ground water monitoring is required to both warn of problems and ensure that problems are not inadvertently created. Properly drilled and completed wells are not environmentally unsound, and there is not a feasible alternative to monitoring ground water in many cases. To wait for ground water to reappear as surface water may be acceptable under selected geohydrologic conditons, but these conditions are not universal. Further, the potentials for adversely affecting ground water exist in coal regions throughout the Nation and are not limited to mines in or adjacent to alluvial valley floors. Ground water monitoring will not be required at a mine site where there is no possibility of disruption of the ground water system.

These monitoring procedures are the general responsibility of the permittee since monitoring of progress will be necessary to warn of impending problems and to signal impending success. Monitoring will be required to measure progress toward restoration of recharge capacity. Some comments suggested that monitoring should be limited to a case when mining in the saturated zone. However, mining in the unsaturated zone has the same opportunity to affect ground water quality and recharge under selected geohydrologic conditions. A few reviewers recommended that monitoring was necessary only when there was a potential to involve regional ground water flow systems. It is difficult to draw such a distinction nationwide, and sufficient latitude exists in the final regulations to require monitoring when mining can affect the ground water system and to vary the degree of monitoring according to the significance of the potential impact.

One commenter noted that blasting effects on the ground water system should be monitored. The final regulations appropriately specify in § 715.19 that the effects of blasting on the ground water system must be considered and minimized.

50. Comments were received regarding the apparent omission in the proposed regulations of any provisions to assist a water user whose supply is adversely affected. Section 717 of the Act provides for such situations, and this section is in force from the date of enactment of the Act. Therefore, a new § 715.17(i) has been added to the regulations to reflect this requirement. The language of the Act has been used as much as possible.

51. A number of comments on alluvial valley floors indicated concern with the wording of the proposed § 715.17(j) to preserve "essential elements" of the hydrologic functions. The commenters argued that the wording in the Act was "essential hydrologic functions" and thus the regulations made excessively stringent requirements for restoration. Further, the commenters argued, the reestablishment criteria were not properly related to their relative importance to the essential functions of the alluvial valley floor. For example, the commenters felt they should not be required to maintain or establish aquifers or aquicludes if these elements were not important to the essential hydrologic functions and postmining land use. A large number of comments were received regarding the need to assure that this section addresses the obligations of the Department to include mines in adjacent areas that could materially damage the quantity or quality of surface and ground water that supply alluvial valley floors.

Sections 715.17(j) has been modified to better reflect the requirement of the Act to minimize disturbances to the prevailing hydrologic balance by preserving the essential hydrologic functions of alluvial valley floors throughout the mining and reclamation process. The term "essential hydrologic functions" has been defined and added to § 710.5 to state the relationship between functions and hydrologic and biologic variables. The final regulations attempt to make certain that the roles of these variables or characteristics are properly understood and defined prior to mining and reclamation. The permittee must demonstrate that those characteristics that support the essential hydrologic functions will be preserved. Though the proposed regulations contained language which protected alluvial valley floors from adverse impacts of adjacent mines, the language in the final regulations has been modified to more specifically address this concern.

52. Recommendations were also made to refine the essential characteristics of alluvial valley floors to include more detailed items. The recommendation has been adopted since it serves to further clarify the requirements of this section. However, none of the requirements have been changed.

53. A few commenters indicated that it was their opinion that existing mines which were "grandfathered" under the Act, did not have to meet the provisions of § 515(b)(10)(F) of the Act. This is an incorrect interpretation of the Act. Mines within alluvial valley floors that are permitted to continue operations by virtue of meeting the provisions of the Act in terms of current permits and production, or new operations which are allowed to operate in or adjacent to alluvial valley floors located west of the 100th meridian, must comply with the performance standards of this part including § 715.17(j)(1).

54. Two commenters recommended that the reference to "regular cropping of hay" in proposed § 715.17(j)(2) was too strict an interpretation of the Act's reference to farming and, although vigorous growth of hay is a partial indicator of alluvial valley floors, it does unduly restrict the meaning of alluvial valley floors, and the phrase has been deleted.

55. A number of commenters offered the opinion that § 715.17(j)(2) as proposed was an incorrect extension of the provisions of § 510(b)(5) of the Act in the initial program. The commenters further noted that if the provisions of paragraph (j)(2) were applied, the remaining exchange provisions of § 510(b)(5) should be implemented. The Department has the authority to provide exchanges of Federal coal leases for other Federal coal leases or a fee interest in Federal coal for private coal in alluvial valley floors provided the requirements for substantial financial and legal commitments have been met prior to January 1, 1977. Detailed regulations implementing the exchange provisions will be developed.

56. One commenter asked to what extent existing mines are allowed to continue operation on or adjacent to alluvial valley floors. The intent of the regulations is to allow such continuances in those areas that have been adequately investigated, on which impacts have been assessed, and which are included as areas to be mined and reclaimed in plans approved by the regulatory authority in support of the existing State permit. Such continuations must comply with the performance standards of §715.17(j)(1) according to the time schedule contained in § 710.11 for new and existing mines.

57. Two commenters requested no mining be allowed on alluvial valley floors until such areas had been scientifically mapped. Another suggested a need for regulatory procedures to determine the existence of alluvial valley floors. Still another commenter indicated that the section appeared too strict and that such determinations should be governed by a landowner-permittee agreement. With regard to the last comment, the Act does not provide for such case-by-case arrangements for reclamation based on landowner-permittee agreements other than those changes in land use approved under the procedures specified in § 715.13. The potentially adverse effects of mining in or adjacent to alluvial valley floors may all too readily affect offsite areas as well as the long-term agricultural economy of a region. Thus, the Act is specific on the degree to which mining is or is not allowed in the vicinity of alluvial valley floors and as to the environmental protection standards that must apply.

Changes in land use in alluvial valley floors may be considered, but the essential hydrologic functions must still be preserved to have the capacity to serve as they did prior to any mining. With regard to recommendations for mapping and additional regulatory procedures, it must be emphasized that while the Department feels it has adequately provided the necessary regulatory basis for national determinations of alluvial valley floors, States and regulatory authorities

are encouraged to refine the performance standards to meet regional and local situations. If, for example, it is necessary to more accurately identify the role of alluvial valley floors in the agricultural economy of a region, the appropriate regulatory agency may develop such a requirement, perhaps through amendment of existing statutes or regulations or exercise of existing authorities.

58. One commenter recommended that if the intent of the proposed regulation was to ban mining on alluvial valley floors, then the intent should be made clear. There is no basis in law to ban all mining on alluvial valley floors if the criteria for permit issuance are met and if the reclamation requirements to preserve essential functions are met.

59. Numerous comments were received from reviewers of § 715.13 (postmining land use) and § 715.14 (backfilling and regrading) regarding permanent impoundments. The recommendations generally favored incorporation of specific requirements for large, permanent impoundments in the initial regulatory program even though § 515(b)(8) of the Act covering permanent impoundments was not specifically designated for the initial program. Public comments support inclusion of provisions for permanent impoundments in the initial program as an approved postmining land use. This change has been made in § 715.13 in order to assure public safety and the protection of the hydrologic balance including protection of water quality. Requirements similar to those in § 515(b)(8) of the Act have also been included in § 715.17(k).

The original definition of approximate original contour in § 710.5 noted that water impoundments could be permitted if they complied with § 715.17. Thus, the inclusion of standards for permanent water impoundments is a modification of the proposed regulations by expansion of that reference. The final regulations require all impoundments, if left after reclamation, to be of proper size, safety, and utility to serve the approved postmining land use.

60. Some commenters were concerned over the application of the proposed standards to haul roads and access roads existing prior to enactment and wished to exempt such roads from compliance. As noted in § 710.11 and § 502(c) of the Act, all existing surface coal mining operations regulated by a State must comply with the environmental protection performance standards of the initial regulatory program on and after May 3, 1978, with respect to lands from which overburden and the coal seam being mined have not been removed. Thus, activities included under the definition of "surface coal mining operations," such as access and haul roads, must comply with the standards. Section 701(28)(B) of the Act includes within the definition of surface coal mining operations "all lands affected by the construction of new roads or the improvement or use of existing roads to gain access to the site of such activities and for haulage * * *." Thus, any existing roads used to gain access to or to haul coal or other materials in support of the extraction of coal after May 3, 1978, or in support of reclamation of lands from which coal was extracted after May 3, 1978, must comply with the environmental performance standards according to § 710.11. Section 710.11(d) specifically addresses the situation the commenters noted.

61. A number of commenters pointed out that § 715.17(l) did not adequately address the expressed intent of the Congress to completely reclaim coal access roads when they may remain major sources of sedimentation and have little continuing social or economic value. The need for design and construction standards and the useful functions of properly constructed roads to break up drainage on long slopes and to protect the outslope from spoil placement was also recognized. Limited provisions for roads have been incorporated in the initial program because of the potentially major impact haul roads and access roads may have on the prevailing hydrologic balance. Since improperly abandoned roads have been identified as a major source of sediment, it is appropriate to modify the regulations to take into account reclamation requirements for roads. Therefore, § 715.17(l)(1) has been modified to require reclamation of roads that are not necessary to support the postmining land use, are not necessary to control drainage, or will not be maintained in an appropriate manner.

62. One comment received suggested it was unwise to reclaim roads to the approximate original contour since it removed beneficial areas. Not all roads that many wish to leave as reclaimed areas are "beneficial." Thus, the criteria for approving the retention of roads remain.

63. One set of comments indicated that the initial regulatory program should be more closely aligned with the specific language of § 515(b)(17) of the Act. Only those elements of road construction and maintenance that are closely related to the requirement of § 515(b)(10) to minimize disturbances to the hydrologic balance are addressed, and, therefore, those portions of § 515(b)(17) relating to fish or wildlife, and public and private property are reserved for the permanent regulatory program.

64. One commenter recommended deletion of the encouragement given in the proposed regulation to locate roads on benches, and ridges. The objective of this proposal was to keep roads out of valley areas to minimize disturbance to the hydrologic balance, and this remains a valid objective. The problem apparently was one of semantics; certain benches which are covered with exposed clay are not suitable for use as roads, and, consequently, the word "bench" has been deleted.

65. Many commenters strongly recommended reducing the proposed 100-year flood plain criteria to 25 years, and changing or modifying the word "restrict" in proposed § 715.17(l)(2). The 100-year flood plain criteria was overly restrictive because it was developed to protect roads and other structures from damage, not to protect downstream areas from erosion and significant changes in flow. Therefore, its application is unwarranted until further information is received that identifies an adequate standard. The proposed regulation contained a qualifying phrase which would allow road construction in the flood plain if the base flood was not restricted and if sedimentation, erosion and flooding were not significantly increased. The revised regulation emphasizes the minimization of sedimentation, erosion, and flooding rather than specifying a flood plain size.

66. Many commenters suggested that the 25-year 24-hour design criteria in § 715.17(l)(2)(iii) for water control structures was excessive and that the annual recurrence interval should be 1 year, 5 years, or 10 years or should comply with local standards. In the interest of instituting an initial regulatory program that phases in permittee responsibilities, the design criteria has been reduced to the 10-year 24-hour design to be compatible with the remainder of this section. It should be noted that the design criteria will be reevaluated for the permanent program to ensure adequate protection of water quality and quantity during precipitation and runoff events likely to occur during use and reclamation of roads. Where more stringent local standards are needed, the regulatory authority must require them.

67. One commenter suggested that use of maximum road grades would increase the total surface area and therefore would increase the potential for erosion. However, the road grade specifications are necessary to control erosion from the roads, and are currently used by a number of regulatory authorities.

68. Several reviewers suggested that application of effluent limitations to discharges from roads was not appropriate because roads were nonpoint sources and since roads may have numerous point source discharges. There is difficulty in applying discharge limits to drainage from roads extending far from the actual area to be mined. Therefore, the proposed regulation has been revised to allow some roads within the permit area to be exempt from the effluent limitations and the monitoring requirements during the initial regulatory program unless the regulatory authority determines that application of the effluent limitations is necessary to protect the hydrologic balance. However, haul roads and portions of access roads in proximity to mining and reclamation operations where control of water from roads can easily be combined with control of water from land disturbed by mining and reclamation must be controlled.

69. One commenter objected to the use of the word "durable" in § 715.17(l)(2)(iv). It is necessary to use material that resists disintegration in road construction in order to minimize erosion. This should not be construed as an inflexible requirement to pave roads.

70. A few commenters objected to the specific design criteria for roads as unnecessary. These specific criteria are necessary since effluent limitations will

not apply to all roads. Therefore, design and construction specifications are necessary to control erosion and ensure successful reclamation.

71. Some commenters recommended prohibition of stream crossings. Other commenters said the constraints on stream fords were too severe. The constraint is both necessary and stringent enough to protect flowing streams. Stream channels may be crossed without special precautions if water is diverted away in a temporary or permanent manner. However, uncontrolled crossing of flowing streams is a major source of increased sediment and therefore must be controlled. Further, this regulation does not prohibit the use of properly designed culverts.

72. One commenter recommended that the grade provisions of § 715.17(l) be waived for roads within open pit mines. The definition in § 710.5 excludes coal haulage roads within the working pit area.

73. One commenter suggested that the phrase, "toxic- or acid-forming substances" used in reference to road surface materials in § 715.17(l)(2)(iv) should be modified by the phrase, "water soluble." Addition of this phrase would be somewhat restrictive, but it is understood that the materials must be toxic- or acid-forming in relationship to some other medium such as water or soil and must have a potential to cause adverse impacts in order to require special controls.

74. A number of comments regarding the applicability of § 715.17(l) to infrequently used roads to underground mine facilities were received. This aspect of road reconstruction and reclamation is further discussed under Part 717.

75. A few commenters encouraged the control of fugitive dust from roads. This subject is properly left for inclusion in the permanent regulatory program.

76. One commenter asked that § 715.17(m) controlling hydrologic impacts of other transport facilities be more stringent. It is more appropriate to cover other aspects of transport facilities in the permanent regulatory program. In response to a few comments, the Department has used the language of § 516(b)(10) of the Act to clarify the need to control the placement and design of other transport facilities.

77. Section 715.17(c)(5) on diversion of overland flow has been deleted and a new § 715.17(n) added. The wording has been modified to reflect the opinion of many technical reviewers that benefits from discharge of surface waters into underground mines were so limited as to negate the need to allow such discharges.

Section 715.18 *Dams constructed of refuse material.*

1. Commenters suggested that § 715.18 should be deleted since it duplicated regulation of the same structures by the Mining Enforcement and Safety Administration (MESA). This view is rejected. These regulations are required by the Act and compliment MESA's authority which is limited to that needed to protect employee health and safety. On the other hand, OSM jurisdiction extends to public safety and protection of the environment. Congress specified that standards and criteria covering design, construction, operation, maintenance, modification and removal or abandonment of all existing and new dams or embankments constructed of or impounding coal mine waste used either temporarily or permanently as dams or embankments, are to be promulgated by the Secretary in cooperation with the Chief of Engineers, U.S. Army. Section 715.18 reflects coordination between the agencies and provides minimum design criteria consistent with criteria governing similar structures built by the Corps of Engineers.

2. Several commenters suggested that the meaning of refuse material be clarified. The word "waste" has been substituted for "refuse" and defined in § 710.5 to mark the distinction between waste materials and spoil. Additionally, § 715.18 has been modified to include dams impounding waste since § 515(b)(13) of the Act requires control of "coal mine waste piles."

3. As a result of several comments, § 715.18 has been modified to more closely conform to the Act and provide for abandonment or removal of all dams constructed of or impounding waste materials.

4. Some commenters objected to the proposed criteria for drawdown, freeboard, and inspection required in § 718.18(c). These criteria have been retained for compliance with Corps of Engineers safety criteria for similar structures.

5. Commenters requested the minimum safety factors proposed for dams be related to methods of calculation through references to appropriate technical manuals. Since the calculation procedures for stability are widely practiced, references were not added. In calculating safety fractors, the permittee must use accepted methods such as those used by the Corps of Engineers.[4] The permittee must carefully consider the nature and placement of materials in the dams so as to ensure achievement of the specified minimum safety factors.

Section 715.19 *Use of explosives.*

1. Several commenters suggested that the minimum weight of explosives subject to the regulations should be increased. This suggestion was rejected because § 715.19(a) is needed to provide the citizen protection mandated by the Act.

2. Many commenters objected to the requirement for a preblasting survey on the grounds that current technology is neither capable of predicting the weights of individual charges that would prevent damage to structures nor of determining the condition of structures in terms of resistance to vibration of structural and nonstructural elements. As a result, the regulation was modified to require the survey to determine the condition of relevant structures and to document any preblasting damage. While the assessment of wells and other water systems is limited to surface conditions and other readily available data, they are to be given special attention. Depth to water table, flow and water quality are among those easily measurable characteristics. In addition, based upon the survey report, the regulatory authority can require redesign of the blasting plan. Other revisions have been made to § 715.19(b) to make the survey less formal. One of the major advantages the preblasting survey is intended to have is increased communication between the permittee and the public about the blasting program. The less formal requirements are intended to foster such communication while still meeting the specific requirements of the Act.

3. Numerous commenters argued that the notice requirements of § 715.19(c) require the permittee to make impractical predictions about blasting schedules. Other commenters argued that the notice should be more specific as to blasting times. Other comments stated that it is not possible to predict all emergency conditions that can occur when blasting, and that the weight and type of explosives used will vary with each blast. Accordingly, while the requirements for public notice of the date and time of blasting and the description of possible emergency conditions that could result in schedule alterations have been retained, the requirement for the weight and type of explosives to be used has been deleted in §§ 715.19 (c) and (d). In addition, since the Act requires notification by mail, the certified mail requirement was deleted.

4. Many commenters objected to the requirement in § 715.19(e)(1)(i) restricting blasting to 1 hour after sunrise until 1 hour before sunset, and cited the safety problems that could ensue from the shorter time. In response, the requirement has been changed to allow the blasting increment of 4 hours to be scheduled at any period during the daylight hours.

5. A number of commenters argued that the requirement to prevent wildlife from entering the blasting area was impractical. As a result, § 715.19(e)(1)(iv) has been revised.

6. Many objections were raised to the provision that all primed blast holes be detonated within 24 hours. Since this provision affects the safety of the worker as well as the safety of the public, the provision was changed to follow the provisions of the Mining Enforcement and Safety Administration regulations.

7. Commenters objected that compliance with the stemming requirement would be impossible under many conditions. The regulation was changed to require that air blast be controlled so that it does not exceed 128 dB linear peak at any inhabited area surrounding the blast site. A decibel standard was recommended by several commenters and is supported by Bureau of Mines studies as one method of air blast control.

8. Numerous commenters objected to the proposed § 715.19(e)(1)(vii)(A) and (B) regarding the distance limitation and owner consent. Commenters ar-

[4] Corps of Engineers, Engineering and Design Stability of Earth and Rock-Fill Dams, EM 1110-2-1902 (1970).

gued that the only statutory authority for limiting mining near occupied buildings and facilities is the 300-foot limitation in § 522(e) of the Act designating lands unsuitable for surface coal mining. It should be recognized that the requirements of this section do not prohibit mining but require that blasting in populated areas be treated differently. Further, a purpose of the Act is to protect the health and safety of the public, and it is believed this section may minimize the likelihood of property damage. Commenters also argued that the requirement for owner consent before blasting within 1,000 feet of a residence would prevent mining in many areas. Blasting is essential to surface mining in many areas and it is possible that property owners without an economic interest would not consent to blasting. The provision for owner consent was deleted because adequate protection is afforded by the preblasting survey and the other blasting requirements. The distance limitation in § 715.19(e)(1)(vii)(c) pertaining to underground mines is required by § 515(b)(12) of the Act and is included in the initial program because of the requirements in § 515(b)(15)(C).

9. Many comments were received on the provision of § 715.19(e)(2)(i) restricting the peak particle velocity of the ground motion to 2 inches per second at specified locations. Some commenters favored retaining the 2-inch per second peak particle velocity, while others supported a reduction to 0.5-inch per second peak particle velocity. The regulation was changed to restrict the maximum peak particle velocity of the ground motion in any direction to 1 inch per second. The revision was based on reevaluation of published U.S. Bureau of Mines studies, discussion with Bureau of Mines personnel, studies of urban blasting by the British National Coal Board and research papers published by faculty members of several universities. The equation that determines the weight of explosives that can be detonated within any 8 millisecond period was changed to reflect the reduction in the allowable peak particle velocity of the ground motion and the table for distances between 350 and 5,000 feet was revised. Changes were made in subsequent provisions where necessary to reflect the new standard for peak particle velocity.

Section 715.20 *Revegetation.*

1. Some commenters suggested that vegetation cover should be capable of stabilizing the soil suface to at least premining conditions. Since stability of the soil with respect to erosion is ensured under the proposed regulation, no changes were made.

2. One commenter pointed out that § 715.20(a)(2) was too broad since it would require seeding of roads and water areas. The section has been revised to eliminate this obvious incongruity.

3. Commenters suggested that the field trial requirement for introduced species be eliminated. Several commenters pointed out that many plants commonly used, such as tree species in the Great Plains, have been in common usage and are considered naturalized. The requirement for appropriate field trials has been retained. However, "field trials" is interpreted broadly to include successful experience with the species in the area mined or a similar area. Thus, naturalized species will generally have been demonstrated to be acceptable.

4. Many commenters suggested that § 715.20(c) be modified since it limited "seeding and planting to land that has been regraded and topsoil replaced". To eliminate confusion, the section has been revised to require the seeding and planting of all "disturbed areas."

5. Many commenters argued that the mulching requirements of § 715.20(d) were unnecessarily specific and should be modified to allow the regulatory authority and permittees greater flexibility. The requirement specifying minimum amounts of mulch to be applied to the land was modified in favor of flexibility in the amount of mulch to be applied as approved by the regulatory authority. The paragraph does allow use of alternatives to vegetative mulch or annual grains.

6. Comments suggested that a pattern of distribution may provide a higher or better use than when plant species are distributed more uniformly. This suggestion was accepted and § 715.20(e)(2) revised.

7. Many commenters argued that it would be unreasonably difficult to prevent hoofed wildlife from damaging vegetation. Further, the commenters argued that it was impossible to determine when an area is ready to sustain natural wildlife grazing. Accordingly, this requirement has been eliminated from § 715.20(e)(2). Elimination of the requirement does not relieve the permittee of his responsibility to achieve acceptable revegetation which may, in some cases, require control of wildlife.

8. Section 715.20 (e)(3) was deleted since it is covered under § 715.17.

9. A significant number of commenters argued that it would not always be appropriate to require immediate revegetation where the postmining land use was for industry, public services, or residential use. This suggestion was adopted and § 715.20(f)(2)(ii) establishes requirements for temporary revegetation for areas that are to be converted to industrial or residential use within two years of regrading. Revegetation must be adequate to control erosion until the final use is achieved.

10. Many commenters suggested that proposed § 715.20(f) was unnecessarily inflexible and that a range of standards for measuring revegetation success should be considered. They argued that the criteria did not take into account variability of precipitation amount, time of occurrence, intensity and form; topography; slope; aspect; growing seasons and soil conditions. Some commenters expressed concern that the standards were too low. In response to the comments, this section has been revised to provide standards that: (1) incorporate site-specific variation within the permit area, (2) utilize reference areas, (3) evaluate a permanent vegetation cover capable of regeneration and plant success, (4) consider site condition of previously mined areas, and (5) ensure a ground cover for controlling erosion. Since the seeding procedures are to be approved by the regulatory authority, the measure of ground cover density by accepted methods should provide an adequate standard of compliance.

In response to comments, the section has been modified to provide that reference areas must be managed and not protected from use over a long period of time. It is believed that a 2-year minimum time base is required to adequately assess whether a permanent vegetation cover is capable of regeneration and plant success, since otherwise excessive fertilization may give the appearance of success prematurely. It is believed that further refinement of revegetation success measurements is needed. Therefore, the Department will continue to collect data necessary to revise the standards initially proposed or to develop a substitute method for the permanent regulatory program.

11. Several commenters objected to the requirement in § 715.20(g) to seed stockpiled topsoil if it is not redistributed within 30 days. It was pointed out that the provision ignored regional climatology and seeding season differences. The suggestion for deleting the 30-day requirement and substituting the first normal period for favorable planting conditions was adopted.

PART 716—SPECIAL PERFORMANCE STANDARDS

Section 716.2 *Steep slopes.*

1. Comments were directed to the proposed paragraph that prohibited the placement on the downslope of material cleared or gubbed from an area to be disturbed. Commenters recommended that placement of vegetative material cleared from the area to be disturbed should be allowed on the downslope since it would serve to filter acid seepage and silt-laden runoff. To accommodate this practice, one commenter recommended that the regulatory authority be given the discretion to allow such placement. However, § 515(d) of the Act prohibits the placement of any debris on the downslope below the bench or mining cut. Debris is normally considered to include vegetation cleared from an area prior to further disturbance. Thus, no wood or vegetative materials are to be placed below the downslope in steep slope operations. Drainage within the disturbed area should be treated by using stabilizing techniques such as vegetation. Barriers to flow, such as terraces and "riprap", must be considered as temporary measures that assist in reestablishing vegetation. If the vegetative filter is effective and otherwise acceptable to the regulatory authority, it may be used above the downslope or bench.

2. One commenter suggested the addition of the word "geology" to the list of variables which the regulatory authority would consider when designating "steep

slopes." Geology is an important variable and has been added to the regulations.

3. One commenter on proposed § 716.2 (a) (1) recommended that the reference to § 715.14 be deleted in favor of the phrase "grade to the approximate original contour." The commenter also argued that the proposed regulation exceeds the requirements of § 515(d) of the Act in that it imposed additional performance requirements on steep slope operations. Section 515(d) of the Act requires that the special performance standards be met in addition to the general performance standards required by § 515(b). Therefore, the performance standards of § 716.2 must be complied with on steep slopes in addition to the general performance standards of Part 715.

4. A few commenters pointed out that a 30-day period was extremely short to establish vegetation on stockpiled spoil. Since all steep slope operations must comply with the provisions of Part 715, the proposed § 716.2(a) (2) has been deleted.

5. One commenter recommended that first-cut overburden should also be allowed to be permanently stored in an approved off-site disposal area. Since such activities are covered in § 715.15, there is no need to cover them here, and the paragraph is deleted.

6. Commenters recommended that proposed § 716.2(a) (3) be deleted to prevent disturbance of additional areas by construction of "stable drainage channels" to which drainage was to be discharged. The requirements for diversion ditches are contained in § 715.17 and are discussed in the appropriate part of this preamble. Further, since terraces are addressed in Part 715, and since operations conducted on steep slopes must comply with the provisions of that part, the proposed § 716.2(a) (3) is deleted as redundant.

7. Commenters indicated uncertainty as to where woody materials could be placed. Proposed § 716.2(a) (4) states that woody materials must not be placed in backfilled areas if that would cause instability. Therefore, woody materials may be placed in backfilled spoil if the spoil remains stable. If woody material can be distributed through the fill or perhaps buried on the solid bench away from the outslope, and the backfill remains stable, such disposal is allowable. Section 716.2(a) (4) has been revised for clarity and to note that chipping of the woody materials to produce mulch or soil amendment for the backfilled area may be acceptable.

8. Three of the comments received recommended the addition of a requirement to retain an unmined coal and overburden barrier 15 feet wide at the outcrop as a restraint to slides. This procedure is overly conservative if applied without adequate discretion and is likely to remove extensive coal reserves from production. Section 515(b) (25) of the Act, to be implemented in the permanent regulatory program, addresses natural barriers. Regulations to implement this provision of the law will be proposed for the permanent regulatory program. The coal seam barrier is further discussed under § 716.3.

9. The proposed regulations failed to inform the permittee that he must meet the requirements of §515(d) (3) of the Act. That subsection limits disturbance of land above the highwall to that necessary to facilitate compliance with the special performance standards applicable to steep slope mines. The language of the Act has been added to the regulations.

10. Some commenters requested variances to the requirement to return land to the approximate original contour in steep slope operations. Variances are provided under § 515(e) of the Act and will be treated in the permanent regulatory program.

Section 716.3 *Mountaintop removal.*

1. Comments relating to § 716.3 dealt principally with the requirements for retaining an outcrop barrier at least 15 feet wide to prevent slides and erosion. The majority of commenters questioned the desirability of specifically delineating an outcrop barrier width. It was suggested by many commenters that the outcrop barrier width be determined on a case-by-case basis by the regulatory authority, considering coal seam thickness and site-specific terrain conditions. A number of comments were received which questioned the need for an outcrop barrier to prevent slides and erosion in all cases. The concern was raised that the mandatory requirement for outcrop barriers conflicts with § 102(f) of the Act which relates to conservation of the nation's coal resource. The comments have been considered, and § 716.3 (b) (1) has been revised. We concur with the concerns expressed relating to the difficulties of setting a minimum outcrop barrier width. The minimum outcrop barrier width has not been specified so that site-specific conditions may be taken into account in barrier design.

2. One commenter raised the issue of whether $1v:2h$ is an appropriate maximum slope for outslopes of the final graded plateau, particularly with regard to erosion control. This slope (or steeper slope if a minimum static safety factor of 1.5 is attained) is acceptable for such outslopes since, as specified in § 716.3 (b) (3), all drainage from the final graded plateau must drain inward from the outslope except at specific points where it is allowed to drain over the outslope in protected, stable channels. In addition, the outslopes of the plateau must satisfy all other applicable requirements of Part 715.

3. Another commenter suggested that the cumulative hydrologic impacts of numerous mountaintop removal operations on a single watershed has not been adequately considered in § 716.3. Hydrologic impacts of mining are addressed in § 715.17.

4. With respect to § 716.3(c) (1), a few commenters suggested that permits approving mountaintop removal operations be reviewed not more than 1 year after the date of permit issuance. Section 515(c) (6) of the Act requires that such reviews take place not more than 3 years from permit issuance. The final regulations provide flexibility by retaining the language of the Act. Further, as a result of other comments, § 716.3(c) (1) and (2) have been modified to make review unnecessary if the permittee adequately demonstrates that all operations are proceeding in accordance with the terms of the permit and applicable requirements of the Act and the regulations. The terms of the permit must be in accordance with the requirements of the Act and the regulations. Section 716.3(c) (2) is retained to notify permittees that performance standards may be revised to provide more stringent controls. There is implied authorization for the regulatory authority to include less stringent controls in a revised permit only to the extent that such less stringent controls conform to these regulations.

Section 716.4 *Special bituminous coal mines.*

1. One commenter recommended deletion of the reference to the State of Wyoming, noting that multiple coal seams in the Roslyn field of Washington dip as steeply as 45 degrees. Since § 716.4 applies only to situations described in § 527 of the Act, that is, where at least one mine pit has been mined in the open pit manner since January 1, 1972, it is not necessary to address all areas in which coal seams have an inclination of 15 degrees or more. Only one operation has been identified, and it is located in Wyoming. Therefore, Wyoming is explicitly listed. The appropriate elements of Wyoming's regulations are adopted pursuant to § 527(b) of the Act which requires that new mines meet all requirements of State law.

2. One commenter made recommendations for specific word changes to the section limiting the exemption to operations in the mine pit. Through investigation of the legislative history, testimony before the Congress, and review of the Kemmerer, Wyo., operations, it has been determined that the exemption to grading to approximate original contour for special bituminous mines applies to the actual mine pit and not to associated spoil areas outside the pit. Leaving those spoil areas ungraded is not an essential exemption to open pit mining. The exemption applies only to the grading of the mine pit walls and the spoil within that pit and is not viewed as relieving the mine operator from making every attempt to return all spoil to the pit or as allowing excess spoil to be dumped at the angle of repose with no consideration of prior topsoil removal, stabilization, grading, or postmining land use.

3. The commenter also recommended that stable highwalls should be allowed, that backfilling be removed from the requirement of § 716.4(c) (2) (i), that terraces be allowed if they produce the desired results rather than requiring contouring methods first, and that the requirement to riprap the exposed mine pit areas as proposed in § 716.4(c) (3) (i) be changed to a discretionary requirement on the part of the permitee. Other changes were requested in § 716.4(c) (3)

(ii). All such changes are not possible since they would be contrary to Wyoming law and regulations.

4. Two commenters interpreted § 527 (b) of the Act as providing an exemption to backfilling and grading requirements for open pit mines that initiated mining after January 1, 1972, and prior to August 3, 1977. They correctly noted that the proposed regulations did not provide an exemption for such operations. The regulations have been slightly revised in § 716.4(a)(3)(i) in order to more closely follow the language of the Act. However, no change is intended in the meaning of the section. Development of a mine refers to those activities that precede mining. Therefore, to qualify for an exemption to the backfilling and grading requirements, a special bituminous coal mine that did not actually produce coal prior to January 1, 1972, must be classified with those new mines that begin to produce coal after August 3, 1977. Further, if a new mine is developed after August 3, 1977, and the mine is to qualify for an exemption to the requirements of § 715.14, the new mine must be located immediately adjacent to operations in production since January 1, 1972.

Section 716.5 *Anthracite coal mines.* This section implements § 529 of the Act, which provides that the permittee of anthracite surface coal mines in States which regulate such activities shall be subject to the State environmental protection standards in effect on August 3, 1977 rather than Part 715. It also provides that in the event the pertinent State standards are amended, the Secretary shall amend § 716.5 accordingly. As Pennsylvania is the only State with surface anthracite mines, this section applies only to that State. No comments were received on this section of the proposed rules and no revisions have been made.

Section 716.6 *Coal mines in Alaska.* This section implements the authority of the Secretary to suspend the performance standards of Parts 715, 716, and 717 if it is determined necessary to ensure continued operation of a coal mining operation in Alaska. This section provides for consultation with the Governor of Alaska prior to any such modification, provides the mechanism for petitioning for changes, and provides for public notification and comment prior to implementation of modifications. Two comments were received on § 716.6. One commenter recommended that the wording of § 716.6(a) be changed so that the section applies to all performance standards rather than to the general performance standards. This recommendation was accepted. The other comment argued that no special procedure for petitions is needed since the procedures of § 514 of the Act are sufficient in this situation. The comment was rejected because the procedures provided in § 514 of the Act are for appeals from decisions of the regulatory authority and thus would be inappropriate in the circumstance of an operator requesting suspension of performance standards.

Section 716.7 *Prime farmland.* A significant number of comments were received on this section. Comments centered on five issues: (1) the statutory justification for adoption of prime farmland regulations in the initial program, (2) the validity of the "grandfather clause", (3) the definition of "prime farmlands", (4) the requirements for restoration of prime farmlands, and (5) the identification of prime farmlands.

1. Prime farmland performance standards are part of the initial program applicable to any permit issued on or after August 3, 1977. The basis for this requirement is § 510(d) of the Act which states that prime farmland provisions shall "* * * apply to all permits issued after the date of enactment of this Act." In addition, the Congressional conferees agreed that the protection for prime farmland should apply to all permits issued after enactment and expected the Secretary to issue regulations to implement the prime farmland provisions as soon as possible [123 Cong. Rec. H6968 (daily ed. July 12, 1977)].

Numerous commenters argued that the prime farmland requirements set forth in the Act are not operative until a State or Federal Program for a State is adopted pursuant to §§ 503 and 504 of the Act and therefore, not until a "regulatory authority" exists. It is believed that the term "regulatory authority" refers to the agency administering the program under the initial program as well, and the term has been so defined in the regulations. Further, § 510(d)(1) of the Act explicitly incorporates the prime farmland performance standards of § 515(b)(7) of the Act into the permit process. Therefore, it is appropriate to include prime farmland standards in the initial program, and the States should modify their permit process to include consideration of the prime farmland requirements.

2. Several commenters argued that the "grandfather" provisions of proposed § 716.7(a)(2) exceeded the authority provided under the Act. Accordingly, this section has been modified to allow permit renewals or revisions to include expansions of existing operations that (i) were in the original permit area or in an approved mining plan prior to August 3, 1977, or (ii) are contiguous and under existing State regulations or practice would have normally been considered as a renewal or revision of a previously approved plan.

3. Section 701(20) of the Act defines prime farmland as having the same meaning as that previously prescribed and published by the Secretary of Agriculture on the basis of specific technical criteria and which historically have been used for intensive agriculture purposes. Several commenters expressed concern that the proposed definition of prime farmland extended beyond the Congressional intent and is not the definition set forth in 123 Cong. Rec. S8109 (daily ed. May 20, 1977).

The Secretary of Agriculture responds that the technical criteria for prime farmland contained in 7 CFR 657.5(a)(2) and published in the FEDERAL REGISTER on August 23, 1977, does not differ substantially from that in the May 20, 1977, Congressional Record. Minor changes were made in the wording in order to remove from the older definition procedural guidelines and other sentences that did not relate specifically to scientific criteria for prime farmland. 7 CFR 657 is not intended to be utilized only for the purposes of implementing this Act. It establishes an important farmland inventory that covers four categories of important farmlands. These regulations require that only the specific criteria of the prime farmland category have applicability to implementation of this Act. These specific technical criteria are contained in the regulations for convenience and will be used with the historical and intensive agriculture use requirements of § 716.7(a)(1) to determine prime farmland.

4. Several commenters suggested that the historical use clause in § 716.7(a)(1) should be revised. Suggested changes ranged from 1 year out of 20 to 14 years out of 20. The Department has retained the 5 years out of 20 standard because it is a reasonable and practical application of the historical use clause, as contained in § 701(20) of the Act.

5. Numerous commenters argued that the requirement in § 716.7(e)(6) to "prove" that an equivalent or higher yield will be achieved was unrealistic and inappropriate. Accordingly, the provision has been revised to allow the operator to "demonstrate" through appropriate means that equivalent or higher yields will be achieved after mining. The comparison is to be made with the same area before mining or on similar soils that have not been mined.

6. Several commenters thought § 515 (b)(7) of the Act required the Secretary of Agriculture to publish in the FEDERAL REGISTER criteria for soil profile reconstruction, as set forth in the special requirements of § 716.7(g). The Department of Agriculture has developed the requirements which are included in this section.

7. Commenters argued that materials proven to have equal or better properties for productive capacity than the available A-horizon may be available, and their use should be allowed. Appropriate sections of the regulations have been modified to recognize this concern.

8. Several commenters expressed concern over the amount of prime farmland that could reasonably and practically be identified by soil surveys and suggested that an acreage limitation should be included. The detail and associated scale of soil surveys is based on user needs and variability of soil pattern. The minimum size delineation for soil mapping units which can be interpreted as prime farmland ranges from 2 to 10 acres. Section 716.7(c) remains unchanged, and soil surveys have been retained as the basis from which the minimum acreage of prime farmland can reasonably and practically be identified.

PART 717—UNDERGROUND MINING

NOTE: Part 717, Underground Mining appeared in the proposed regulations as § 716.8.

1. A number of commenters argued that underground mining operations should not be regulated during the initial program. Commenters indicated that it was more important to regulate surface mining than underground mining during the initial program since the alleged abuses of surface mining were considered more important by Congress. The view that regulations for underground mining should be deferred is not accepted. Section 502 of the Act applies the initial standards to "surface coal mining operations." That term is defined in § 701 of the Act to include the surface effects of deep mining, "subject to the requirements of § 516." This reference to § 516 in the definition was not intended to exclude underground mining operations from the initial program, but rather to limit the scope of the regulations to those activities referred to in § 516 of the Act. Controls over subsidence and a few other effects of underground mining with a high potential to cause environmental damage will not be addressed until the permanent regulatory program.

2. Several commenters argued that extensive use of cross-references in proposed § 716.8 caused unnecessary confusion. Many commenters, while expressing their reservations as to the inclusion of underground mining operations in the initial regulatory program, gave some examples of why they considered that the proposed regulations did not adequately consider the distinct differences between surface and underground mining alluded to in the Act. The examples given included roads, placement of earth materials on the downslope, blasting, and ground water. As a result, the proposed regulations have been modified. Certain phases of operations conducted as part of an underground coal mine are best regulated by somewhat different regulations than those necessary for surface mining. Underground mining regulations now appear in a separate Part 717 and contain a minimum number of cross-references. The regulations reflect the level of control necessary to minimize environmental impacts of the operations characteristic of underground mining. The final regulations define "surface operations" and "underground operations." These terms have been defined to clarify the applicability of the requirements pursuant to § 516(b)(10) of the Act.

3. The general obligations provisions of § 715.11 have been made explicitly applicable to underground mines by repeating them in § 717.11. The requirements of § 717.11 relating to permits remains equally valid for underground mines. The requirement for a map of the undisturbed coal resources has been deleted.

4. The regulations now appearing in § 717.12 have been revised in a form that is consistent with that of § 715.12. Perimeter markers may be required by the regulatory authority if needed, but these signs are not specified in the regulations. The regulations do not require the use of topsoil markers, though topsoil will likely be stored for long periods of time and will therefore be susceptible to unauthorized disturbance, contamination, and removal. However, surface activities will likely be limited and will not have a high probability of disturbing the stockpiled topsoil. Blasting signs are not required by the final regulations since blasting near the surface will be infrequent.

5. Requirements of § 515(b)(2) of the Act for achieving an equal or higher postmining use of disturbed land was not included in the initial regulations for underground mining since § 516 of the Act does not specifically list land use considerations. However, since § 516(b)(10) requires conformance with § 515 of the Act for surface operations, the Department will evaluate further controls for the permanent regulatory program.

6. A number of commenters questioned whether roads and other facilities that support underground mining operations must be reclaimed, and argued that the backfill and regrading standards should apply only to new operations. Section 516 of the Act requires that areas disturbed by surface operations be reclaimed to the standards authorized by the Act. Therefore, § 717.14 and § 717.20 of the final regulations require that disturbed areas caused by surface operations must be reclaimed. Specifically, § 717.14 and § 717.20 require that all new roads be reclaimed in a manner consistent with the backfill and grading and revegetation standards of those sections. However, because of the difficulty of backfilling existing older roads and support facility areas after mining has been completed, it is expected that regulatory authorities will be flexible in administering these requirements. Many cases exist where the excavated material has been discarded over the outslope or hauled an appreciable distance away from the cut making it very difficult to backfill and grade. While it may be necessary to remove unsuitable drainage systems and to restrict future access, the degree of regrading required of older roads may likely be determined according to site-specific circumstances. Nevertheless, new facilities must be designed, constructed, and fully reclaimed as required by these sections. Further, roads may be retained after mining has been completed only when in support of the postmining land use.

7. The backfilling and grading requirements have been further tailored to underground mining practices. Provisions relating to extensive slope measurements, grading exemptions for mountaintop removal, and criteria for distinguishing thin and thick overburden have been removed from the underground regulations since they relate to more extensive land disturbances where detailed regulations are required.

8. Several commenters argued that underground mines should not be subject to the spoil and waste disposal requirements of § 715.15. As discussed in paragraph 1 above, adequate authority exists to provide the necessary regulations for this area. Many of the requirements of § 715.15 appear in this section in the final regulations. Since the hazards from improper waste rock disposal are similar for underground operations to those of surface mining, the same environmental standards should apply. Further, selective controlled placement, compaction, and careful consideration of the drainage characteristics of these materials remain necessary. The disposal of wastes or excess coal that could cause acid drainage, instability, or unwanted burning is prohibited in valley and head-of-hollow fills. Waste materials, especially those slurried from cleaning plants and those containing large amounts of pyrite and other sulfide materials, should not be placed in or near drainage channels. The final regulations allow careful placement of first cut materials from the site of an initial entry or faceup of a mine to be placed on the downslope (immediately below the projected outcrop of the coalbed being mined) if the appropriate safety factor is achieved. Materials placed below mine workings must be stabilized consistent with § 715.15. However, the final regulations allow that where the volume of excess rock or earth materials is small and where the materials' chemical and physical characteristics do not pose a threat to either public safety or the environment, the regulatory authority may modify the requirements of § 715.15 relating to such disposal.

9. As suggested by one commenter, requirements for topsoil removal, segregation, and replacement now appear in the revegetation section and have been simplified to ease distinguishing between the A- and B-horizons. Since most topsoil will be stockpiled for a long period, protective stockpiling is most important. However, since the area affected by surface operations of underground mines is small, the more detailed topsoil requirements for surface coal mines have been eliminated from this section. Topsoil removal, however, is included as a requirement to be adhered to for all surface operations.

10. The hydrology section for underground mines in the final regulations is much the same as that section for surface mines. Some modifications of § 715.17 were necessary to allow proper application to both the surface and subsurface operations of an underground mine. In the case of underground mines, the surface operations should affect relatively little land and thus compliance with standards designed to minimize disturbances to the hydrologic balance should be facilitated. On the other hand, discharges from underground mines have a high potential to pollute surface and ground waters. Thus, the majority of § 715.17 has been retained as § 717.17 for underground mines and to distinguish between requirements to minimize disturbances caused by surface operations and those caused by underground operations.

11. One commenter suggested that the term "disturbed area" be more clearly defined for underground operations and that the section reflect different requirements for discharge from underground mines than those for surface mines. The "disturbed area," the critical area of land surface for which surface water treatment must be provided, has been defined for purposes of this part as excluding surface areas overlying the underground workings unless those areas are disturbed by support activities for the underground mining operation which create a risk of pollution. However, "disturbed areas" include excess mine rock fills, roads near buildings or storage areas supporting the mine, ventilating facilities, conveyors or other coal haulage facilities near support structures such as tipples and loadout facilities. Surface runoff from these disturbed areas is to be treated in the same manner as from surface mining operations. Temporary diversions from the disturbed area are permissible when they are safely constructed and maintained.

12. Several commenters suggested that the final regulations should more clearly specify underground mining requirements to protect the ground water system. Other commenters argued that the requirements of § 715.17(i) were overly restrictive. The ground water requirements have been tailored to underground operations since it is expected that surface operations of underground mines will minimally affect ground water. Since the Act requires that disturbances to the hydrologic balance be minimized, underground mining operations must be planned and conducted accordingly. As suggested by one commenter, monitoring requirements now appear in this section to ensure compliance with the standards. Further, the section requires treatment of all waters discharged from underground workings prior to discharge to surface waters where necessary to meet effluent limitations. If treatment facilities are used for discharges from underground operations and also collect surface runoff from disturbed areas, the facilities must be designed to effectively meet the sedimentation pond requirements. Diversion of water away from the disturbed areas is encouraged. However, stream diversions should be avoided for surface operations of underground mines, and underground operations should be planned and conducted to minimize changes in the flow of streams. If, however, perennial or intermittent streams must be diverted, the diversions are to be constructed in accordance with § 715.17.

13. Acid and toxic materials require treatment regardless of whether they are exposed by surface or underground mining operations. Potential problems that may be caused by exposure of such materials from underground mines to water are controlled by the requirements of § 717.17(g).

14. As a result of comments, inclusion of the requirement contained in § 516(b)(12) of the Act was considered to ensure that new drift mines are constructed to prevent uncontrollable gravity discharge of water from the mine. However, this requirement is not in the initial standards required by § 502 of the Act. Since it is contained in § 516, it will be included in the permanent program.

15. Provisions for haul and access roads have been included in this part since proper design, construction, and maintenance of those roads is critical to successfully regulate the potentially adverse impacts of underground mining. Roads currently used for hauling and access to underground mines are subject to the requirements of this part because of § 710.11. Although it is expected that some existing roads will not meet the grade requirements of this part, the practicability of regrading these roads will be considered in applying the grading requirements to existing and nonconforming structures. However, roads will not be left unreclaimed as a matter of course and therefore, backfilling, grading and revegetation will be required. Permittees who wish to leave roads after mining operations are complete must demonstrate that, among other requirements, retention of the access roads is necessary for the postmining land use and that necessary maintenance will be provided.

Several commenters suggested that some roads constructed and used for infrequent passage should be exempt from the requirements of this part. Since adverse impacts are less likely, infrequently used roads are exempt from the construction standards when erosion is adequately controlled by alternative practices such as vegetation to comply with the remaining provisions for sediment control.

16. A few commenters interpreted the proposed regulations as requiring blasting schedules for underground mining operations. Others argued that a blasting schedule requirement for construction of surface facilities at an underground mine is impracticable. Because the use of explosives for the construction of surface facilities will be infrequent and short-lived, no standards have been included at this time.

17. As previously noted, the topsoil handling provisions for underground mines have been simplified and combined with the revegetation requirements in § 717.20. The revegetation requirements have also been simplified for underground mining operations. The revegetation requirements apply, for the most part, to areas disturbed by surface operations. Areas in need of revegetation should be relatively small and should not have received a degree of disturbance as great as that caused by surface coal mining. Nonetheless, it is imperative that a diverse, permanent vegetative cover capable of self-regeneration and plant succession and providing a cover equivalent to premining conditions be established.

17. Several commenters requested that subsidence control regulations be included in the initial program. Subsidence control is not covered by the initial standards of § 502 of the Act. The Department will address subsidence control in the permanent regulatory program.

PART 720—STATE ENFORCEMENT ACTIVITIES

Section 720.11 limits preemption of State laws and regulations and present State enforcement to instances in which compliance with the State law, regulations, or any permit condition would preclude compliance with the Federal standard. Otherwise, State law and enforcement remains intact. It is believed all States should and will enforce the more stringent Federal standards in the interim period, but this section recognizes the importance of maintaining the existing State programs as a floor of regulation by a State which cannot enforce some of the more stringent Federal standards in the interim period.

1. Comments were received objecting to the power of preemption and seeking a change in § 720.11(b) to require involvement of State agencies before publication of those State laws or regulations which have been preempted. The provision was removed because it was unnecessary. Before any action is taken under the Secretary's statutory authority under § 505(b) of the Act, the State will be consulted.

2. Proposed 720.12 stated that the Act "contemplates" that States will enforce Federal standards during the interim program. This method of stating the duty on the States was chosen in recognition of the 10th Amendment to the Constitution. Comments were received that this section added or subtracted nothing from the duty of the States. This comment is accepted; and, because the section is unnecessary, it was deleted.

3. New § 720.12, which was § 720.13 as proposed, requires the issuance of permits in conformity with the Act by States that are enforcing more stringent Federal standards in the interim period. States that are not enforcing more stringent Federal standards are not covered by the section. If there are any such States, the State and OSM will work out a method, perhaps related to the permit issuance, to notify permittees that by operation of law he is bound by the Act and these regulations.

4. Comments were received on new § 720.12 that pre-existing mines issued renewed or revised permits after February 3, 1978, were not properly subject to the initial standards until May 4, 1978. The legislative history speaks of the standards applying 6 months from enactment to new mines. The division of § 720.12 into two subsections is in recognition of the merit of this comment. Of course, substance rather than form is the test; if the operation to which the permit is issued is in fact a new mine, the standards will apply regardless of whether the permit is labeled "revised" or "renewed".

5. A comment was received that the use of the word "develop" in new § 720.12 implied that States were allowed to put off incorporating the necessary permit conditions until some unspecified time after February 4, 1978. This was not the intent. Rather, by the use of the word "develop" it was intended to emphasize the duty of the State to go through the

process of translating the Act and regulations into permit terms for every permit issued after February 4, 1978. Since this process is logically required without specific reference, the word "develop" was removed in order to avoid any misunderstanding that States covered by this section have a duty to incorporate permit conditions in all permits issued on or after February 4, 1978.

6. New § 720.13, which was § 720.14 as proposed, provides for State submission to OSM of all inspection reports and certain permits and permit applications. Comments were received that the 5-day period for submission of State inspection reports is too short given certain States' procedures. The 5-day period was retained, but it must be emphasized that the 5-day period is calculated to take into account State procedures, including filing several days after field trips. The mechanics of this and other cooperative efforts between State and Federal offices will be worked out to mutual satisfaction by each State and the Regional and District offices of OSM.

PART 721—FEDERAL INSPECTIONS

1. Several commenters suggested that § 721.11(a) should be specifically limited to violations of § 502 (b) and (c) of the Act to conform with the language of § 502(e)(2) of the Act. Recommended language was offered to authorize Federal inspections of surface coal mining operations subject to interim regulations to determine "compliance with sections (b) and (c) of section 502 of the Act." This change was not adopted. While it is clear that Federal inspectors will inspect only for those parts of the Act which are in force in the interim period, it is unnecessary to state that the inspections are limited to "interim regulations". In addition, Federal inspections in the interim period will not be exclusively tied to § 502 of the Act. In any event, § 721.11 is an inspection section relating to when Federal inspections shall occur and is not intended to confer independent enforcement authority upon the Secretary.

2. Several comments requested that § 721.11(a) should specify more clearly that violations indicated by consecutive State inspection reports must have occurred at the same mining operations and not at different operations of the permittee. This additional language is considered unnecessary because it seems clear from a reading of § 502(e)(2) of the Act that the reports must indicate that any "surface coal mining operation" has been found in violation during not less than two consecutive State inspections.

3. It was requested in one comment that there be a mandatory Federal inspection after four consecutive State inspection reports indicated a violation. The proposed regulation provides that on the basis of "not less than two" consecutive State inspection reports indicating a violation, the Secretary shall conduct an inspection. The recommended language in the comment was not adopted and the final regulation remains unchanged in order to generally track the language contained in § 502(e)(2) of the Act. It should be emphasized, however, that the Office of Surface Mining intends to inspect on the basis of State inspection reports indicating violations during two consecutive State inspections.

4. Section 721.11(b) was found deficient by one commenter because it was felt that the regulation does not require inspection when conditions or practices create an imminent danger to private property interests. While no change was made in the language of § 721.11(b), it is believed that threats to private property would almost certainly be a violation of the Act, regulations or permit conditions required by the Act which would require a Federal inspection.

5. One commenter requested the right to contest State inspection reports which allegedly indicate violations of the Act prior to triggering a Federal inspection under § 502(e)(2) of the Act. The justification given for this request was that without necessary safeguards, arbitrary reports incorrectly indicating a violation would mandate a Federal inspection.

This comment was not adopted because no such right was given under the Act nor was any such review believed contemplated by Congress. If the State inspection reports incorrectly reflect that a violation of the Act has occurred, a Federal inspection will result in no more than a verification of that fact, unless other violations of the standards are found.

6. The same commenter indicated that it was not clear from a reading of § 721.11 of the regulations what is meant by a State inspection report. No additional language was inserted in § 721.11 to cover this point because § 720.14(a) of the regulations describes the types of reports which are to be submitted by the States to the appropriate district managers of the Office.

7. The recommendation was made in one comment to add the words "any person having an interest which is or may be adversely affected" to § 721.11(b). It was suggested that allowing the submission of information by any person would invite submission of frivolous claims. This recommended language was not adopted because the Act and the legislative history are clear that receipt of any information may trigger a Federal inspection in the initial regulatory period, if it provides a reasonable belief that the Act is being violated.

8. Several commenters recommended that § 721.11 make clear that the information received must be verified before it can provide the basis for a Federal inspection in the initial regulatory period. The justifications for these recommendations are that written and verified charges will prevent needless and superfluous inspections and that Federal inspectors will be better able to form a "reasonable belief" that a violation occurred if the changes are in writing. It was additionally argued that § 517(h)(1) of the Act provides for written notice to the Secretary and that the legislative history refers to documentary evidence such as photographs.

These comments are treated with the comments on § 721.13 dealing with inspections based on citizen requests.

9. Several commenters objected to the definition of complete inspection contained in § 721.11(c). The gist of the comments was that the words "onsite review" is too vague and that the definition must ensure that the inspection determines the extent of the permittee's compliance with all relevant performance standards. Additional language was inserted in § 721.11(c) to reflect these comments, since a complete inspection should be a review of compliance with all applicable standards.

10. One commenter suggested inclusion of a provision to create adequate checks and balances on any uninformed or overzealous inspectors. While no language was inserted in § 721.11 regarding this suggestion, inspectors will be monitored by the Office of Surface Mining to prevent, as far as possible, abuses of conduct from occurring. Additionally, § 521(a)(5) of the Act and § 722.15 of the regulations provide for informal mine-site hearings to review cessation orders within 30 days of their issuance. It is anticipated that this review plus internal control and monitoring on the part of the Office will prevent abuses from occurring. Notwithstanding these precautions, if some abuses occur, formal administrative review is available to the permittees under § 525 of the Act.

11. Finally, one commenter urged that a new paragraph (d) be added to § 721.11 to provide that all inspections are to be done at reasonable times, within limits, in a reasonable manner and conducted to preclude unreasonable disruption of business operations. It was stated that such a provision exists in the regulations of the Occupational Safety and Health Administration. While no additional language has been added to the regulation, it is the intention and expectation of the Office that no unreasonable inspections will occur in a manner that unnecessarily interfers with mining operations. However, the Act requires inspections without notice and in any area of the operation necessary to determine compliance with the Act and regulations.

It is not intended that inspections be restricted to "normal business hours" if the exigencies or violations justify inspection at other times. An example would be attempts to detect illegal discharges or other night-time activities which are prohibited by the Act or regulations.

12. Several commenters objected to the language contained in § 721.12(b) as to access to and copying of "any records." It was recommended that only those records which are required to be maintained under the regulations or the permit should be inspected or copied. This comment has merit, but it is not necessary to change the language of § 721.12 to reflect this comment since this section is taken directly from the Act. It is true however, that the authorized representatives will only inspect and copy those records

required to be maintained under the Act, regulations or permit.

13. Several commenters requested deletion of the words "without a search warrant" contained in § 721.12(a). The suggestion was also made to add a new paragraph to § 721.12 to require the Secretary to give a specific written order for an inspection where it is contemplated that a criminal penalty might result. Such order would set forth the basis upon which it was being issued, the matters to be inspected and the provisions of § 502 (b) and (c) allegedly violated. Additionally, it was suggested that the regulations provide that no such inspection could be made without the issuance of a valid search warrant and that no criminal penalty may result from an inspection conducted without a search warrant.

This comment was rejected. With regard to a specific written order by the Secretary to inspect, such requirement is considered unworkable and without justification under the Act. The comments regarding search warrants are rejected because the Act contemplates warrantless inspections and because present law authorizes warrantless searches in circumstances such as those under which the Office of Surface Mining's inspections will be conducted. Furthermore, if inspections occur where criminal activity is suspected, these can be dealt with on a case-by-case basis.

14. A number of commenters objected to the words "suspects" in § 721.13(a) regarding citizen reports to the Office of Surface Mining. It was generally argued that suspicion is insufficient and that the citizen should know or at least have a reasonable belief that the violation has occurred. The suggestion was made that disgruntled landowners, improperly motivated environmentalists or competitors would be able to prompt a Federal inspection without sufficient grounds. The idea of the agency flooded with spurious complaints was further raised as justification for the removal of the term "suspects." These comments were considered along with the Act and legislative history. It is believed that spurious, vindictive and groundless complaints would not become the source of harassment or financial loss to surface coal operators. On the other hand, the Act and legislative history make clear the Office's duty to respond to any information furnished by any person which gives rise to a reasonable belief that the Act or regulations are being violated. To accommodate this duty, yet to discourage and prevent frivolous or vindictive complaints, the word "suspects" has been deleted and the word "believes" inserted in its place. Therefore, if one "believes" a violation has occurred, the Office would then determine whether the information gives rise to a reasonable belief that a violation has occurred.

15. A number of commenters objected to the provisions requiring written citizen complaints. The comments generally stated that this requirement was both unworkable and potentially dangerous where imminent dangers or significant, imminent environmental harms were concerned. Additionally, it was argued that the writing requirement would seriously limit citizen access to the Act's enforcement procedures which is contrary to the clear intent of Congress.

Several comments received regarding § 721.11 recommended that this section should make clear that citizen information should be in writing. The justification given was that written and verified charges prevent needless and superfluous inspections and more adequately enable the Office to form a reasonable belief as to the occurrence of a violation.

It is believed that an inflexible requirement of written information is unworkable in many situations such as where imminent hazards exist. Even if one could normally drive to the local OSM office to deliver a written complaint, this may be impractical in some instances, particularly where transportation or roads may be inadequate, or distances great. Thus the regulations allow for oral reports to be followed by a written and signed report.

In addition, the same tests of reasonable belief would continue to apply whether the complaints were oral or written. Even when written complaints are received they must be accompanied by a telephone number, and inspectors will routinely call the citizen to discuss the details of the complaint so that it can be evaluated. Therefore, no additional abuse will occur from the receipt of oral complaints.

16. Several commenters suggested that a complaint should be considered as having a reasonable basis if it alleges facts "and states the basis for such facts" which, if proven to be true, would show a violation. The commenters reasoned that the Secretary would be better able to judge the complaints and that there would be no additional burden on the citizen.

The recommended language was not adopted although the Office intends to inquire of citizens as to the basis of their complaints. On the other hand, a rigid rule regarding necessity of documentary proof in every case seems totally contrary to the intent of Congress. Such documentary evidence as photographs, while desirable and preferable, obviously cannot always be available if for no other reason than citizens would have no legal right of access onto mine property to photograph violations.

17. Numerous commenters objected to the lack of a specific time period in which a Federal inspection must be conducted under § 721.13(a). This section was amended to provide that inspections are to occur within 15 days of receipt of the complaint or promptly if an imminent hazard is reasonably believed to exist. Such language is appropriate in order that alleged violations and imminent hazards which are reasonably believed to exist are checked and, where appropriate, remedied rapidly.

18. Several commenters requested that the cost to the government of a Federal inspection or any losses in time or production incurred due to unsubstantiated complaints by citizens be borne by these citizens. These comments are not adopted because there appears to be no basis in the Act for such a remedy.

19. One commenter recommended that citizens be required to send carbon copies of their reports or complaints to the permittee about whom they were reporting. This comment is rejected because it would notify a permittee who may be violating the Act that a Federal inspection may be about to occur.

20. Numerous commenters objected to the provisions of § 721.13(a)(2) regarding the confidentiality of persons supplying information to the Office relating to possible violations or imminent hazards. The comments argued that the Act makes no provision for maintaining the anonymity of citizens and that the concept of a "secret informant" is abhorrent to a fair administration of the Act. Also, it was argued that because criminal sanctions may be imposed under the Act, the permittee has a right to be informed of the nature and cause of the accusation and to be confronted by the witnesses against him. Another argument was that the Office may unwittingly be allowing coal operators to direct Federal enforcement away from themselves and toward their competitors. Several commenters stated that bona fide complainants would not hesitate to have their identities disclosed and that there is no legitimate purpose to be served by concealing a citizen's identity.

The provision in issue does not enable a citizen to keep his identity from the Office when supplying information. It merely allows the citizen to request that his name not be disclosed to the public and requires the Office to honor that request. When receiving and analyzing information from citizens, the Office will ascertain the identity of the citizen, where he lives and what his relationship is, if any, to the permittee so that the information can be properly weighed and evaluated.

On the other hand, it is believed that citizens who desire not to have their identity known to the general public have a right to expect that this request will be honored. Such confidentiality outside the Office of Surface Mining would not impinge on any rights of mine operators. The right to face one's accuser under the Sixth Amendment to the Constitution relating to obtaining the identity of an informant or other accuser is available after a criminal indictment or information is brought against an accused. No such right exists prior to such indictment or information.

In addition, citizens reporting violations of the Act are not in the same category as accusers of criminal conduct. If a violation is observed by an inspector following a complaint by a citizen, it is the inspector who would be confronting the operator and who would provide the basis for obtaining a penalty against the permittee. The citizen supplying information is merely the person who brought the violation to the attention of the Office.

The need for confidentiality upon request is grounded on a belief that many citizens will be reluctant to come forward if they are concerned about harassment, black-listing, or physical abuse even if such concern is generally groundless. Additional language was inserted, however, to clarify that disclosure would not be made unless required under the Freedom of Information Act or by other Federal law.

21. Several commenters requested that the appropriate permittee should be contacted when the Office notifies a person who supplied information that an inspection is to occur. Other commenters requested that the State regulatory authority be notified at the same time a citizen is notified. The operator is not to be notified prior to an inspection because the Act requires that inspections be conducted without advance notice. While no change in language was made in § 721.13 (b) (1), it is understood that the Office will keep the State regulatory authority apprised of Federal enforcement activities so that proper coordination and exchange of information can occur.

22. Numerous commenters objected to the citizen's right of entry provision. Some commenters felt that the provision was not sufficiently specific to prohibit the citizen from examining cost and sales records of a permittee. Citizens do not have such a right and inspectors will be instructed to prevent such an occurrence.

Other commenters requested a provision requiring the inspector to obtain a written release from the citizen for any injuries suffered by the person while on mine property and to indemnify and hold harmless the Secretary and the permittee from damages or injuries caused by the citizens during an inspection. It was also suggested that no person should be allowed entrance if his presence is in violation of the Coal Mine Health and Safety Act of 1969.

These changes were not adopted in the regulations. The regulations provide that a citizen accompanying a Federal inspector must remain in the presence of and is under control, direction, and supervision of the inspector while on mine property. It is expected that internal guidelines will be published specifying what an inspector can allow a citizen to do while under his direction and control. It is further the intent of the Office to ensure that persons accompanying inspectors will be allowed to enter only those areas which are considered safe and that required protective equipment will be worn during inspections. It is not believed, however, that these restrictions and provisions should be included in the enforcement regulations. These would appear to be internal rules that guide inspectors in their duties. With regard to releases, indemnity, and "hold harmless" agreements, permittees have a right to expect a certain degree of protection from liability or damage caused by citizens on mine property. However, there is no authority contained in the Act or legislative history to authorize the Secretary to require citizens to execute such documents.

Several commenters requested that the permittee receive copies of reports specified in § 721.13(c) (1) and (2) relating to the results of investigations by Federal inspectors or reasons for not inspecting following a complaint. In reaction to these comments, a new paragraph (c) (4) has been added to provide that permittees shall receive copies of all such reports which have not already been given to the permittee, except that the name of the person who supplied information will be removed.

23. Several commenters requested that permittees be notified of the scheduling of informal review proceedings outlined in § 721.13(d) and permitted to participate in such conferences. These comments were not adopted because the informal review rights created by the Act relate specifically to a citizen's right to determine why his complaint was not acted upon or why certain action was taken. There is no reference in the Act or legislative history to participation in this process by the permittee. If any enforcement action occurs which is adverse to the permittee, he is fully entitled to participate in informal and formal review of these actions under § 521(a) (5) and § 525 of the Act.

24. One commenter suggested that a time limit be placed upon review under § 721.13(d). This comment was adopted to require notification of the results of the review within 30 days and that informal review would not affect any rights to formal review or a citizen's suit.

25. Section 721.14 provides that a notice of violation or cessation order otherwise proper may not be invalidated because of errors by OSM in giving notice prior to the inspection or by reason of a subsequent determination that, prior to the inspection, OSM did not have information sufficient to create a reasonable belief that a violation had occurred. Comments were received that this section is improper and will insulate unlawful conduct by OSM. The Act and the regulations require notice to a complainant to allow him to accompany an inspector. The Act and the regulations also require an OSM inspection when it receives information which creates a reasonable belief that a violation has occurred. These activities are not relevant to the question of whether a violation has occurred once an inspection is made. The Act applies certain standards to mining and authorizes inspections at any and all times in the discretion of OSM. If an inspection is made and a violation discovered, the activity preceding the inspection should not be relevant to the treatment of the violation, much less be grounds for vacating any enforcement action taken. Of course, activity inconsistent with the regulations by OSM personnel is to be avoided and should be called to the immediate attention of OSM.

PART 722—ENFORCEMENT PROCEDURES

1. One commenter suggested that the regulations regarding the issuance of cessation orders for imminent hazards (imminent danger to public health or safety or significant, imminent environmental harm) should provide for reimbursement to a permittee for lost productivity and related expenses incurred as a result of the cessation of mining or from any additional personnel and equipment required by the Secretary if the order was subsequently determined to be unjustified. This comment was rejected as being unsupportable by the Act or the legislative history. If a cessation order is vacated by the Office or by an administrative law judge, there would be an appropriate impact on any assessment of civil penalty. The Act provides no basis, however, for financial reimbursement to a permittee for lost production or other expenses.

2. Another commenter argued for precessation order review proceedings including a hearing or consultation with mine management and for approval of any cessation orders by the District Manager prior to issuance. This comment was rejected because the Act mandates the issuance of a cessation order if the Secretary or his authorized representative determines that an imminent hazard exists. To delay issuance of the order pending a hearing would be inconsistent with the concept of imminent hazard. While consultation with mine management and the appropriate District Manager is to be encouraged, the Act clearly requires the issuance of a cessation order when an authorized representative of the Secretary has concluded that an imminent hazard exists.

Regarding the comment as to a precessation order hearing, the only hearings specified by the Act regarding notices and orders are to occur following the issuance of notices or orders.

3. Several commenters suggested deleting references in § 722.11 (a) and (b) to ordering cessation of surface coal mining and reclamation operations leaving reference only to cessation of the portion of the operations relevant to the condition, practice, or violation. The suggested language was not adopted because the wording used in the regulations tracks the wording of § 521(a) (2) of the Act.

4. One commenter requested that there be guidelines regarding the determinations as to the issuance and termination of cessation orders. It is believed that guidance is provided by the definitions of imminent danger and significant, imminent environmental harm contained in § 701(8) of the Act and § 700.5 of the regulations. Additional guidance to inspectors is expected to be provided in inspector training, manuals, and memoranda to be developed by the Office. This material will be available to the public.

5. A commenter suggested adding the words "prior to the time the condition, practice, or violation can be abated" in § 722.11(b) to bring the section in line with the definition of imminent danger as contained in § 701(8) of the Act. No change of this nature was made since § 722.11(b) basically tracks the language of § 521(a) (2) of the Act. Furthermore, the definition of significant, imminent environmental harm contained in § 700.5

of the regulations adequately conveys, it is believed, the concept of imminence to guide inspectors in the issuance of cessation orders under § 722.11(b).

6. One commenter urged that only the Secretary of the Interior, and not his "authorized representative", impose affirmative obligations on a permittee. While the language of the Act uses "Secretary" regarding affirmative obligations, such a limitation would be totally unworkable and would frustrate the intent of the Act as to enforcement. Furthermore, there is no reason or support for the conclusion that Congress intended the Secretary personally to visit mine sites throughout the country to impose affirmative obligations in cessation orders. In any case, delegation of authority by the Secretary is an appropriate exercise of his authority to assign work and responsibility.

7. An additional suggestion with regard to § 722.11(c) was to delete the words "condition, practice, or violation" in the first paragraph and the words "or eliminate the practices or conditions that contributed to the imminent danger or significant, imminent environmental harm" in § 722.11(2). This comment was occasioned by the belief that the Act does not authorize the imposition of affirmative obligations to eliminate conditions, practices, or violations which merely contribute to the imminent danger. This comment was not adopted because it is believed to be an unduly restrictive interpretation of the Act and because adoption of the suggested language would create an unworkable enforcement mechanism which would frustrate efficient enforcement of the Act which was deemed by Congress to be central to the success of the surface mining control program. There appears to be no basis for concluding that Congress intended inspectors to issue cessation orders citing imminent hazards resulting from various conditions, practices or violations without a further duty to impose affirmative obligations to eliminate those conditions, practices or violations. The right to impose affirmative obligations to abate imminent hazards carries with it the obligation on the permittee to abate the conditions, practices or violations which contributed to the imminent hazard.

Additionally, it would be totally unworkable and illogical to have some of the conditions, practices or violations contributing to the imminent hazard abated by affirmative obligations and others, contained in the same cessation order, abated in another fashion. The confusion to permittees and inspectors alike from such a procedure would cripple the affirmative obligation provisions and frustrate the intent of Congress.

8. One commenter suggested that more specific language be inserted in the affirmative obligation section to include the use of extra shifts and workers and the acquisition of necessary equipment. The language in the proposed regulation is believed to be adequate to include the types of activity listed in the comment.

9. It was suggested in several comments that when imposing affirmative obligations, abatement be accomplished in the most expeditious "and economically feasible" manner physically possible. The concept of economic feasibility is considered inappropriate and unsupportable by the Act or legislative history. Another commenter suggested that use of existing or "reasonably available" personnel and equipment be required rather than existing or additional personnel and equipment. This comment was rejected because of the belief that Congress intended the affirmative obligation concept as being sufficiently broad to include whatever additional personnel and equipment are required to avoid undue continuation of imminent hazards or violations. It is not expected, however, that arbitrary or unreasonable actions will be taken by inspectors regarding affirmative obligations.

10. Three commenters requested that § 722.11(f) be changed to require inspectors to terminate cessation orders upon abatement of the conditions, practices or violations which caused the danger. The proposed regulation states that an authorized representative may terminate a cessation order upon abatement. This requested change was made so as to comport with the wording of the Act. Additionally, it was requested that authorized representatives be required to check on abatement if requested by an operator. Such language was not deemed to be necessary although the Office expects that permittees may request inspections to check abatement of cessation orders and that inspectors will terminate cessation orders promptly upon satisfying themselves that complete abatement has occurred.

11. Another commenter urged that the phrase "cultural and historic resources" be added whenever referring to the environment in § 722.11(e) as well as in paragraphs (b) and (c). This language was not adopted in order to have the regulations track the language of the statute. However, the Office does not wish to preclude the possible inclusion of cultural and historic resources within the broader concept of environmental harm.

12. One commenter suggested the addition of a new paragraph (f) in § 722.11 giving the right to permittees to obtain temporary injunctions against enforcement of cessation orders until a minesite review is held and a ruling made under § 722.15. This comment was rejected because the informal minesite hearings under § 722.15 of the regulations and § 521(a)(5) of the Act are clearly not intended to stay the effect of a cessation order, but rather a cessation order expires if such a hearing is not held unless the hearing is waived. Furthermore, temporary relief against enforcement is provided for in § 525 of the Act and will be dealt with in procedural regulations in 43 CFR Part 4.

13. Numerous comments were received regarding the prohibition contained in § 722.12(c) of the proposed regulations against extending beyond 90 days the time for abatement as originally fixed and subsequently extended. It was stated that the 90-day limit will create unnecessarily harsh results especially when considered with the provisions of § 722.16 relating to inability to comply. The occurrence of such events as labor disputes, unavailability of equipment, acts of God and other acts of *force majeure* should be considered, it is argued, in extending the 90-day period. Several commenters urge that such a result is authorized by § 521(a)(3) of the Act.

Other comments address the same issue but have different suggested language such as changing the 90 days to 180 days and extending the abatement time for "good faith shown" without a hard-and-fast number of days as a maximum.

These comments were rejected because § 521(a)(3) is interpreted as prohibiting the setting of an abatement time, initially or as extended, beyond 90 days. Section 521(a)(3) does provide for extending the period of abtement for good cause shown, but such authority does not create an argument for abatement beyond 90 days. Additionally, the legislative history of the Act clearly states that while an inspector may extend the initial abatement period, the total abatement period cannot exceed 90 days.

14. One commenter recommended amending § 722.12 to set out clearly that the Secretary can establish interim steps on an abatement period, and that failure to meet these interim steps may result in the issuance of a cessation order. This suggestion was adopted and a new paragraph (c) was inserted. While it seems clear that the Secretary has such authority under the provisions of § 521(a)(3) of the Act, specifically providing for the right to establish interim steps seems appropriate to advise industry as to the methods which may be used in issuing notices of violation.

15. One commenter requested that the proposed § 722.13 be amended to delete reference to the imposition of affirmative obligations in a cessation order issued for failure to abate and to state instead that steps necessary to abate the violation shall be included in the order. It is argued that such language directly tracks the language of § 521(a)(3) of the Act and conveys a different meaning from the concept of the imposition of affirmative obligations.

The suggested language change was not adopted in this instance. While § 521(a)(3) does not contain the words "affirmative obligations" relative to the issuance of cessation orders, Congress intended that the authorized representatives of the Secretary should impose affirmative obligations when issuing cessation orders under § 521(a)(3) of the Act. Such an interpretation is reasonable considering that this remedy is available for cessation orders under § 521(a)(2) of the Act regarding imminent hazards and since the words "determine the steps necessary to abate" are wholly consistent with the concept of affirmative obligations. Moreover, the legislative history uses the words "affirmative obligations"

and "steps necessary to abate" interchangeably when discussing sections 521(a)(2) and 521(a)(3) of the Act. Accordingly, it is apparent that Congress intended that affirmative obligations be used under § 521(a)(3) of the Act.

16. One commenter wished to limit cessation of surface coal mining and reclamation operations to the portions relevant to the violation and to restrict the use of the affirmative obligations power to the Secretary of the Interior himself and not to his authorized representatives. These issues were likewise raised in the comments to § 722.11 of the proposed regulations and were addressed in the discussion of comments to that section.

17. A comment on § 722.13 suggested a provision requiring termination of cessation orders issued under this section when the authorized representative determines that the cause of the danger has been eliminated. This commenter further recommended requiring inspection of a minesite to check on abatement within 2 days of such request. The suggestion regarding mandatory termination of orders was adopted and the other recommendation was not adopted for the reasons stated in response to the same comment under § 522.11(e) of the proposed regulations.

18. A number of commenters objected to the authority contained in § 722.14 to serve notices and orders on any person on the minesite who appears to be in charge of the mining or reclamation operation if no designated agent is found. Some of the commenters objected because there was no requirement that the inspector attempt to look for or ascertain the whereabouts of a supervisory official or other designated agent. Specific language was recommended regarding reasonable inquiry by an inspector which was adopted in the final regulations. Reasonable inquiry to ascertain the person in charge of the mining and reclamation operations is appropriate.

19. Other comments recommended the addition of a provision in § 722.14 stating that service is not complete until actual delivery is made to the permittee or his designated agent and that if personal service cannot be made upon the permittee or his designated agent at the minesite, service is to be accomplished by certified mail with actual delivery representing completion of service. This comment was not adopted because the exigencies of imminent hazards as well as the necessity to commence immediately abatement of nonimminent hazards to prevent their spread or degeneration dictate completion of service of citations at the time of the inspection.

20. Other commenters objected to having persons receiving notices of violation or cessation orders being responsible for any immediate compliance actions required by the notice or order. This provision of § 722.14 is deemed essential and justified for the same reasons as given previously: if the permittee fails to have responsible supervisory personnel at the minesite and immediate action is required to remedy a situation, the inspector must look to the person or persons who, based upon reasonable inquiry, appear to be in charge of the mining and reclamation operations. Any delay in obtaining abatement of violations or imminent hazards may well prove harmful to personal safety or to the environment.

To assure rapid notification of a citation to a permittee where no designated agent can be located on mine property, the proposed regulations were changed to provide for mailings to the permittee within 48 hours of the issuance of the citations rather than 5 days as originally proposed.

21. One commenter suggested that each notice under § 722.14 should set forth with reasonable specificity the nature of the violation, the remedial action required, the time required for abatement, and a reasonable description of the portion of the minesite to which the notice or order applies. All notices and orders should contain the above information as required by § 521(a)(5) of the Act. However, recitation of these requirements in the Act is deemed to be sufficient and inclusion in the regulations unnecessary.

22. Several commenters objected to limiting newspaper notice of minesite hearings to "the extent possible", reasoning that such notice should be mandatory in all cases. It was stated that greater citizen participation would result if notices were published in a newspaper in each instance. This recommended change to § 722.15 was not adopted because there may realistically be instances when sufficient time is not available for published notice. Such would be the case where, for instance, no hearing is scheduled until immediately prior to the end of the 30-day period following issuance of the cessation order because of a belief that the order would be abated within the 30-day period. In such a case, sufficient time may not exist for published notice. Effort would be made, however, to notify known appropriate parties by other means, including telephone.

23. A number of comments on § 722.15 objected to limiting the persons to be notified of such hearings to citizens who filed a report which led to the cessation order under review and to the State regulatory authority. It was recommended that notice be given additionally to any person who had communicated to the Office within the prior year an interest or concern about violations or dangers at the subject mine.

The notice provisions regarding minesite hearings are not intended to preclude or discourage citizens from attending the hearings. However, given the likely notice by newspaper and posting at appropriate district or field offices and at the minesite, it is believed that sufficient notice is provided for in § 722.15. The person with the primary interest in the particular cessation order involved, the one whose report prompted the inspection in the case of a citizen-initiated inspection, is to be given direct notice of the time, place and subject matter of the hearing.

24. One commenter suggested that in addition to distributing the results of the hearing to the persons designated, the results should also go to any person who had expressed a desire to be notified as to a particular cessation order. While this language was not adopted in § 722.15, the Office will endeavor to respond to such requests since persons who may wish to request a formal hearing before the Office of Hearings and Appeals need to know the status of a particular cessation order.

25. The same commenter recommended that the word "substantial" be deleted from § 722.15(b) and that a sentence be added prohibiting any discussion between the Office and a permittee as to the merit of a cessation order unless the discussion occurs during an informal hearing. This recommended change was rejected as being too restrictive in that it would essentially eliminate contact and constructive exchange between the Office and the industry it regulates regarding the issuance of cessation orders.

26. Several comments on § 722.15 stated that the 30-day time period for conducting minesite hearings is excessive in light of losses experienced by the permittees as a result of cessation orders. The only guidance from the statute is that the cessation orders will expire within 30 days unless the hearing is held. While it is expected that informal minesite hearings will be held as promptly as possible under the circumstances where the cessation orders have not been terminated because the condition has been corrected, a reduction in the mandatory 30 days is considered to be inappropriate because of the need for flexibility by the Office. There may well be situations when it appears that an order will be complied with promptly but the permittee subsequently encounters difficulties occasioning the last-minute scheduling of a conference.

26. One commenter suggested making the minesite hearings permissive rather than mandatory because of the language of § 521(a)(5) of the Act. This change was adopted leaving the discretion with the Office. The result would be that unless such a hearing is waived by the permittee, a cessation order would expire if no hearing is held. Of course, previously terminated orders do not require a hearing and will not expire for purposes of the permittee's history.

The same commenter also objected to the provision which states that no hearing will be required where the operator waives the hearing. This comment was rejected because the intent of the minesite review provision as evidenced by the legislative history is to provide a field-level review of cessation orders without the burden of a more formal administrative review. Clearly, if the permittee does not want such a review, it would be inappropriate and wasteful for all parties to conduct such a hearing. Additional language regarding waiver was inserted to clarify the point that the cessation order will not expire in the event of a waiver.

27. Several commenters state that the hearing provided pursuant to § 521(a)

(5) of the Act should be a formal hearing under the Administrative Procedure Act presided over by an administrative law judge. Legislative history in the form of floor debates was cited as evidence that such a hearing was intended. These comments were rejected, however, because it is clear that Congress did not intend the minesite hearings to be formal adjudicative hearings before administrative law judges. The minesite hearing provision was added to provide an informal review by a supervisory official of a cessation order and not the formal adjudicatory hearing as is provided by § 525 of the Act. This intent is made clear by a colloquy between Senators Metzenbaum and Metcalf which distinguishes the formal review under § 525 of the Act and the informal minesite review under § 521(a)(5). 123 Cong. Rec. S12,443 (daily ed. July 20, 1977). That the minesite hearing is not intended as a formal adjudicatory hearing is also evidenced by examination of other review available to a permittee under the Act regarding a cessation order, including the 30-day decision required of the Secretary in adjudicatory hearings and availability of temporary relief under § 525 of the Act.

28. Another commenter urged that the public hearing under § 521(a)(5) must result in a decision within 30 days rather than be held within that time. This comment is rejected, however, because it is not consistent with the language of the Act or the legislative history.

29. A number of comments were received regarding the provisions of § 722.16 of the proposed regulations, appearing now as § 722.17 of the final regulations, which prohibit vacation of a notice or order because of inability to comply. While several commenters urged complete deletion of the section, others requested retention only of the principle that inability to comply may be considered in mitigation of the amount of a civil penalty under Part 723 of the regulations. Still other commenters recommended the addition of new language which would exempt or provide for additional time for compliance to correct practices or violations resulting from conditions beyond a permittee's control such as labor disputes, unavailability of equipment, acts of God, and other events commonly termed *force majeure*. One commenter suggested that the time fixed by an inspector for abatement of a violation should be tolled and good cause would be deemed to exist should there occur any event not within the control of the permittee which renders timely abatement impossible.

The language contained in the proposed regulation was retained because the Act does not authorize either total avoidance of compliance with the performance standards or a tolling of the time fixed for abatement where events such as labor disputes, equipment shortages, or the like occur. Because the degree of negligence is one of the statutory criteria contained in § 518 of the Act regarding the assessment of civil penalties, the inability of a permittee to comply is considered to be appropriate for consideration as a mitigating factor in the amounts of civil penalties, unless a lack of diligence is shown.

30. Numerous comments on § 722.17 of the proposed regulations, appearing now as § 722.16 of the final regulations, addressed the question of whether a national norm showing a pattern of willful or unwarranted violations should be established and used to trigger the issuance of show cause orders under this section. Most of the comments were opposed to a national norm concept. A number of commenters stated that if the norm concept were retained in this section, it should, at a minimum, be a State or regional norm to take into account regional differences such as the size and type of operations and the different problems and conditions faced. Several commenters reasoned that Western operations are generally much larger and face much different climatological and other problems than the numerous small mines in the East.

Others objected to the national norm concept because it meant that a fixed percentage of the coal operators nationwide would automatically be subject to show cause proceedings and would constantly be in jeopardy. Further comments argued that the national norm would be impossible or extremely difficult to calculate causing considerable waste and confusion in recordkeeping, thus possibly delaying implementation of an effective enforcement program.

The regional norm approach was given careful and thorough consideration. It was not adopted in these regulations because of a number of factors. First, it is doubtful that sufficient and adequate statistical data would exist in most of the initial regulatory period to enable this approach to become truly workable. Secondly, without knowing with any degree of certainty how many willful or unwarranted violations will occur during the initial regulatory period, it would be difficult to affix a percentage above the regional norm at which a pattern should be deemed to occur.

However, OSM will develop, during the interim period, the recordkeeping and analytical capability to calculate a national or a regional norm to be used for guidance in enforcement policy and for use in adopting, if feasible, further regulations for a mandatory system based on a national or regional norm.

As to the use of a mandatory show cause order, the Office considered the suggestion that the Director be given an understanding of the Secretary's intentions regarding what is a pattern, but that he be given the flexibility to administer § 521(a)(4). The response to this suggestion is twofold. First, § 722.17(c)(2) of the proposed regulations provides discretion for the Regional Director to determine when there is a pattern of violations. Second, a fixed standard of conduct is needed beyond which the permittee knows he is subject to an order to show cause. If however, such a system produces results of the Act's standards, a finding to that effect could be made, and no show cause order would issue.

The option selected was to require the issuance of a show cause order if the permittee violates the same or related requirements of the Act, willfully or due to an unwarranted failure to comply, during three or more Federal inspections within any 12-month period. It is believed that such a procedure reflects the intent of Congress as to what constitutes a pattern. The legislative history clearly states that the Secretary must issue a show cause order when the permittee violates the same or related standard "several times". The number of violations was set at three because this is considered to be consistent with the concepts of "several" and "pattern". If a show cause order would not further enforcement of the standards in the Director's judgment, a finding would be made with an appropriate explanation as to why a pattern is not deemed to exist in that instance.

31. Several comments state that § 722.17(d)(2) of the proposed regulations is not in conformity with the Act in that it requires suspension or revocation of a permit if the Secretary finds that a pattern of violations exists or has existed. The reasons stated for this position are that the standard is arbitrary and lacking in due process and that it would require suspension or revocation of a permit even if past violations had been corrected.

These comments were rejected because it is believed that the central focus of the provisions of § 521(a)(4) of the Act is the concept of a pattern of violations. The order to show cause directed to the permittee referred to in § 521(a)(4) of the Act is to afford the permittee an opportunity to demonstrate that he is not in a pattern of violations. This can be done in several ways including a showing that the violations alleged to constitute the pattern are neither willful nor unwarranted or a showing that they are not violations. Once the Secretary concludes, after the opportunity for public hearing is given, that a pattern exists, the permit must be suspended or revoked. The length of any suspension, however, is within the discretion of the Secretary.

The comment that correction of past violations would be a defense to a suspension or revocation is likewise rejected because it is contrary to the Act and the legislative history.

32. Two commenters recommended that all regulations regarding pattern of violations be deferred until such time as the procedural regulations contained in 43 CFR Part 4 are promulgated. This comment was rejected because the pattern of violations regulations are considered integrally related to the other enforcement regulations which are being published at this time. It should be noted that the procedural regulations are now in preparation and will be published for comment.

33. One commenter objected to the lack of standards as to whether there will be a suspension or a revocation

under § 722.17 of the proposed regulations. While there is some guidance contained in the legislative history, it is believed that these standards are more appropriately suited for inclusion in the procedural regulations in 43 CFR Part 4.

34. Several comments on § 722.17 of the proposed regulations recommended certain procedural provisions such as burden of proof in show cause proceedings and types of evidence which must be offered and considered. These comments are also more properly directed to the procedural regulations to be contained in 43 CFR Part 4.

35. Finally, it was requested that § 722.17(c)(1) of the proposed regulations be restricted specifically to the permit area so as to eliminate an ambiguity as to whether a pattern relates to a particular operation or all of a permittee's operations. No change was made as a result of this comment because the comment is not inconsistent with the intent of the proposed regulation and the Act.

PART 723—CIVIL PENALTIES

Part 723 covers the assessment of civil penalties under § 518 of the Act for violations of Title V of the Act, the regulations and permit conditions.

1. Several comments were received that the proposed regulations were too inflexible while others supported the detail and the mandatory provisions. Some comments were received complaining of the difficulty of defining and using general terms such as "negligence" and "seriousness" and "good faith in compliance" while others, sometimes citing past MESA difficulty, urged that few if any regulations be adopted and that civil penalties be determined and assessed on a case-by-case basis.

The maximum degree of consistency and rationality was the goal sought in developing regulations to guide the exercise of enforcement judgment in imposing civil penalties. Given the large number of mines and Federal inspections under this program, the civil penalty system is designed to allow the handling of many notices of violations and cessation orders with a minimum of involvement by policy makers and lawyers in each individual case. Policymakers and lawyers would be deeply involved in case-by-case development of a civil penalty which is proposed without guiding regulations.

The detail of the regulations and the mandatory provisions also produce substantial certainty. Certainty is an important element in enforcement; certainty increases effectiveness and decreases disputes.

The use of the terms "negligence," "seriousness," and "good faith in compliance" are required by § 518 of the Act. The regulations attempt to reduce the uncertainty about the interpretation of these key phrases, but there is no way to reduce the element of judgment inherent in those terms. A reduction in detail in the regulations will not solve any problems in using these terms, and it may exacerbate them. Clear policy direction and effective training and management of the people within OSM who will interpret daily these phrases is important and will be accomplished.

2. Comments were received that assessment of violations contained in a cessation order should be discretionary and that the determination of whether to assess a penalty for such violations should be made by use of a formula similar to that presently adopted for assessing penalties for notices of violation. This was not adopted because § 518 of the Act requires that all violations which lead to a cessation order must be assessed.

3. Commenters suggested that the word "operator" should be deleted and the section apply only to permittees. This has been accepted. The word "operator" was originally used to bring a person conducting underground mining within this section. Since such a person is now covered by the definition of the word "permittee" in § 717 of these regulations and thereby brought under all the enforcement regulations, including this section, the use of the word "operator" is unnecessary.

4. Comments were received that the regulations should be changed to clarify that the previous violations relevant as history are those at the particular mine, not those for all mines of a particular permittee. This comment is accepted. Only history of previous violations at a particular mine is considered in assessing a civil penalty; not the history at another operation of the permittee. While one change was made in § 723.12 to clarify the point, other specific changes were not made because this point is sufficiently clear.

5. Comments were received that the regulations should allow the consideration of factors other than those four listed in § 518 of the Act. This suggestion was not accepted because it would create uncertainty in results and administrative difficulty. It should be noted that the consideration of other factors may be possible on a case-by-case basis when the formula is waived pursuant to § 723.15.

6. Comments were also received that OSM should use fewer than the four statutory criteria in making the determination to assess, and, in general, should devise a system to avoid assessments for minor violations. The point is well made, and the present system will achieve that goal. The use of the four statutory criteria is maintained in determining whether to assess because they are all relevant to the determination.

7. Section 723.12 contains the formula based on assigning points to each violation. One comment indicated confusion about the threshold number of 30 in paragraph (a) and its relation to the dollar conversion table in § 723.13. The threshold number is used to determine whether a violation not contained in a cessation order will lead to a civil penalty. If such a violation is assigned 27 points in the formula, a penalty is not assessed. On the other hand, a penalty must be assessed for every violation contained in a cessation order, even in the unusual case in which such a violation is assigned less than 30 points. It is because of the latter possibility that the point-dollar conversion table goes below 30 points.

8. Commenters suggested that the threshold number of 30 in § 723.12 was too high and would allow serious violations to escape assessment. The threshold remains at 30 for two reasons. First, many serious violations will lead to cessation orders given the broad statutory and regulatory definitions of "imminent danger to the health or safety of the public" and "significant, imminent environmental harm to land, air, or water resources." A penalty will be assessed for such violations regardless of whether they are assigned less than 30 points by the formula. Second, it is estimated that 30 will be a workable threshold number that will in fact separate those violations for which an assessment is appropriate from those for which it is not. OSM will pay close attention to the success of this threshold number in achieving this goal with a view to rapid change if it does not work as intended.

9. Comments were also received that the regulations should be changed to allow assessments as a matter of discretion for violations assigned less than 30 points. No change was made, although the Office has such discretion as the Act and the regulations stand.

10. Section 723.12(b) provides a method for converting the history of previous violations at the particular mine to points for use in the formula. Comments were received that OSM should not count previous violations that were being contested. That comment was accepted because of the potential unfairness and legal uncertainty of doing so. However, the period during which the violation was being contested will not count as a part of the 1-year period before the slate is wiped clean of past violations. If this were not done, certain violations would in effect never be counted even though they were sustained in the review process because of the time covered in the review process.

11. A comment was received that previous violations should not be counted if they did not lead to a civil penalty. This comment was rejected because such violations are just as indicative as others of previous conduct.

12. A comment was received that OSM should not weight previous violations which resulted in a cessation order by assigning the cessation order itself 5 points in addition to the 1 point per underlying violations. This comment was not accepted because with such weighting, the points assigned will more accurately reflect the actual facts and circumstances of the permittee's history. Cessation orders that resulted from a condition or practice and not from a violation are not counted.

13. A comment was received that OSM should count violations resulting from State inspections. While this has theoretical merit, it was rejected as too impractical in the initial program.

14. Comments were received that the number of points assigned to a given

number of violations should be increased or decreased. The number of violations that will be encountered in the interim period is difficult to estimate. However, the present numbering system for history of previous violations should prove to be an effective measure. As in other segments of these regulations, OSM will monitor the civil penalty system closely and be alert to the need for adjustment on the basis of experience.

15. Section 723.12(c) contains the criteria for determining the seriousness of a violation and assigning it points for use in the formula. There was much confusion about the criteria as proposed. The principal confusion was between the violation itself and the event against which a standard violated is designed to protect.

Section 723.12(c) divides seriousness into two components. The first is the probability of the occurrence, not of the violation of the standard itself which has already occurred, but of the event which the violated standard is designed to prevent. The best way to clarify this distinction is by example. There is an example in the paragraph as adopted. Another example is the standard requiring sedimentation ponds of a certain size and construction. Not having such a pond is a violation of the standard. Discharge of water from the permit area carrying greater concentrations of sediment than allowed is the event which the pond requirements are designed to protect.

The second component of seriousness is extent of potential or actual damage. This concept is designed to weigh the scope of the harm as if the event had occurred against which the violated standard was designed to prevent. For instance, failure of a refuse dam and consequent flooding is the event which the standards dealing with the construction of refuse dams are designed to prevent. Such a failure would have impact, probably catastrophic, far outside the permit area. Thus, any violation of a construction standard would be assigned the maximum 15 points under the second component of the seriousness test contained in § 712.11(c)(2), even though the probability of such a failure resulting from the particular violation is insignificant and, therefore, assigned only 0 to 5 points under § 723.12(c)(1).

The interrelation of these two components can be seen in another example. If the violation is a failure to spread topsoil over a relatively small area in a relatively flat terrain where the underlying strata is a good growing medium, the probability of a revegation failure and erosion is insignificant. Furthermore, any failure or erosion would be very localized and probably only effect land within the permit area. In such a case, 0 to 5 points would be assigned for probability of occurrence and 0 to 7 points for extent of potential or actual damage.

If the area is large, on a steep slope, near the permit boundary and the uppermost layer is a poor growing medium, then revegation failure and erosion are likely and the environmental harm will spread off the permit area. In such a case, 10 to 15 points would be awarded for probability of occurrence and 8 to 15 points for extent of potential or actual damage.

Comments were received that the concepts explained above were unclear in the regulations as proposed. Some changes, and the above explanation, clarify the regulations further. One comment suggested that instead of the approach taken, the regulations should list certain violations as *per se* serious. This idea has merit but was rejected as impractical at this time. Some practices may be serious in one circumstance and not another; to label a given practice as "serious" or "not serious" in every instance is likely to be unsatisfactory.

16. Section 723.12(d) provides criteria for assigning points based on the permittee's negligence. Several comments were received that the definition of negligence proposed is incorrect, or at least poorer than others available. One definition recommended is the definition contained in the American Law Institute's *Restatement of Torts*. While the assertion that the definition in the Restatement is superior has some merit from an academic viewpoint, the proposed definition was retained because it coincides with a key provision of the statutory definition of "unwarranted failure to comply." Having two different definitions, one for negligence in civil penalty assessments and the other for the negligence component of the concept of "unwarranted failure to comply," would be a legal and administrative nightmare. By making the definitions coincide these difficulties are avoided.

17. Comments were received suggesting that the attribution to the permittee of the actions of all persons working on the mine site was improper. They were rejected. The Act, and indeed State laws, makes the permittee liable for the conduct of the mining and compliance with the law. Anyone working on the mine is there for the benefit of or at the sufferance of the permittee. To excuse the permittee from violations resulting from activity of such people would undermine the permittee's motivation to exercise his control to protect against violations.

18. Section 723.12(e) provides a method for considering the permittees' "demonstrated good faith in attempting to achieve rapid compliance after notification of the violation." Comments were received that the test for rapid compliance is too stringent and will undermine the motivation to comply rapidly. Because abatement after a violation is never as desirable as prevention of the violation in the first place, credit for rapid compliance is appropriate only where extraordinary effort is demonstrated.

Because a period for abatement can be longer than the 30 days given for proposing assessments, in a small percentage of the cases a complete analysis of the permittee's good faith in compliance will be impossible before the proposed assessment is issued. One comment was received that OSM should assign points for this criterion based on the progress toward abatement during the first 30 days. The suggestion would require a visit to the mine solely to analyze progress on abatement. This would be wasteful of important inspection resources. On balance, it was decided not to require a second inspection solely for the purpose of checking progress toward abatement, but to allow recalculation of the assessment after abatement was completed.

19. Section 723.13 provides a table for converting points from the formula to a dollar amount. The table, as promulgated, goes down to one point, although it is difficult to conceive of an example where a violation subject to a penalty will be assigned only one point. The maximum number of points which may be assigned a violation by the formula is 95. All violations which are assigned 70 or more points will result in the maximum fine of $5,000.00.

Commenters suggested that the conversion table would result in unduly high penalties and other commenters suggested that it would result in unduly low penalties. In designing the table, and indeed all the civil penalty regulations, the goal has been a system that will result in penalties commensurate with the violation and that will be an effective deterrent to future violations. This goal is difficult to achieve. These regulations come as close as possible to this goal given the present uncertainty about the actual results of enforcement and given the practical constraints of a system designed to handle many violations. Moreover, it should be noted that the formula and point system can be waived pursuant to § 723.15 when justified.

20. A comment was received that the formula should take into account the size of the operation. This was not done because the legislative history indicates Congress intended that size not be considered.

21. Section 723.14 provides criteria for determining when each day of a continuing violation will be assessed separately. Comments were received that to require assessment of each day of a continuing violation is improper. This comment was not accepted because it is proper and desirable for the Secretary to announce in regulations the criteria that will be used for exercising the enforcement discretion under the Act.

22. A comment was received that § 723.14(a) should be changed to clarify whether the daily penalty begins after the cessation order is issued or reverts back to the date the notice of violation was given. A change was made to clarify the regulation. The daily penalty under this paragraph begins with the cessation order.

23. One comment received expressed confusion over what constitutes a continuing violation. The commenter asserted that it could not be the period after a notice of violation was issued fixing a reasonable time for abatement because it is reasonable for the violation to continue during the abatement period. That assertion is rejected. Although the abatement period may be reasonable, that is not an excuse or protection for the viola-

tion in the first instance. Thus, the reasonable abatement period is not relevant to the definition of a continuing violation. The Act and the regulations provide no definition of a continuing violation, but it is believed that it is every day that the Act, regulations, or permit conditions are violated regardless of whether it is before or after a notice of violation or cessation order.

24. Section 723.15 provides for a waiver of the formula and point system by OSM. A number of comments were received that the formula and point system might be unable to treat every fact situation satisfactorily and that a provision for waiving the use of the formula and point system should be adopted. That comment was accepted. The waiver provision may be invoked by OSM on its own initiative and on motion received within 10 days of the issuance of the notice or order. The 10 days is the same period granted in § 723.16 for submisison of information by the permittee to be considered by OSM in making the proposed assessment. This is a relatively short period; but since the procedural assessment must be issued within 30 days, it is appropriate. The waiver can be invoked when the Director determines that doing so, and proposing either a higher or lower penalty than that resulting from the formula and point system, would further abatement of violations under the Act.

25. Section 723.17 provides for informal conferences between a permittee against whom a penalty has been proposed and a representative of the OSM assessment office. The purpose is to attempt to clarify the facts surrounding the violation and reach agreement between OSM and the permittee on the proper amount of the penalty. Comments were received that "citizen" participation should be broadened and others were received that it should be reduced. Those who wanted broader participation suggested that people attending the conference be allowed to participate, and they called for actual notice to any person whose complaint led to the violation which is the subject of the conference, to any person who communicated to OSM about the mine in the preceding year, to the State regulatory authority, and to the general public by notice in the newspaper. Those favoring narrowing participation wanted to limit or prevent the attendance of anyone other than the permittee and the OSM representative and to clarify that only those latter two were parties to any agreement reached at the conference.

The comment that third parties attending be allowed to participate has been accepted, but the suggestion to increase public notice has been rejected because of the administrative burden. The suggestion to narrow public participation was rejected. The regulations are clarified so that only the permittee and the OSM representative are parties to any agreement reached.

The principal purpose of the conference is to discuss informally the facts relevant to the proposed assessment and reach an agreement on the proper assessment without a formal hearing. Thus, the conference is neither a public nor formal hearing. On the other hand, residents near the mine or other interested members of the public may have information useful in this process. Moreover, public confidence in the conference and the entire administration of the Act will not be long maintained if critical interactions between the regulator and the regulated are conducted behind closed doors.

OSM will monitor the effectiveness of conferences as a procedure for resolving disputes. If adjustments are called for, they will be made.

26. Comments were received that the conference officer should be able to consider confidential information in reaching an agreement. That comment was rejected for several reasons. First, confidential information is of very limited relevance to the issues of a conference. Second, the administrative law judge or a lawyer in the Solicitor's Office is better trained to handle such information. Third, public confidence in the conference procedure is maintained by this rule.

27. Section 723.18 sets out the process for seeking a formal hearing to contest a proposed penalty. Comments were received that payment of the penalty should not be a prerequisite for a hearing. That requirement is in the Act and has been retained in the regulations. It is proper inasmuch as the money is returned with interest if the assessment is reduced or overturned.

28. Comments were also received that the last sentence in § 723.18(c) deprived a person assessed of a full hearing under the Administrative Procedure Act. This argument was rejected. The Secretary has the rulemaking authority under this Act to establish interpretive rules both for the Act and for his enforcement discretion under the Act. Given a proper exercise of that authority, regulations can limit hearings to the contested facts and issues as this provision does.

29. Comments were received that § 723.19 should be changed to protect confidential records. The suggested change was not made because the section only applied to the assessment process and not to the formal hearing. Since no confidential material can be considered until the hearing, it is unlikely that there will be any confidential material to which protection could apply.

PART 725 AND PART 740—REIMBURSEMENTS TO STATES AND GRANTS FOR PROGRAM DEVELOPMENT, ADMINISTRATION AND ENFORCEMENT

1. One commenter noted that Part 725, Reimbursements to States, failed to clearly state what a State must do to be eligible for reimbursement and that a State was not required to implement Federal enforcement and penalty procedures during the initial enforcement period.

To clarify the eligibility requirements for reimbursements under this part, § 725.11 has been revised to include a cross-reference both to § 710.4(b) and Part 720. Together, these provisions require the States to enforce the Federal initial performance standards if they are more stringent than existing State performance standards, to incorporate appropriate terms in permits issued, revised or renewed on or after February 4, 1978, and to submit to OSM copies of certain inspection reports. During the initial regulatory period, States are not required to comply with the provisions of Part 721, Federal Inspection, Part 722, Enforcement Procedures or Part 723, Civil Penalties.

2. One commenter stated that Parts 725 and 740 should be used as a mechanism to encourage States to promulgate performance standards which are more stringent than the Federal performance standards.

This comment has been rejected as beyond the statutory purposes of the grant programs. Part 720 makes it clear that States may adopt and enforce performance standards more stringent than the initial Federal standards and Part 718 provides for Federal adoption of more stringent State standards.

3. One commenter stated that the grants should provide the basis for increasing State salary levels. This comment was rejected. Responsibility for establishing levels of pay for State employees rests with the States.

4. One commenter stated that covering 100 percent of the incremental costs of enforcing the initial regulatory program under Part 725 rewarded States which had not previously made a strong effort to regulate surface mining. Part 725, in this respect, was not changed. The Act does not authorize this Department to make value judgements of past enforcement efforts. Rather, it looks to strong State programs in the future and authorizes grants as a tool for constructing such programs.

5. Three commenters suggested that Parts 725 and 740 should provide for the transfer of money to counties, local units of government and regional councils for their use in implementing the Act. These comments were rejected. Grants under § 502(e)(4) and § 705 of the Act are in support of State regulatory activities. Local units of government, while assigned a consultative role in a number of procedures under the Act, perform no regulatory function under the Act during either the initial or permanent regulatory programs. States may, if they wish, contract with local governments for the performance of specific activities.

6. Twelve commenters suggested that a specific time limit be set for acting upon grant applications. The time suggested most frequently was 30 days. The comments were accepted in part and §725.15 and § 740.18 were changed to require the Regional Director to act on grant applications within 30 days or as soon thereafter as possible. While a prompt response is desirable, circumstances beyond the control of the Office may necessitate flexibility in the application review period.

7. Several comments related to the need to include "supporting costs" and

equipment costs in reimbursement grants. These comments were accepted. The term "supporting costs" was added to § 725.12(g) and a new (h) was added to authorize purchase of major pieces of equipment, excluding aircraft, under one grant. The proposed regulations had required that the cost of major pieces of equipment be amortized over consecutive grants equivalent to the life expectancy of the equipment. Aircraft purchases are not included in the new provision because they require more advance budget planning than will be possible in the initial program. Part 740 similarly was revised and aircraft was included as an item of equipment which can be purchased after a State program is approved.

8. A few commenters noted that a State should be allowed to take corrective action before its grant is reduced or terminated. These comments were accepted and § 725.18 was changed accordingly.

9. One commenter stated that grounds for terminating a reimbursement grant should include failure to comply with the non-discrimination provisions applicable to Federal grantees. This comment was accepted and appropriate non-discrimination provisions, already included in Part 740, were added to § 725.18.

10. One commenter stated that the audit provisions were inconsistent with those listed in Federal Management Circular 74-4. The comment was accepted and appropriate changes in audit provisions were made.

11. One commenter suggested that the grant coverage provisions of § 725.12 and § 740.14(b) be expanded to include base maps. This comment was rejected, as base maps already are covered as part of the inspection process.

12. One commenter suggested that § 725.24(a), pertaining to retention of records, require retention of maps. This suggestion was adopted.

13. One commenter suggested that States be allowed 80 percent Federal funding for both program development grants and first year administration and enforcement grants, perhaps by deferring payments for program development grants until the administration and enforcement phase was started. This comment was rejected. Section 705 of the Act provides for grants of up to 80 percent of the total costs incurred during the first year. During the first year it would be impossible to fund both program development and program administration grants at the same percentage rate, because the time periods for the two grants will not run concurrently. A program development grant might run for less than one year, in which case an administration and enforcement grants for 80 percent would be provided for the remainder of the year. Alternatively, a State may elect to forego the program development grant, thus becoming eligible for funding for an entire year of an 80 percent administration and enforcement grant.

14. One commenter suggested that all activities conducted pursuat to a State law should be eligible for assistance when conducted as part of an approved State regulatory program. The Department agrees that activities in addition to those required by the Federal law may be included in a State regulatory program. To the extent that they are included, they will be eligible for grant assistance. No change in the regulations is required for this purpose.

15. Two commenters suggested that the regulations include specific dates when grant funds would be available to the States. While the comment has some merit, it was rejected because of inherent uncertainties in the Federal budgeting and appropriations process. In most years, however, OSM will know how much money is available for grants by October 1.

16. One commenter suggested that a State be allowed to allocate grant funds and responsibilities to State agencies other than the one designated by the Governor to apply for, receive, and administer grant funds. This comment was rejected as unnecessary. Parts 725 and 740 already permit transfer of grant funds to other State agencies. However, the designated agency remains responsible for all grant funds.

17. The Department revised § 725.13, Amount of grants, to reflect the possibility that appropriated funds may be insufficient to reimburse each State for 100 percent of its incremental enforcement costs during the initial regulatory program. In that event, available funds will be allocated proportionately, i.e., each State would receive the same percentage of its budget, except where proportional allocation would not serve the best interests of the program. The revised language provides for such flexibility. Similarly, § 740.13(b)(4) has been changed to eliminate mandatory proportional allocation and to substitute a flexible reallocation process.

PART 795—SMALL OPERATOR ASSISTANCE PROGRAM

The regulations in Part 795 establish procedures for providing assistance to eligible small operators to obtain data which will be required for permit applications under permanent program regulations. The procedures are published at this time since it is assumed that assistance must start, in some cases, a full year before the permit application is filed. Under the regulations, assistance may be started up to 6 months before the State submits a proposed regulatory program for the Secretary to approve. Comments on the proposed regulations were received from 26 commenters and are discussed below.

1. Several commenters noted the heavy application burdens on small operators and suggested that the Small Operator Assistance Program be broadened to provide aid to operators for purposes other than hydrology and core sample analyses. This suggestion has been rejected because § 507 of the Act limits assistance to the cost of the preparation of the determination of the probable hydrologic consequences and statement of the results of test borings or core samplings. However, every effort has been made to provide the maximum allowable assistance consistent with the availability of funds. Thus, the operator eligibility has been defined to prevent unwarranted expenditure of funds. In order to minimize the burden on applicants, the Office has assumed as much of the administrative workload as possible.

2. Several commenters felt that the States should have the option of including the Small Operator Assistance Program within the State's approved regulatory program. Further, they felt that under § 795.11(a) the requirement for the State to notify the Office 6 months in advance of its intent to submit its regulatory program should be deleted. These views were not accepted. Section 507(c) of the Act is cast in mandatory terms that require the regulatory authority to designate qualified laboratories and to assume the costs of the services. These regulations are consistent with the rulemaking authority in § 201(c)(2) of the Act. The 6-month prior notice requirement is necessary to allow enough time for the Small Operator Assistance Program to proceed in an orderly way without causing delays and hardship to the small operators.

3. One commenter objected to the proposed method of taking production of operations controlled by the applicant or by the person who controls the applicant and attributing such production to the applicant. The regulations in § 795.13 have been revised to bring the section into conformity with the small operator exemption provisions of § 710.12. The concept of attributing production from other operations based on the identity of the controlling person has been retained in order to reduce the potential of granting assistance to unqualified operators.

4. One commenter suggested that § 795.14(e)(1) be clarified to specify the area of natural drainage that must be shown on the map. This suggestion has not been accepted. Since geological conditions vary greatly from region to region, the State regulatory authority should be allowed to make specific determinations as to the sufficiency of drainage detail on a case-by-case basis.

5. One commenter argued that information required from an applicant for small operator assistance unduly duplicated that required for small operator exemptions by § 710.12. Although it is recognized that some duplication exists, it is believed necessary to adequately administer the two programs, one of which lasts for 15 years and the other of which expires on January 1, 1979. The procedure chosen eliminates the need to cross-reference two programs that may be administered by different regulatory authorities.

6. One commenter recommended that a uniform scheme be adopted to award contracts among qualified laboratories and to pay them for their services. This suggestion was rejected. Divergent State and Federal procedures for securing and paying for services suggest that the imposition of any one scheme is inappropriate. It is contemplated that all existing legal methods to secure services could be used.

7. Two commenters felt that the data requirements of § 795.16 should be more specific. Another commetner felt that logs should only be required on seams with proven acid production potential. These comments were not accepted. Sections 507(b)(11) and 507(b)(15) of the Act require the regulatory authority to make an assessment of the probable cumulative impacts of all anticipated mining in the area, provide hydrologic information on the general area prior to mining, and determine whether it is necessary to require a statement of the result of test borings or core samplings. As a result, the regulatory authority must continually determine the adequacy of its data base. The regulatory authority needs flexibility to determine what additional data should be required from proposed permit areas. Section 507(b)(15) requires logs be made on all drill holes and not just drilling logs from acid producing seams.

8. Another commenter suggested that a small laboratory performing a specific service should not be disqualified because it does not have the same financial capability and business organization as a large laboratory performing a variety of services. The laboratory qualifications are designed to be flexible to allow the regulatory authority latitude in determining what services a laboratory is capable of performing in an acceptable way. A minor word change was made in § 795.17(b)(1)(v) to reflect that the financial capability will be related to the work required.

9. A commenter felt that the regulations required all laboratories to meet a single set of criteria, implying that each laboratory must be capable of performing all types of testing. It is intended that the provisions in § 795.17(b)(1)(vii) are basic qualifications. It is expected that some laboratories will only be qualified to perform some work under the Small Operator Assistance Program.

10. One commenter argued that there was no authority in the Act to prohibit the use of funds for actual costs of the test boring or core sampling. The same commenter also argued that under § 795.18(b) no applicant could evaluate its chance of being approved or rejected for assistance. The management scheme for the Small Operator Assistance Program must be devised so as to equitably divide available money among eligible applicants. Actual costs of test boring or core sampling are high, and payment of these costs would very soon deplete the available funds for any year. The decision not to cover these costs was based on § 507(c) of the Act which focuses on the result of test borings or core samplings, and does not authorize payment of actual drilling. Section 795.18(b) of the regulations is intended to allow the regulatory authority flexibility in developing its own formula for the equitable distribution of funds.

11. Commenters suggested that the operator should be liable for repayment if he fails to mine coal after obtaining a permit or if he mines more than 100,000 tons during any year. These recommendations were accepted and language was inserted to reflect the operator's responsibility. The Program is intended to assist qualified small operators in the permit application process. If the operator's permit is rejected after the assistance is provided, and he has acted in good faith, the regulatory authority may still waive reimbursement as provided under § 795.19(b).

12. Section 795.15 has been revised to permit the regulatory authority to withhold assistance in those cases where it is obvious that a permit will not be issued. For example, under this section the regulatory authority may refuse to grant assistance where the land has been declared unsuitable for mining. The section is further revised to emphasize that the grant of assistance will not prejudice any future decision by the regulatory authority.

13. Section 795.16 is clarified so that data collection and analysis may proceed concurrently with the development of mining and reclamation plans by the operator.

PART 830—PROTECTION OF EMPLOYEES

1. One commenter argued that since §§ 501 and 502 of the Act do not include an employee protection provision, Part 830 should not be included in the interim program. The protection provided employees by Part 830 is necessary once any enforcement of the Act begins. Section 703 of the Act establishes employee protection rights concurrent with the effective dates of the Act and regulations.

2. One commenter argued that the scope of employee protection under the proposed rules should be broadened to that afforded under the Coal Mine Health and Safety Act of 1969. Further, the commenter argued that the legislative history of the Federal Mine Safety and Health Act of 1977 should provide guidance as to the proper scope of employee protection in the final rules. To the extent consistent with the Act, the protection afforded employees by these regulations is to be broadly interpreted to ensure that employees are not inhibited from contributing to the enforcement of the Act in any way.

3. One commenter suggested that potential forms of employee discrimination should be listed to the extent possible to prevent future litigation over the scope of the rights protected. To avoid litigation and to clarify the rights protected, § 830.1(a) has been revised to include some specific forms of employee discrimination.

4. One commenter argued that the specified protected activities of § 830.11 exceed the authority of § 703 of the Act. Where potential problems of misinterpretation of the regulations existed, the provisions were revised to conform to § 703 of the Act. Further, minor changes were made in several provisions of § 830.11 to increase clarity.

5. Another reviewer suggested that employers be required to provide notice to employees of the provisions of § 830. This suggestion has been accepted to ensure employee knowledge of the protection standards.

6. One commenter suggested the addition of several other activities to the provisions of § 830.11. The commenter suggested that employees should be protected for "refusing to comply with orders by the employer or his agent believed in good faith to be violative of the Act, regulations or permit conditions or to endanger public health or safety or land, air, or water resources." Although the language is not adopted in the final regulations, it is expected that the scope of protection provided for such acts is to be determined on a case-by-case basis. Further, it was suggested that the regulations require a finding of discrimination "* * * whenever protected activity is in any manner or degree a contributing factor to retaliatory conduct." Again, such determinations are more appropriately made on a case-by-case basis rather than broadly in the regulations. Finally, the commenter suggested that statements and testimony made, or about to be made, in any judicial proceeding under the Act should be protected. This suggestion has been accepted to clarify the intent of the regulations.

7. One commenter suggested that the definition of an application for review should be revised to require a statement of "* * * the reason why the person believes he has been discriminated against and the facts surrounding the alleged discrimination in sufficient detail to permit the employer to file a response." Although the section has been modified to require a background statement of facts relating to the alleged discrimination, the suggestion that the statement be "sufficiently detailed" has been rejected because of the potential confusion arising from such a standard.

8. Two commenters suggested that § 830.12(c) should be modified to permit the filing of an application for review after 30 days upon a showing of good cause. The proposed language has been retained to conform to § 703 of the Act. However, it is recognized that in unique situations it may be appropriate to allow filing of the application after the 30-day period.

9. One commenter argued that the time periods proposed by § 830.13 for the application review process were unreasonably long. The periods were reduced as much as possible consistent with the need for a complete and thorough investigation and review procedure.

10. One commenter suggested that the alleged discriminating person should be required to file a response to the application for review. This suggestion has not been accepted since such a requirement would unnecessarily formalize the procedure before the informal conference. However, it is expected that in many cases a response will be made within 10 days of notification.

11. One commenter suggested that the informal conference be held before the factual investigation is completed. This suggestion was not accepted. To provide a factual framework to ensure that the conference is productive, it is necessary

that the investigation be conducted before the conference occurs.

12. A commenter suggested that § 830.13(d) should be revised to require the Office to prepare a summary of the informal conference. This suggestion has been adopted to ensure a full administrative record of the proceedings.

13. One commenter suggested that § 830.14(a) should be modified to provide a standard for the Director's determination of whether or not to represent the applicant before the Office of Hearings and Appeals. Further, the commenter recommended that if the standard were met, the Director should be required to represent the applicant. These comments have been accepted and § 830.14(a) has been revised accordingly.

14. One commenter noted that the proposed regulations required the filing of an application for review and a formal complaint. The commenter suggested that the procedure was unnecessarily burdensome and should be revised. Accordingly, the final regulations have been modified to require only a single filing.

15. One commenter requested a provision which would clarify that an applicant for review could still obtain a formal hearing with his own counsel regardless of the Director's determination under § 830.14(a). This specific language was not adopted because the regulations as written give the applicant such a right.

16. One commenter suggested that the final regulations require an initial decision on the application within 45 days of the close of the formal hearing. While this change was not adopted, it is expected that decisions will be made as quickly as possible consistent with the demands on the Office of Hearings and Appeals.

17. A commenter recommended that the final regulations specify possible remedies for violation of this part. The language adopted in § 830.15 conforms with that of § 703 of the Act. However, it is recognized that the Secretary may take broad affirmative action to remedy adequately violations of this part.

18. One commenter suggested that temporary relief should be granted applicants for review if their claims were not found "frivolous". It is recognized that temporary relief may be required to prevent undue hardship to the applicant in many cases. Therefore, § 830.15 has been revised to permit the Secretary or the applicant to seek temporary relief after 10 days from the filing of the application for review. However, the proper standard for the granting of an order for temporary relief will appear in the Office of Hearings and Appeals procedural regulations which will soon be proposed and subject to public comment before promulgation.

INFORMATION COLLECTION PROVISIONS

A number of these regulations require the States or permittees to collect, submit, or retain certain information. By publication of these final regulations, this Department has determined that such information is necessary to the performance of its responsibilities under the Act and must be collected, submitted or retained. Accordingly, these requirements, included in regulation sections 710.4(b), 710.11(d)(2)(ii), 710.12(e), 715.11(c), 715.13(d), 715.17(b), (j)(3) and (5), 715.18(b)(2) and (6), 715.19(b), (c), (d), and (e)(4), 716.7(c), (d), and (e), 717.17(b), 717.18(b)(2) and (6), 718.1(b), 720.13, 725.15, 725.23(a), 725.24, 740.13(a) and (b), 740.16(e), 740.18, 740.26, 740.27, 795.11(a) and (b), 795.12(a) and (b), 795.14, 795.16, and 795.17(a)(3) and (b), are adopted, subject only to review by the General Accounting Office, pursuant to 44 U.S.C. 3512, to assure that a minimum burden is imposed upon States or permittees in the manner in which such information is proposed to be obtained. These specific regulatory provisions will be effective January 29, 1978 or on the date of GAO clearance, whichever is earlier.

DRAFTING INFORMATION

Principal authors of these regulations include the following: Parts 700 and 710: Michael Bradley and Edward Clair; Parts 715, 716, 717, and 718: George Davis, John Hardaway, and Jack Martin; Parts 720, 721, 722, and 723: Richard Hall and Marcus McGraw; Parts 725 and 740: Carl Close; Part 795: Donald Willen; and Part 830: Jesse Jackson. All regulations were developed and written by the Office of Surface Mining Task Force, Department of the Interior, under the general supervision of Paul Reeves.

Dated: December 2, 1977.

LEO M. KRULITZ,
Solicitor of the Interior.

30 CFR Chapter VII is amended by adding new Parts 700, 710, 715, 716, 717, 718, 720, 721, 722, 723, 725, 740, 795, and 830, reading as follows:

PART 700—GENERAL

Sec.
700.1 Scope.
700.2 Objectives.
700.3 Authority.
700.4 Responsibility.
700.5 Definitions.
700.11 Applicability.
700.12 Petitions to initiate rulemaking.
700.13 Prior notice of citizens suits.
700.14 Requests for records.
700.15 Computation of time.

AUTHORITY: Sec. 201 and 501, Pub. L. 95-87, 91 Stat. 445 (30 U.S.C. 1201).

§ 700.1 Scope.

(a) This chapter sets forth the rules and procedures through which the Secretary of the Interior will implement the Surface Mining Control and Reclamation Act of 1977 (Pub. L. 95-87). The Act requires the Secretary to establish procedures for development and approval of programs for the regulation of surface coal mining and surface effects of underground coal mining in each State. The Act also requires the Secretary to establish an initial regulatory program which applies limited environmental performance standards to State, Federal, Indian and private lands until the implementation of a permanent regulatory program.

(b) Regulations authorized under the Act and contained in this chapter include but are not limited to—

(1) Environmental performance standards for surface coal mining and reclamation operations during the initial and permanent regulatory programs;

(2) Inspection and enforcement procedures during the initial and permanent regulatory programs, including the assessment of civil penalties;

(3) Assistance to small operators in meeting permit application requirements of the permanent regulatory programs;

(4) Requirements and approval procedures for State programs;

(5) Requirements for surface coal mining and reclamation operations on Federal lands;

(6) Procedures for State and Federal designation of areas unsuitable for surface coal mining operations and lands unsuitable for non-coal mining;

(7) Conflict of interest standards for State and Federal employees;

(8) Requirements and procedures for approval of State mining permits during the permanent regulatory program;

(9) Requirements for posting, release and forfeiture of performance bonds;

(10) Standards prohibiting discrimination against employees for reporting violations of the Act and regulations;

(11) Procedures for administering the Abandoned Mine Reclamation Fund, including approval of State plans and programs, procedures for implementing Federal programs; and

(12) Procedures for grants for State mining and mineral research institutes.

§ 700.2 Objectives.

The objectives of the regulations are to—

(a) Establish a nationwide regulatory program to protect society and the environment from adverse effects of surface coal mining and surface impacts of underground coal mining.

(b) Establish environmental, enforcement and administrative standards for regulatory programs;

(c) Create a program for the reclamation of previously mined and inadequately reclaimed lands; and

(d) Establish procedures for public review of the administrative and enforcement programs through access to data, hearings, inspections, and standing to sue for damages for non-compliance with the Act.

§ 700.3 Authority.

(a) The Secretary is authorized to administer the programs required by the Act, except—

(1) Provisions of the Act authorizing the Secretary of Agriculture to establish programs for the reclamation of rural lands, identification of prime agricultural lands and other responsibilities described in the Act. Regulations promulgated by the Secretary of Agriculture are in Title 7 of the Code of Federal Regulations.

(2) Other provisions of the Act for which responsibility is specifically assigned to other Federal agencies includ-

ing the Environmental Protection Agency, Corps of Engineers, Council on Environmental Quality and the Energy Research and Development Administration.

(3) Authority retained by the States to enforce State laws or regulations which are not inconsistent with the Act or these regulations.

§ 700.4 Responsibilities under the Act.

(a) The Director of the Office of Surface Mining Reclamation and Enforcement, under the general direction of the Assistant Secretary, Energy and Minerals, is responsible for exercising the authority of the Secretary except for—

(1) Initial approval or disapproval of State regulatory programs under Section 503 of the Act; and

(2) Designation of Federal lands as unsuitable for mining under Sections 522 and 601 of the Act.

(b) The Director is responsible for consulting with the Federal land managing agency on actions which may have an affect on their responsibilities for the management of Federal land resources.

(c) The States are responsible for the regulation of surface coal mining and reclamation operations and the reclamation of abandoned mine lands in accordance with procedures in this chapter.

(d) The Secretary may delegate to a State certain authority for regulating coal mining on Federal lands through a cooperative agreement.

§ 700.5 Definitions.

As used throughout the regulations of this chapter, except where otherwise indicated—

Act means the Surface Mining Control and Reclamation Act of 1977, (Pub. L. 95–87).

Auger mining means a method of mining coal at a cliff or highwall by drilling holes laterally into an exposed coal seam from the highwall and transporting the coal along an auger bit to the surface.

Coal means combustible carbonaceous rock, classified as anthracite, bituminous, subbituminous. or lignite by A.S.T.M. designation 0–388–66.

Director means the Director, Office of Surface Mining Reclamation and Enforcement, or his representative.

Federal lands means any land, including mineral interests, owned by the United States without regard to how the United States acquired ownership of the lands and without regard to the agency having responsibility for management thereof, except Indian lands: provided, that for the purposes of the Act lands or mineral interests east of the one hundredth meridian west longitude owned by the United States and entrusted to or managed by the Tennessee Valley Authority are not subject to sections 714 (Surface Owner Protection) and 715 (Federal Lesee Protection) of the Act.

Federal lands program means a program established by the Secretary pursuant to section 523 of the Act to regulate surface coal mining and reclamation operations on Federal lands.

Federal program means a program established by the Secretary pursuant to section 504 of the Act to regulate surface coal mining and reclamation operations on lands within a State in accordance with the requirements of the Act.

Fund means the Abandoned Mine Reclamation Fund established pursuant to section 401 of the Act.

Imminent danger to the health and safety to the public means the existence of any condition; or practice, or any violation of a permit or other requirement of the Act in a surface coal mining and reclamation operation, which condition, practice, or violation could reasonably be expected to cause substantial physical harm to persons outside the permit area before such condition, practice, or violation can be abated. A reasonable expectation of death or serious injury before abatement exists if a rational person, subjected to the same condition or practice giving rise to the peril, would not expose himself or herself to the danger during the time necessary for abatement.

Indian lands means all lands, including mineral interest, within the exterior boundaries of any Federal Indian reservation, notwithstanding the issuance of any patent, and including rights-of-way, and all lands including mineral interests held in trust for or supervised by an Indian tribe.

Indian tribe means any Indian tribe, band, group or community having a governing body recognized by the Secretary.

Office means the Office of Surface Mining Reclamation and Enforcement established under Title II of the Act.

Operator means any person, partnership or corporation engaged in coal mining who removes or intends to remove more than 250 tons of coal from the earth by mining within 12 consecutive calendar months in any one location.

Permit, except as used in references to permits during the initial regulatory program, means a permit to conduct surface coal mining and reclamation operations issued by the State regulatory authority pursuant to a State program or by the Secretary pursuant to a Federal program. During the initial regulatory program, permit means a permit to conduct surface coal mining and reclamation operations issued by a State under State law. During the initial regulatory program, permit also means a mining plan approved pursuant to Part 211 of this title held by a lessee of Federal lands during the initial program.

Permittee means any individual, partnership, association, society, joint stock company, firm, company, corporation, or other business organization holding a permit to conduct surface coal mining and reclamation operations issued by a State regulatory authority pursuant to a State program or by the Secretary pursuant to a Federal program or a Federal lands program. During the initial regulatory program the term includes persons conducting surface coal mining and reclamation operations regulated by a State under State law or conducting such operations under a mining plan approved pursuant to Part 211 of this title.

Person means an individual, partnership, association, society, joint stock company, firm, company, corporation, or other business organization.

Regulatory authority means the department or agency in each State which has primary responsibility at the State level for administering the Act in the initial program, or the State regulartory authority where the State is administering the Act under an approved State program, or the Secretary in the initial or permanent program where the Secretary is administering the Act.

Secretary means the Secretary of the Interior or his representative.

Significant, imminent environmental harm to land, air or water resources is determined as follows:

(i) An environmental harm is any adverse impact on land, air, or water resources, including but not limited to plant and animal life.

(ii) An environmental harm is imminent if a condition, practice or violation exists which (a) is causing such harm or (b) may reasonably be expected to cause such harm at any time before the end of the reasonable abatement time that would be set under section 521(a)(3) of the Act.

(iii) An environmental harm is significant if that harm is appreciable and not immediately reparable.

State program means a program established by a State pursuant to section 503 of the Act to regulate surface coal mining and reclamation operations on lands within such State in accord with the requirements of the Act and regulations issued by the Secretary under the Act.

State regulatory authority means the department or agency in each State which has primary responsibility at the State level for administering the Act under both the initial and permanent regulatory programs.

Surface Coal Mining Operations means: (a) activities conducted on the surface of lands in connection with a surface coal mine or subject to the requirements of Section 516 surface operations and surface impacts incident to an underground coal mine, the products of which enter commerce or the operations of which directly or indirectly affect interstate commerce. Such activities include excavation for the purpose of obtaining coal including such common methods as contour, strip, auger, mountaintop removal, box cut, open pit, and area mining, the uses of explosives and blasting, and in situ distillation or retorting, leaching or other chemical or physical processing, and the cleaning, concentrating, or other processing or preparation, loading of coal for interstate commerce at or near the mine site: provided, however, that such activities do not include the extraction of coal incidental to the extraction of other minerals where coal does not exceed 16⅔ per centum of the tonnage of minerals removed for purposes of commercial use or sale or coal exploration subject to Section 512 of the

Act; and (b) the areas upon which such activities occur or where such activities disturb the natural land surface. Such areas shall also include any adjacent land, the use of which is incidental to any such activities, all lands affected by the construction of new roads or the improvement or use of existing roads to gain access to the site of such activities and for haulage and excavation, workings, impoundments, dams, ventilation shafts, entryways, refuse banks, dumps, stockpiles, overburden piles, spoil banks, culm banks, tailings, holes or depressions, repair areas, storage areas, processing areas, shipping areas and other areas upon which are sited structures, facilities, or other property or material on the surface, resulting from or incident to such activities.

Surface coal mining and reclamation operations means surface coal mining operations and all activities necessary and incidental to the reclamation of such operations. This term includes the term "surface coal mining operations."

Ton means 2000 pounds avoirdupois (.90718 metric ton).

§ 700.11 Applicability.

The regulations in this chapter apply to all surface coal mining and reclamation operations except—

(a) The extraction of coal by a landowner for his own noncommercial use from land owned or leased by him;

(b) The extraction of coal for commercial purposes where the surface mining and reclamation operation affects two acres or less;

(c) The extraction of coal as an incidental and non-commercial part of Federal, State or local government-financed highway or other construction;

(d) The extraction of coal incidental to the extraction of other minerals where coal does not exceed 16⅔ percent of the mineral tonnage removed for commercial use or sale; and

(e) The extraction of coal on Indian lands which are covered by 25 CFR 177, Subpart B.

§ 700.12 Petitions to initiate rulemaking.

(a) Any person or State may petition the Director to initiate a proceeding for the issuance, amendment, or repeal of any regulation issued under the Act. The petition shall be filed in the Office of the Director, Office of Surface Mining Reclamation and Enforcement, United States Department of the Interior, Washington, D.C. 20240.

(b) The petition shall set forth a concise statement of the facts and law which require issuance, amendment, or repeal of a regulation under the Act and shall indicate whether the petitioner desires a public hearing.

(c) Upon receipt of a petition, the Director shall publish a notice in the FEDERAL REGISTER seeking comments from the public on the proposed change, and may hold a public hearing, may conduct an investigation or take other actions to determine whether or not the petition should be granted.

(d) Within 90 days from the date of receipt, the Director shall issue a written decision either granting or denying the petition. If the petition is granted the Director shall commence a rulemaking proceeding. If the petition is denied, the Director shall notify the petitioner in writing setting forth the reasons for denial.

§ 700.13 Prior notice of citizen suits.

A person who intends to commence a civil action on his own behalf under section 520 of the Act shall give notice of intent to do so in accordance with the regulations of this section.

(a) Notification shall be given by certified mail to the Secretary and the Director in all cases and to the head of the State regulatory authority if a complaint involves or relates to a specific State. A copy of the notification shall be provided by first class mail to the Regional Director of the Office if the complaint involves or relates to a specific region.

(b) Notification shall be given by certified mail to the alleged violator if the complaint alleges a violation of the Act or any regulation, order or permit issued under the Act.

(c) Service of notice under this section is complete upon mailing to the last known address of the person being notified.

(d) A person giving notice regarding an alleged violation of the Act or any regulation, order or permit issued under the Act shall state, to the extent known—

(1) Sufficient information to enable the recipient to identify the provision of the Act, rule, regulation, order or permit allegedly violated;

(2) The action or omission alleged to constitute a violation;

(3) The person or persons responsible for the alleged violation;

(4) The date, time and location of the alleged violation;

(5) The name, address, and telephone number of the person giving notice; and

(6) The name, address, and telephone number of legal counsel, if any.

(e) A person giving notice regarding an alleged failure by the Secretary or a State regulatory authority to perform a mandatory act or duty under the Act shall state, to the extent known—

(1) The provision or provisions of the Act containing the mandatory act or duty allegedly not performed;

(2) Sufficient information to enable the recipient to identify the omission alleged to constitute the failure to perform a mandatory act or duty under the Act;

(3) The name, address, and telephone number of the person giving notice; and

(4) The name, address and telephone number of legal counsel, if any.

§ 700.14 Request for records.

(a) Records required to be made available locally to the public under the Act shall be retained at the local office having jurisdiction over the location involved.

(b) Other records or documents may be requested under 43 CFR Part 2, which implements the Freedom of Information Act and the Privacy Act.

§ 700.15 Computation of time.

(a) Except as otherwise provided, computation of time for these regulations will be based on calendar days.

(1) In computing any period of prescribed time, the day on which the designated period of time begins is not included. The last day of the period is included unless it is a Saturday, Sunday or legal holiday on which the Department of Interior is not open for business, in which event the period runs until the end of the next day which is not a Saturday, Sunday or legal holiday.

(2) Intermediate Saturdays, Sundays and legal holidays are excluded from the computation when the period of prescribed time is seven days or less.

PART 710—INITIAL REGULATORY PROGRAM

Sec.

710.1 Scope.
710.2 Objectives.
710.3 Authority.
710.4 Responsibility.
710.5 Definitions.
710.11 Applicability.
710.12 Special exemption for small operators on State lands.

AUTHORITY: Sec. 201, 501, and 502, Pub. L. 95-87, 91 Stat. 445 (30 U.S.C. 1201).

§ 710.1 Scope.

(a) This part provides general introductory and applicability material for the initial regulatory program required by section 502 and other sections of the Act which require early implementation. The initial regulatory program is effective until permanent programs are approved in accordance with section 503, 504, or 523 of the Act.

(b) The initial regulatory program which this part introduces includes—

(1) Environmental performance standards of Parts 715–718 of this Chapter.

(2) Inspection and enforcement procedures of Parts 720–723 of this chapter; and

(3) Reimbursements to States of Part 725 of this chapter.

§ 710.2 Objectives.

(a) The objectives of the initial regulatory program are to—

(1) Protect the health and safety of the public and minimize the damage to the environment resulting from surface coal mining operations during the interval between enactment of the Act and adoption of a permanent State or Federal regulatory program; and

(2) Coordinate the State and Federal regulatory programs to accomplish the purposes of the Act.

§ 710.3 Authority.

(a) The Secretary is directed to implement an initial regulatory program

within six months after the date of enactment of the Act in each State which regulates any aspect of surface coal mining under one or more State laws until a State program has been approved or until a Federal program has been implemented. (b) The Secretary is also authorized to regulate surface coal mining and reclamation operations on Federal Lands by the Mineral Leasing Act of February 25, 1920, as amended, (30 U.S.C. 181–287) and the Mineral Leasing Act for Acquired Lands (30 U.S.C. 351–359) and on Indian lands by various Indian lands acts. Additional regulations under these Acts are in 30 CFR Part 211, 43 CFR Part 3041 and 25 CFR Part 177.

§ 710.4 Responsibility.

(a) Under the general direction of the Assistant Secretary, Energy and Minerals, the Director is responsible for administering the initial regulatory program established by the Secretary.

(b) The States are responsible for issuing permits and inspection and enforcement on lands on which operations are regulated by a State to insure compliance with the initial performance standards in Parts 715–718 of this chapter. States are required to file copies of inspection reports with the Office. States are also responsible for assuring that permits are not issued which would be in conflict with the restriction on mining found in section 510 of the Act, particularly in regard to alluvial valley floors and prime farm lands, and Section 522(e) of the Act in regard to prohibitions of mining on certain lands.

§ 710.5 Definitions.

As used throughout the initial regulatory program the following terms have the specified meanings unless otherwise indicated:

Acid drainage means water with a pH of less than 6.0 discharged from active or abandoned mines and from areas affected by coal mining operations.

Acid-forming materials means earth materials that contain sulfide mineral or other materials which, if exposed to air, water, or weathering processes, will cause acids that may create acid drainage.

Alluvial valley floors means unconsolidated stream-laid deposits holding streams where water availability is sufficient for subirrigation or flood irrigation agricultural activities but does not include upland areas which are generally overlain by a thin veneer of colluvial deposits composed chiefly of debris from sheet erosion, deposits by unconcentrated runoff or slope wash, together with talus, other mass movement accumulation and windblown deposits.

Approximate original contour means that surface configuration achieved by backfilling and grading of the mined area so that the reclaimed area, including any terracing or access roads, closely resembles the general surface configuration of the land prior to mining and blends into and complements the drainage pattern of the surrounding terrain, with all highwalls and spoil piles eliminated; water impoundments may be permitted where the regulatory authority determines that they are in compliance with § 715.17.

Aquifer means a zone, stratum, or group of strata that can store and transmit water in sufficient quantities for a specific use.

Combustible material means organic material that is capable of burning either by fire or through a chemical process (oxidation) accompanied by the evolution of heat and a significant temperature rise.

Compaction means the reduction of pore spaces among the particles of soil or rock, generally done by running heavy equipment over the earth materials.

Disturbed area means those lands that have been affected by surface coal mining and reclamation operations.

Diversion means a channel, embankment, or other manmade structure constructed for the purpose of diverting water from one area to another.

Downslope means the land surface between a valley floor and the projected outcrop of the lowest coalbed being mined along each highwall.

Embankment means an artifical deposit of material that is raised above the natural surface of the land and used to contain, divert, or store water, support roads or railways, or other similar purposes.

Essential hydrologic functions means, with respect to alluvial valley floors, the role of the valley floor in collecting, storing, and regulating the natural flow of surface water and ground water, and in providing a place for irrigated and subirrigated farming, by reason of its position in the landscape and the characteristics of its underlying material.

Flood irrigation means irrigation through natural overflow or the temporary diversion of high flows in which the entire surface of the soil is covered by a sheet of water.

Ground water means subsurface water that fills available openings in rock or soil materials such that they may be considered water-saturated.

Highwall means the face of exposed overburden and coal in an open cut of a surface or for entry to an underground coal mine.

Hydrologic balance means the relationship between the quality and quantity of inflow to, outflow from, and storage in a hydrologic unit such as a drainage basin, aquifer, soil zone, lake, or reservoir. It encompasses the quantity and quality relationships between precipitation, runoff, evaporation, and the change in ground and surface water storage.

Hydrologic regime means the entire state of water movement in a given area. It is a function of the climate, and includes the phenomena by which water first occurs as atmospheric water vapor, passes into a liquid or solid form and falls as precipitation, moves thence along or into the ground surface, and returns to the atmosphere as vapor by means of evaporation and transpiration.

Impoundment means a closed basin formed naturally or artificially built, which is dammed or excavated for the retention of water, sediment, or waste.

Intermittent or perennial stream means a stream or part of a stream that flows continuously during all (perennial) or for at least one month (intermittent) of the calendar year as a result of ground-water discharge or surface runoff. The term does not include an ephemeral stream which is one that flows for less than one month of a calendar year and only in direct response to precipitation in the immediate watershed and whose channel bottom is always above the local water table.

Leachate means a liquid that has percolated through soil, rock, or waste and has extracted dissolved or suspended materials.

Noxious plants means species that have been included on official State lists of noxious plants for the State in which the operation occurs.

Overburden means material of any nature, consolidated or unconsolidated, that overlies a coal deposit, excluding topsoil.

Outslope means the exposed area sloping away from a bench or terrace being constructed as a part of a surface coal mining and reclamation operation.

Productivity means the vegetative yield produced by a unit area for a unit of time.

Recharge capacity means the ability of the soils and underlying materials to allow precipitation and runoff to infiltrate and reach the zone of saturation.

Roads means access and haul roads constructed, used, reconstructed, improved, or maintained for use in surface coal mining and reclamation operations, including use by coal-hauling vehicles leading to transfer, processing, or storage areas. The term includes any such road used and not graded to approximate original contour within 45 days of construction other than temporary roads used for topsoil removal and coal haulage roads within the pit area. Roads maintained with public funds such as all Federal, State, county, or local roads are excluded.

Recurrence interval means the precipitation event expected to occur, on the average, once in a specified interval. For example, the 10-year 24-hour precipitation event would be that 24-hour precipitation event expected to be exceeded on the average once in 10 years. Magnitude of such events are as defined by the National Weather Service Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S.," May 1961, and subsequent amendments or equivalent regional or rainfall probability information developed therefrom.

Runoff means precipitation that flows overland before entering a defined stream channel and becoming streamflow.

Safety factor means the ratio of the available shear strength to the developed shear stress on a potential surface of sliding determined by accepted engineering practice.

Sediment means undissolved organic and inorganic material transported or deposited by water.

Sedimentation pond means any natural or artificial structure or depression used to remove sediment from water and store sediment or other debris.

Slope means average inclination of a surface, measured from the horizontal. Normally expressed as a unit of vertical distance to a given number of units of horizontal distance (e.g., 1*v* to 5*h*=20 percent=11.3 degrees).

Soil horizons means contrasting layers of soil lying one below the other, parallel or nearly parallel to the land surface. Soil horizons are differentiated on the basis of field characteristics and laboratory data. The three major soil horizons are—

(1) *A horizon.* The uppermost layer in the soil profile often called the surface soil. It is the part of the soil in which organic matter is most abundant, and where leaching of soluble or suspended particles is the greatest.

(2) *B horizon.* The layer immediately beneath the A horizon and often called the subsoil. This middle layer commonly contains more clay, iron, or aluminum than the A or C horizons.

(3) C *horizon.* The deepest layer of the soil profile. It consists of loose material or weathered rock that is relatively unaffected by biologic activity.

Spoil means overburden that has been removed during surface mining.

Stabilize means any method used to control movement of soil, spoil piles, or areas of disturbed earth and includes increasing bearing capacity, increasing shear strength, draining, compacting, or revegetating.

Subirrigation means irrigation of plants with water delivered to the roots from underneath.

Surface water means water, either flowing or standing, on the surface of the earth.

Suspended solids means organic or inorganic materials carried or held in suspension in water that will remain on a 0.45 micron filter.

Toxic-forming materials means earth materials or wastes which, if acted upon by air, water, weathering, or microbiological processes, are likely to produce chemical or physical conditions in soils or water that are detrimental to biota or uses of water.

Toxic-mine drainage means water that is discarged from active or abandoned mines and other areas affected by coal mining operations and which contains a substance which through chemical action or physical effects is likely to kill, injure, or impair biota commonly present in the area that might be exposed to it.

Valley fill and head-of-hollow fill means a structure consisting of any materials other than waste placed so as to encroach upon or obstruct to any degree any natural stream channel other than those minor channels located on highland areas where overland flow in natural rills and gullies is the predominant form of runoff. Such fills are normally constructed in the uppermost portion of a V-shaped valley in order to reduce the upstream drainage area (head-of-hollow fills). Fills located farther downstream (valley fills) must have larger diversion structures to minimize infiltration. Both fills are characterized by rock underdrains and are constructed in compacted lifts from the toe to the upper surface in a manner to promote stability.

Waste means earth materials, which are combustible, physically unstable, or acid-forming or toxic-forming, wasted or otherwise separated from product coal and are slurried or otherwise transported from coal processing facilities or preparation plants after physical or chemical processing, cleaning, or concentrating of coal.

Water table means upper surface of a zone of saturation, where the body of ground water is not confined by an overlying impermeable zone.

§ 710.11 Applicability.

(a) *Operations on lands on which such operations are regulated by a State.* (1) The requirements of the initial regulatory program do not apply to surface mining and reclamation operations which occur on lands within a State which does not regulate any part of such operations.

(2) *General obligations.* (i) A person conducting coal mining operations shall have a permit if required by the State in which he is mining and shall comply with State laws and regulations that are not inconsistent with the Act and this chapter.

(ii) A person conducting coal mining operations shall not engage in any operations which result in a condition or constitute a practice that creates an imminent danger to the health or safety of the public.

(iii) A person conducting coal mining operations shall not engage in any operations which result in a condition or constitute a practice that causes or can reasonably be expected to cause significant, imminent environmental harm to land, air, or water resources.

(3) *Performance standards obligations.* (i) A person who conducts any coal mining operations under an initial permit issued by a State on or after February 3, 1978, shall comply with the requirements of the initial regulatory program. Such permits shall contain terms that comply with the relevant performance standards of the initial regulatory program.

(ii) On and after May 3, 1978, any person conducting coal mining operations shall comply with the initial regulatory program, except as provided in § 710.12 of this part.

(iii) A person shall comply with the obligations of this section until he has received a permit to operate under a permanent State or Federal regulatory program.

(b) *Operations on Indian Lands.* On or after December 16, 1977, a person conducting coal mining operations on Indian Lands shall comply only with the performance standards of this Chapter insofar as they are incorporated in Part 177, Subpart B, of Title 25 of the Code of Federal Regulations.

(c) *Operations on Federal lands.* (1) A person conducting coal mining operations on Federal lands that commence operations on or after February 3, 1978, shall comply with the performance standards of this Chapter.

(2) Any person conducting coal mining operations on Federal lands on and after May 3, 1978, shall comply with the performance standards of this Chapter.

(d) *Operations on all lands.* (1) The requirements of this chapter apply to operations conducted after the effective date of these regulations on lands from which the coal has not yet been removed and to any other lands used, disturbed, or redisturbed in connection with or to facilitate mining or to comply with the requirements of the Act or these regulations.

(2) Any pre-existing, non-conforming structure or facility which is used in connection with or to facilitate mining after the effective date of these regulations shall comply with the requirements of the regulations, unless—

(i) It is physically impossible to bring the structure or facility into compliance by the effective date;

(ii) The permittee or operator submits to the regulatory authority by February 3, 1978, a plan designed by a professional engineer for the reconstruction of the structure or facility;

(iii) The regulatory authority approves the plan; and

(iv) Reconstruction is started and completed as soon as possible. No plan shall be approved unless construction is to begin on or before May 4, 1978, and is to be completed by November 4, 1978, at the latest.

§ 710.12 Special exemption for small operators on State lands.

(a) As used in this section—

(1) *Permittee* means a person holding a permit under State law and to whom the permit was originally issued.

(2) *Renewed permit* means any extension of the original area or duration of a permit.

(b) If a person is an eligible permittee under paragraph (c) of this section and intends to conduct surface coal mining operations on or after May 3, 1978, that permittee may receive from the Director a limited exemption from the performance standards of this chapter. The exemption shall not—

(1) Include the Special Performance Standard of § 716.2(a) (1) of this chapter regarding the handling of spoil;

(2) Apply to surface coal mining operations to be conducted under a permit or renewed permit issued on or after August 3, 1977;

(3) Include any general or special performance standard with which a permittee is required to comply by a State;

(4) Relieve the permittee of the general obligations imposed by § 710.11(a) of this part regarding conditions or practices creating imminent danger or caus-

ing significant, imminent environmetal harm; or

(5) Relieve the permittee of any obligations under State law, regulation or permit.

(c) A permittee is eligible for an exemption under this section—

(1) If the actual and attributed production of that permittee is estimated by the Director not to exceed 100,000 tons of coal during the year ending on December 31, 1978; and

(2) If that permittee—

(i) Was in existence on July 31, 1976, and during the year ending on July 31, 1977, the actual and attributed production of that permittee was 100,000 tons of coal or less from all surface and underground coal mining operations; or

(ii) Came into existence after July 31, 1976, and prior to May 2, 1977, and the actual and attributed production from all surface and underground coal mining operations of that permittee in the average calendar month was an amount of coal which when multiplied by 12 yields a product of 100,000 tons or less.

(iii) And, in the case of a business organization, has not undergone a substantial change in ownership since May 2, 1977, other than a substantial change due to the death of an owner.

(d) Applications for an exemption under this section shall be submitted to the Director of the Office by February 3, 1978, with a copy to the State regulatory authority.

(e) The request for exemption shall be in the form of an affidavit under oath and shall include—

(1) The name and address of the permittee and of persons who control the permittee by reason of stock ownership or otherwise.

(2) The name, location, Mining Enforcement and Safety Administration identification numbers, and permit numbers of the surface coal mining operations for which exemption is sought, including a statement of the dates each permit was issued or renewed and will expire.

(3) The date and method by which the permittee was created if the permittee is not an individual.

(4) A listing of all surface and underground coal mining operations showing—

(i) Actual production for the year ending July 31, 1977, attributed to the permittee and the inclusive dates of operation.

(ii) Estimated production for the year ending December 31, 1978, attributed to the permittee and the anticipated dates of operation.

(5) A copy of coal severence tax returns for coal produced during the year ending on July 31, 1977.

(6) A copy of a notice the permittee has published in a local newspaper of general circulation in the area of each mine for which an exemption is sought once a week for two weeks stating—

(i) That an application for a small operator exemption will be filed, which if granted would exempt the operator from certain environmental protection performance standards in the Act;

(ii) The name and address of the permittee;

(iii) The location of the surface coal mining operations to which the exemption will apply; and

(iv) That public comments may be submitted to the Director, Office of Surface Mining Reclamation and Enforcement.

(f) Production from the following operations shall be attributed to the permittee—

(1) All coal produced by operations beneficially owned entirely by the permittee, or controlled by reasons of ownership, direction of the management, or in any other manner by the permittee.

(2) The pro rata share, based upon percentage of beneficial ownership, of coal produced by operations in which the permittee owns more than a 5-percent interest.

(3) All coal produced by persons who own more than 5 percent of the permittee or who directly or indirectly control the permittee by reason of stock ownership, direction of the management or in any other manner.

(4) The pro rata share of coal produced by operations owned or controlled by the person who owns or controls the permittee.

(g) The Director shall grant the request for an exemption if, upon the basis of the request and any State regulatory authority or public comments, or any other information, he finds that—

(1) The permittee has satisfied his burden of proof by demonstrating eligibility for the exemption; and

(2) The exemption will not be inconsistent with State law, regulation or permit terms.

(h) Any person aggrieved by the decision of the Director under this section may appeal within 20 days from receipt of that decision to The Office of Hearings and Appeals under 43 CFR Part 4. The Office of Hearings and Appeals and the Secretary shall have the authority to stay the exemption pending the outcome of the appeal.

(i) The exemption shall be effective on the date approved. It shall remain in effect until expiration or renewal of the State permit to which it applies, December 31, 1978, or until revoked, whichever is earlier.

(j) The Director shall revoke the exemption upon finding that the exemption was erroneously issued or that the exempted operation has or will produce more than 100,000 tons of coal per year.

PART 715—GENERAL PERFORMANCE STANDARDS

Sec.

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AUTHORITY: Secs. 201 and 501, Pub. L. 95-87 Stat. 445 (30 U.S.C. 1201).

§ 715.11 General obligations.

(a) *Compliance.* All surface coal mining and reclamation operations conducted on lands where any element of the operations is regulated by a State shall comply with the initial performance standards of this Part according to the time schedule specified in § 710.11. Part 717 of this chapter establishes performance standards for surface effects of underground coal mines. Initial regulations regarding the special Initial Performance Standards are established by Part 716 of this chapter for—

(1) Surface coal mining operations on steep slopes;

(2) Surface coal mining operations involving mountaintop removal;

(3) Special bituminous coal mines;

(4) Anthracite surface coal mining operations;

(5) Surface coal mining operations in Alaska; and

(6) Surface coal mining operations on prime farmlands.

Where State environmental protection standards are adopted for a specific State because they are more stringent than the standards of Parts 715, 716, and 717, they will be published in Part 718 of this chapter.

(b) *Authorizations to operate.* A copy of all current permits, licenses, approved plans, or other authorizations to operate the mine shall be available for inspection at or near the mine site.

(c) *Mine maps.* Any person conducting surface coal mining and reclamation operations on and after May 3, 1978, shall submit two copies of an accurate map of the mine and permit area at a scale of 1:6000 or larger. The map shall show as of May 3, 1978, the lands from which coal has not yet been removed and the lands and structures which have been used or disturbed to facilitate mining. One copy of the mine map shall be submitted to the State regulatory authority and one copy shall be submitted to the Regional Director, OSM, before July 3, 1978.

§ 715.12 Signs and markers.

(a) *Specifications.* All signs required to be posted shall be of a standard design that can be seen and read easily and shall be made of durable material. The signs and other markers shall be maintained during all operations to which they pertain and shall conform to local ordinances and codes.

(b) *Mine and permit identification signs.* Signs identifying the mine area shall be displayed at all points of access to the permit area from public roads and highways. Signs shall show the name, business address, and telephone number of the permittee and identification numbers of current mining and reclamation permits or other authorizations to operate. Such signs shall not be removed until after release of all bonds.

(c) *Perimeter markers.* The perimeter of the permit area shall be clearly marked by durable and easily recognized markers, or by other means approved by the regulatory authority.

(d) *Buffer zone markers.* Buffer zones as defined in § 715.17 shall be marked in a manner consistent with the perimeter markers along the interior boundary of the buffer zone.

(e) *Blasting signs.* If blasting is necessary to conduct surface coal mining operations, signs reading "Blasting Area" shall be displayed conspicuously at the edge of blasting areas along access and haul roads within the mine property. Signs reading "Blasting Area" and explaining the blasting warning and all-clear signals shall be posted at all entrances to the permit area.

(f) *Topsoil markers.* Where topsoil or other vegetation-supporting material is segregated and stockpiled according to § 715.16(c), the stockpiled material shall be marked. Markers shall remain in place until the material is removed.

§ 715.13 Postmining use of land.

(a) *General.* All disturbed areas shall be restored in a timely manner (1) to conditions that are capable of supporting the uses which they were capable of supporting before any mining, or (2) to higher or better uses achievable under criteria and procedures of paragraph (d) of this section.

(b) *Determining premining use of land.* The premining uses of land to which the postmining land use is compared shall be those uses which the land previously supported if the land had not been previously mined and had been properly managed.

(1) The postmining land use for land that has been previously mined and not reclaimed shall be judged on the basis of the highest and best use that can be achieved and is compatible with surrounding areas.

(2) The postmining land use for land that has received improper management shall be judged on the basis of the premining use of surrounding lands that have received proper management.

(3) If the premining use of the land was changed within 5 years of the beginning of mining, the comparison of postmining use to premining use shall include a comparison with the historic use of the land as well as its use immediately preceding mining.

(c) *Land-use categories.* Land use is categorized in the following groups. Change from one to another land use category in premining to postmining constitutes an alternate land use and the permittee shall meet the requirements of paragraph (d) of this section and all other applicable environmental protection performance standards of this chapter.

(1) *Heavy industry.* Manufacturing facilities, powerplants, airports or similar facilities.

(2) *Light industry and commercial services.* Office buildings, stores, parking facilities, apartment houses, motels, hotels, or similar facilities.

(3) *Public services.* Schools, hospitals, churches, libraries, water-treatment facilities, solid-waste disposal facilities, public parks and recreation facilities, major transmission lines, major pipelines, highways, underground and surface utilities, and other servicing structures and appurtenances.

(4) *Residential.* Single- and multiple-family housing (other than apartment houses) with necessary support facilities. Support facilities may include commercial services incorporated in and comprising less than 5 percent of the total land area of housing capacity, associated open space, and minor vehicle parking and recreation facilities supporting the housing.

(5) *Cropland.* Land used primarily for the production of cultivated and close-growing crops for harvest alone or in association with sod crops. Land used for facilities in support of farming operations are included.

(6) *Rangeland.* Includes rangelands and forest lands which support a cover of herbaceous or scrubby vegetation suitable for grazing or browsing use.

(7) *Hayland or pasture.* Land used primarily for the long-term production of adapted, domesticated forage plants to be grazed by livestock or cut and cured for livestock feed.

(8) *Forest land.* Land with at least a 25 percent tree canopy or land at least 10 percent stocked by forest trees of any size, including land formerly having had such tree cover and that will be naturally or artificially reforested.

(9) *Impoundments of water.* Land used for storing water for beneficial uses such as stock ponds, irrigation, fire protection, recreation, or water supply.

(10) *Fish and wildlife habitat and recreation lands.* Wetlands, fish and wildlife habitat, and areas managed primarly for fish and wildlife or recreation.

(11) *Combined uses.* Any appropriate combination of land uses where one land use is designated as the primary land use and one or more other land uses are designated as secondary land uses.

(d) *Criteria for approving alternative postmining use of land.* An alternative postmining land use shall be approved by the regulatory authority, after consultation with the landowner or the land-management agency having jurisdiction over State or Federal lands, if the following criteria are met. Proposals to remove an entire coal seam running through the upper part of a mountain, ridge, or hill must also meet these criteria in addition to the requirements of § 716.3 of this chapter.

(1) The proposed land use is compatible with adjacent land use and, where applicable, with existing local, State or Federal land use policies and plans. A written statement of the views of the authorities with statutory responsibilities for land use policies and plans shall accompany the request for approval. The permittee shall obtain any required approval of local, State or Federal land management agencies, including any necessary zoning or other changes necessarily required for the final land use.

(2) Specific plans have been prepared which show the feasibility of the proposed land use as related to needs, projected land use trends, and markets and that include a schedule showing how the proposed use will be developed and achieved within a reasonable time after mining and be sustained. The regulatory authority may require appropriate demonstrations to show that the planned procedures are feasible, reasonable, and integrated with mining and reclamation, and that the plans will result in successful reclamation.

(3) Provision of any necessary public facilities is assured as evidenced by letters of commitment from parties other than the permittee, as appropriate, to provide them in a manner compatible with the permittee's plans.

(4) Specific and feasible plans for financing attainment and maintenance of the postmining land use including letters of commitment from parties other than the permittee as appropriate, if the postmining land use is to be developed by such parties.

(5) The plans are designed under the general supervision of a registered professional engineer, or other appropriate professional, who will ensure that the plans conform to applicable accepted standards for adequate land stability, drainage, and vegetative cover, and aesthetic design appropriate for the postmining use of the site.

(6) The proposed use or uses will neither present actual or probable hazard to public health or safety nor will they pose any actual or probable threat of water flow diminution or pollution.

(7) The use of uses will not involve unreasonable delays in reclamation.

(8) Necessary approval of measures to prevent or mitigate adverse effects on fish and wildlife has been obtained from the regulatory authority and appropriate State and Federal fish and wildlife management agencies.

(9) Proposals to change premining land uses of range, fish and wildlife habitat, forest land, hayland, or pasture to a postmining cropland use, where the cropland would require continuous maintenance such as seeding, plowing, cultivation, fertilization, or other similar practices to be practicable or to comply with applicable Federal, State, and local laws, shall be reviewed by the regulatory authority to assure that—

(i) There is a firm written commitment by the permittee or by the landowner or land manager to provide sufficient crop management after release of applicable performance bonds to assure that the proposed postmining cropland use remains practical and reasonable;

(ii) There is sufficient water available and committed to maintain crop production; and

(iii) Topsoil quality and depth are shown to be sufficient to support the proposed use.

(10) The regulatory authority has provided by public notice not less than 45 days nor more than 60 days for interested citizens and local, State and Federal agencies to review and comment on the proposed land use.

§ 715.14 Backfilling and grading.

In order to achieve the approximate original contour, the permittee shall, except as provided in this section, trans-

port, backfill, compact (where advisable to ensure stability or to prevent leaching of toxic materials), and grade all spoil material to eliminate all highwalls, spoil piles, and depressions. Cut-and-fill terraces may be used only in those situations expressly identified in this section. The postmining graded slopes must approximate the premining natural slopes in the area as defined in paragraph (a).

(a) *Slope measurements.* (1) To determine the natural slopes of the area before mining, sufficient slopes to adequately represent the land surface configuration, and as approved by the regulatory authority in accordance with site conditions, must be accurately measured and recorded. Each measurement shall consist of an angle of inclination along the prevailing slope extending 100 linear feet above and below or beyond the coal outcrop or the area to be disturbed; or, where this is impractical, at locations specified by the regulatory authority. Where the area has been previously mined, the measurements shall extend at least 100 feet beyond the limits of mining disturbances as determined by the regulatory authority to be representative of the premining configuration of the land. Slope measurements shall take into account natural variations in slope so as to provide accurate representation of the range of natural slopes and shall reflect geomorphic differences of the area to be disturbed. Slope measurements may be made from topographic maps showing contour lines, having sufficient detail and accuracy consistent with the submitted mining and reclamation plan.

(2) After the disturbed area has been graded, the final graded slopes shall be measured at the beginning and end of lines established on the prevailing slope at locations representative of premining slope conditions and approved by the regulatory authority. These measurements must not be made so as to allow unacceptably steep slopes to be constructed.

(b) *Final graded slopes.* (1) The final graded slopes shall not exceed either the approximate premining slopes as determined according to paragraph (a)(1) and approved by the regulatory authority or any lesser slope specified by the regulatory authority based on consideration of soil, climate, or other characteristics of the surrounding area. Postmining final graded slopes need not be uniform. The requirements of this paragraph may be modified by the regulatory authority where the mining is reaffecting previously mined lands that have not been restored to the standards of this section and sufficient spoil is not available to return to the slope determined according to paragraph (a)(1). Where such modifications are approved, the permittee shall, as a minimum, be required to—

(i) Retain all overburden and spoil on the solid portion of existing or new benches; and

(ii) Backfill and grade to the most moderate slope possible to eliminate the highwall which does not exceed the angle of repose or such lesser slopes as is necessary to assure stability.

(2) On approval by the regulatory authority and in order to conserve soil moisture, ensure stability, and control erosion on final graded slopes, cut-and-fill terraces may be allowed if the terraces are compatible with the postmining land use approved under § 715.13, and are appropriate substitutes for construction of lower grades on the reclaimed lands. The terraces shall meet the following requirements:

(i) The width of the individual terrace bench shall not exceed 20 feet unless specifically approved by the regulatory authority as necessary for stability, erosion control, or roads included in the approved postmining land use plan.

(ii) The vertical distance between terraces shall be as specified by the regulatory authority to prevent excessive erosion and to provide long-term stability.

(iii) The slope of the terrace outslope shall not exceed $1v:2h$ (50 percent). Outslopes which exceed $1v:2h$ (50 percent) may be approved if they have a minimum static safety factor of more than 1.5 and provide adequate control over erosion and closely resemble the surface configuration of the land prior to mining. In no case may highwalls be left as part of terraces.

(iv) Culverts and underground rock drains shall be used on the terrace only when approved by the regulatory authority.

(3) All operations on steep slopes of 20 degrees or more or on such lesser slopes as the regulatory authority defines as a steep slope shall meet the provisions of § 716.2 of this chapter.

(c) *Mountaintop removal.* The requirements of this paragraph and of § 716.3 shall apply to surface mining operations which remove entire coal seams in the upper part of a mountain, ridge, or hill by removing all of the overburden, and where the requirements for achieving the approximate original contour of this section cannot be met. Final graded top plateau slopes on the mined area shall be less than $1v:5h$ so as to create a level plateau or gently rolling configuration and the outslopes of the plateau shall not exceed $1v:2h$, except where engineering data substantiates and the regulatory authority finds that a minimum static safety factor of 1.5 (or higher factors specified by the regulatory authority) will be attained. Although the area need not be restored to approximate original contour, all highwalls, spoil piles, and depressions except as provided in paragraphs (d) and (e) of this section shall be eliminated. All mountaintop removal operations shall in addition meet the provisions of § 716.3 of this chapter.

(d) *Small depressions.* The requirement of this section to achieve approximate original contour does not prohibit construction of small depressions if they are approved by the regulatory authority to minimize erosion, conserve soil moisture or promote revegetation. These depressions shall be compatible with the approved postmining land use and shall not be inappropriate substitutes for construction of lower grades on the reclaimed lands. Depressions approved under this section shall have a holding capacity of less than 1 cubic yard of water or, if it is necessary that they be larger, shall not restrict normal access throughout the area or constitute a hazard. Large, permanent impoundments shall be governed by paragraph (e) of this section and by § 715.17.

(e) *Permanent impoundments.* Permanent impoundments may be retained in mined and reclaimed areas provided all highwalls are eliminated by grading to appropriate contour and the provisions for postmining land use (§ 715.13) and protection of the hydrologic balance (§ 715.17) are met. No impoundments shall be constructed on top of areas in which excess materials are deposited pursuant to § 715.15 of this part. Impoundments shall not be used to meet the requirements of paragraph (j) of this section.

(f) *Definition of thin and thick restored overburden.* The thin overburden provisions of paragraph (g) of this section may apply only where the final thickness is less than 0.8 of the initial thickness. The thick overburden provisions of paragraph (h) of this section may apply only where the final thickness is greater than 1.2 of the initial thickness. Initial thickness is the sum of the overburden thickness and coal thickness. Final thickness is the product of the overburden thickness times the bulking factor to be determined for each mine area. The provisions of paragraph (g) and (h) apply only when operations cannot be carried out to comply with the requirements of paragraph (a) of this section to achieve the approximate original contour.

(g) *Thin overburden.* In surface coal mining operations carried out continuously in the same limited pit area for more than 1 year from the day coal-removal operations begin and where the volume of all available spoil and suitable waste materials is demonstrated to be insufficient to achieve approximate original contour, surface coal mining operations shall be conducted to meet, at a minimum, the following standards:

(1) Transport, backfill, and grade, using all available spoil and suitable waste materials from the entire mine area, to attain the lowest practicable stable grade, which may not exceed the angle of repose, and to provide adequate drainage and long-term stability of the regraded areas.

(2) Eliminate highwalls by grading or backfilling to stable slopes not exceeding $1v:2h$ (50 percent), or such lesser slopes as the regulatory authority may specify to reduce erosion, maintain the hydrologic balance, or allow the approved postmining land use.

(3) Transport, backfill, grade, and revegetate to achieve an ecologically sound land use compatible with the prevailing land use in unmined areas surrounding the permit area.

(4) Transport, backfill, and grade to ensure the impoundments are constructed only where it has been demonstrated

to the regulatory authority's satisfaction that all requirements of § 715.17 have been met and that the impoundments have been approved by the regulatory authority as meeting the requirements of this part and all other applicable Federal and State regulations.

(h) *Thick overburden.* In surface coal mining operations where the volume of spoil is demonstrated to be more than sufficient to achieve the approximate original contour surface coal mining operations shall be conducted to meet at a minimum the following standards:

(1) Transport, backfill, and grade all spoil and wastes not required to achieve approximate original contour in the surface mining area to the lowest practicable grade.

(2) Deposit, backfill, and grade excess spoil and wastes only within the permit area and dispose of such materials in conformance with this part.

(3) Transport, backfill, and grade excess spoil and wastes to maintain the hydrologic balance in accordance with this part and to provide long-term stability.

(4) Transport, backfill, grade, and revegetate wastes and excess spoil to achieve an ecologically sound land use compatible with the prevailing land uses in unmined areas surrounding the permit area.

(5) Eliminate all highwalls and depressions except as stated in paragraph (e) of this section by backfilling with spoil and suitable waste materials.

(i) *Regarding or stabilizing rills and gullies.* When rills or gullies deeper than 9 inches form in areas that have been regarded and the topsoil replaced but vegetation has not yet been established the permittee shall fill, grade, or otherwise stabilize the rills and gullies and reseed or replant the areas according to § 715.20. The regulatory authority shall specify that rills or gullies of lesser size be stabilized if the rills or gullies will be disruptive to the approved postmining land use or may result in additional erosion and sedimentation.

(j) *Covering coal and acid-forming, toxic-forming, combustible, and other waste materials; stabilizing backfilled materials; and using waste material for fill.* (1) *Cover* All exposed coal seams remaining after mining and any acid-forming, toxic-forming, combustible materials, or any other waste materials identified by the regulatory authority that are exposed, used, or produced during mining shall be covered with a minimum of 4 feet of nontoxic and noncombustible material; or, if necessary, treated to neutralize toxicity in order to prevent water pollution and sustained combustion, and to minimize adverse effects on plant growth and land uses. Where necessary to protect against upward migration of salts, exposure by erosion, to provide an adequate depth for plant growth, or to otherwise meet local conditions, the regulatory authority shall specify thicker amounts of cover using nontoxic material. Acid-forming or toxic-forming material shall not be buried or stored in proximity to a drainage course so as to cause or pose a threat of water pollution or otherwise violate the provisions of § 715.17 of this part.

(2) *Stabilization.* Backfilled materials shall be selectively placed and compacted wherever necessary to prevent leaching of toxic-forming materials into surface or subsuface waters in accordance with § 715.17 and wherever necessary to ensure the stability of the backfilled materials. The method of compacting material and the design specifications shall be approved by the regulatory authority before the toxic materials are covered.

(3) *Use of waste materials as fill.* Before waste materials from a coal preparation or conversion facility or from other activities conducted outside the permit area such as municpal wastes are used for fill material, it must be demonstrated to the regulatory authority by hydrogeological means and chemical and physical analyses that use of these materials will not adversely affect water quality, water flow, and vegetation; will not present hazards to public health and safety; and will not cause instability in the backfilled area.

(k) *Grading along the coutour.* All final grading, preparation of overburden before replacement of topsoil, and placement of topsoil, in accordance with § 715.16, shall be done along the contour to minimize subsequent erosion and instability. If such grading, preparation or placement along the contour would be hazardous to equipment operators then grading, preparation or placement in a direction other than generally parallel to the contour may be used. In all cases, grading, preparation, or placement shall be conducted in a manner which minimizes erosion and provides a surface for replacement of topsoil which will minimize slippage.

§ 715.15 Disposal of spoil and waste materials in areas other than the mine workings or excavations.

(a) *Disposal of spoil in other than valley or head-of-hollow fills.* Spoil not required to achieve the approximate original contour shall be transported to and placed in a controlled (engineered) manner in disposal areas other than the mine workings or excavations only if all the following conditions, in addition to the other requirements of this part, are met:

(1) The disposal areas shall be within the permit area, and they must be approved by the regulatory authority as suitable for construction of fills in accordance with the requirements of this paragraph.

(2) The disposal areas shall be located on the most moderate sloping and naturally stable areas available as approved by the regulatory authority. Where possible, fill materials suitable for disposal shall be placed upon or above a natural terrace, bench, or berm if such placement provides additional stability and prevents mass movement.

(3) The fill shall be designed using recognized professional standards, certified by a registered professional engineer, and approved by the regulatory authority.

(4) Where the slope in the disposal area exceeds $1v:2.8h$ (36 percent), or such lesser slope designated by the regulatory authority based on local conditions, measures such as keyway cuts (excavations to stable bedrock) or rock toe buttresses shall be constructed to stabilize the fill.

(5) The disposal area does not contain springs, natural water courses, or wet weather seeps unless lateral drains are constructed from the wet areas to the underdrains in such a manner that infiltration of the water into the spoil pile will be prevented.

(6) All organic material shall be removed from the disposal area and the topsoil must be removed and segregated pursuant to § 715.16 before the material is placed in the disposal area. However, if approved by the regulatory authority, organic material may be used as mulch or may be included in the topsoil.

(7) The spoil shall be transported and placed in a controlled manner, concurrently compacted as necessary to ensure mass stability and prevent mass movement, covered, and graded to allow surface and subsurface drainage to be compatible with the natural surroundings, and to ensure long-term stability. The final configuration of the fill must be suitable for postmining land uses approved in accordance with § 715.13. Terraces shall not be constructed unless approved by the regulatory authority.

(8) If any portion of the fill interrupts, obstructs, or encroaches upon any natural drainage channel, the entire fill is classified as a valley or head-or-hollow fill and must be designed and constructed in accordance with the requirements of paragraph (b) of this section.

(9) The fill shall be inspected for stability by a registered engineer or other qualified professional specialist during critical construction periods to assure removal of all organic material and topsoil, placement of under-drainage systems, and proper construction of terraces according to the approved plan. The registered engineer or other qualified professional specialist shall provide a certified report after each inspection that the fill has been constructed as specified in the design approved by the regulatory authority.

(b) *Disposal of spoil in valley or head-of-hollow fills.* Waste material must not be disposed of in valley or head-of-hollow fills. Spoil to be disposed of in natural valleys must be placed in accordance with the following requirements:

(1) The disposal areas shall be within the permit area, and they must be approved by the regulatory authority as suitable for construction of fills in accordance with the requirements of paragraph (b).

(2) The disposal site shall be near the ridge top of a valley selected to increase the stability of the fill and to reduce the drainage area above the fill. Where possible, spoil shall be placed above a natural terrace, bench, or berm, if such place-

ment provides additional stability and prevents mass movement.

(3) The fill shall be designed using recognized professional standards, certified by a registered professional engineer and approved by the regulatory authority.

(4) All organic material shall be removed from the disposal area and the topsoil must be removed and segregated pursuant to § 715.16 of this part before the material is placed in the disposal area. However, if approved by the regulatory authority, organic material may be used as mulch or may be included in the topsoil.

(5) Where the slope in the disposal area exceeds $1v:2.8h$ (36 percent), or such lesser slope designated by the regulatory authority based on local conditions, measures such as keyway cuts (excavations to stable bedrock) or rock toe buttresses shall be constructed to stabilize the fill.

(6) A system of underdrains constructed of durable rock shall be installed along the natural drainage system, shall extend from the toe to the head of the fill and contain lateral drains to each area of potential drainage or seepage. In constructing the underdrains, no more than 10 percent of the rock may be less than 12 inches in size and no single rock may be larger than 25 percent of the width of the drain. No rock shall be used in underdrains if it tends to easily disintegrate and thereby clog the drain or if it is acid-forming or toxic-forming. The minimum size of the main underdrain shall be:

Total amount of fill material	Predominant type of fill material	Minimum size of drain in feet	
		Width	Height
Less than 1 million yd³.	Sandstone	10	4
Do.	Shale	16	8
More than 1 million yd³.	Sandstone	16	8
Do.	Shale	16	8

(7) Spoil shall be transported and placed in a controlled manner and concurrently compacted as specified by the regulatory authority in lifts that are less than 4 feet thick in order to achieve the densities designed to ensure mass stability, to prevent mass movement, to avoid contamination of the rock underdrain and to prevent formation of voids. The final configuration of the fill must be suitable for postmining land uses approved in accordance with § 715.13.

(8) Terraces shall be constructed to stabilize the face of the fill. The outslope of each terrace shall not exceed 50 feet in length and the width of the terrace shall not be less than 20 feet.

(9) The tops of the fill and each terrace shall be graded no steeper than $1v:20h$ (5 percent) and shall be constructed to drain surface water to the sides of the fill where stabilized surface channels shall be established off the fill to carry drainage away from the fill. Drainage shall not be directed over the outslope of the fill unless approved by the regulatory authority.

(10) All surface drainage from the undisturbed area above the fill shall be diverted away from the fill by approved structures leading into water courses.

(11) The outslope of the fill shall not exceed $1v:2h$ (50 percent). The regulatory authority may require a flatter slope.

(12) The fill shall be inspected for stability by a registered engineer or other qualified professional specialist during critical construction periods and at least quarterly throughout construction to assure removal of all organic material and topsoil, placement of underdrainage systems, and proper construction of terraces according to the approved plan. The registered engineer or other qualified professional specialist shall provide a certified report after each inspection that the fill has been constructed as specified in the design approved by the regulatory authority.

§ 715.16 Topsoil handling.

To prevent topsoil from being contaminated by spoil or waste materials, the permittee shall remove the topsoil as a separate operation from areas to be disturbed. Topsoil shall be immediately redistributed according to the requirements of paragraph (b) of this section on areas graded to the approved postmining configuration. The topsoil shall be segregated, stockpiled, and protected from wind and water erosion and from contaminants which lessen its capability to support vegetation if sufficient graded areas are not immediately available for redistribution.

(a) *Topsoil removal.* All topsoil to be salvaged shall be removed before any drilling for blasting, mining, or other surface disturbance.

(1) All topsoil shall be removed unless use of alternative materials is approved by the regulatory authority in accordance with subparagraph (4). Where the removal of topsoil results in erosion that may cause air or water pollution, the regulatory authority shall limit the size of the area from which topsoil may be removed at any one time and specify methods of treatment to control erosion of exposed overburden.

(2) All of the A horizon of the topsoil as identified by soil surveys shall be removed according to paragraph (a) and then replaced on disturbed areas as the surface soil layers. Where the A horizon is less than 6 inches, a 6-inch layer that includes the A horizon and the unconsolidated material immediately below the A horizon (or all unconsolidated material if the total available is less than 6 inches) shall be removed and the mixture segregated and replaced as the surface soil layer.

(3) Where necessary to obtain soil productivity consistent with postmining land use, the regulatory authority may require that the B horizon or portions of the C horizon or other underlying layers demonstrated to have comparable quality for root development be segregated and replaced as subsoil.

(4) Selected overburden materials may be used instead of, or as a supplement to, topsoil where the resulting soil medium is equal to or more suitable for vegetation, and if all the following requirements are met:

(i) The permittee demonstrates that the selected overburden materials or an overburden-topsoil mixture is more suitable for restoring land capability and productivity by the results of chemical and physical analyses. These analyses shall include determinations of pH, percent organic material, nitrogen, phosphorus, potassium, texture class, and water-holding capacity, and such other analyses as required by the regulatory authority. The regulatory authority also may require that results of field-site trials or greenhouse tests be used to demonstrate the feasibility of using such overburden materials.

(ii) The chemical and physical analyses and the results of field-site trials and greenhouse tests are accompanied by a certification from a qualified soil scientist or agronomist.

(iii) The alternative material is removed, segregated, and replaced in conformance with this section.

(b) *Topsoil redistribution.* (1) After final grading and before the topsoil is replaced, regraded land shall be scarified or otherwise treated to eliminate slippage surfaces and to promote root penetration.

(2) Topsoil shall be redistributed in a manner that—

(i) Achieves an approximate uniform thickness consistent with the postmining land uses;

(ii) Prevents excess compaction of the spoil and topsoil; and

(iii) Protects the topsoil from wind and water erosion before it is seeded and planted.

(c) *Topsoil storage.* If the permit allows storage of topsoil, the stockpiled topsoil shall be placed on a stable area within the permit area where it will not be disturbed or be exposed to excessive water, wind erosion, or contaminants which lessen its capability to support vegetation before it can be redistributed on terrain graded to final contour. Stockpiles shall be selectively placed and protected from wind and water erosion, unnecessary compaction, and contamination by undesirable materials either by a vegetative cover as defined in § 715.20(g) or by other methods demonstrated to provide equal protection such as snow fences, chemical binders, and mulching. Unless approved by the regulatory authority, stockpiled topsoil shall not be moved until required for redistribution on a disturbed area.

(d) *Nutrients and soil amendments.* Nutrients and soil amendments in the amounts and analyses as determined by soil tests shall be applied to the surface soil layer so that it will support the postmining requirements of § 715.13 and the revegetation requirements of § 715.20.

§ 715.17 Protection of the hydrologic system.

The permittee shall plan and conduct coal mining and reclamation operations to minimize disturbance to the prevail-

ing hydrologic balance in order to prevent long-term adverse changes in the hydrologic balance that could result from surface coal mining and reclamation operations, both on- and off-site. Changes in water quality and quantity, in the depth to ground water, and in the location of surface water drainage channels shall be minimized such that the postmining land use of the disturbed land is not adversely affected and applicable Federal and State statutes and regulations are not violated. The permittee shall conduct operations so as to minimize water pollution and shall, where necessary, use treatment methods to control water pollution .The permittee shall emphasize surface coal mining and reclamation practices that will prevent or minimize water pollution and changes in flows in preference to the use of water treatment facilities. Practices to control and minimize pollution include, but are not limited to, stabilizing disturbed areas through grading, diverting runoff, achieving quick growing stands of temporary vegetation, lining drainage channels with rock or vegetation, mulching, sealing acid-forming and toxic-forming materials, and selectively placing waste materials in backfill areas. If pollution can be controlled only by treatment, the permittee shall operate and maintain the necessary water-treatment facilities for as long as treatment is required.

§ 715.17(a) Water quality standards and effluent limitations.

All surface drainage from the disturbed area, including disturbed areas that have been graded, seeded, or planted, shall be passed through a sedimentation pond or a series of sedimentation ponds before leaving the permit area. Sedimentation ponds shall be retained until drainage from the disturbed area has met the water quality requirements of this section and the revegetation requirements of § 715.20 have been met. The regulatory authority may grant exemptions from this requirement only when the disturbed drainage area within the total disturbed area is small and if the permittee shows that sedimentation ponds are not necessary to meet the effluent limitations of this paragraph and to maintain water quality in downstream receivin gwaters. For purpose of this section only, disturbed area shall not include those areas in which only diversion ditches, sedimentation ponds, or roads are installed in accordance with this section and the upstream area is not otherwise disturbed by the permittee. Sedimentation ponds required by this paragraph shall be constructed in accordance with paragraph (e) of this section in appropriate locations prior to any mining in the affected drainage area in order to control sedimentation or otherwise treat water in accordance with this paragraph. Discharges from areas disturbed by surface coal mining and reclamation operations must meet all applicable Federal and State laws and regulations and, at a minimum, the following numerical effluent limitations:

EFFLUENT LIMITATIONS, IN MILLIGRAMS PER LITER, mg/l, EXCEPT FOR pH

Effluent characteristics	Maximum allowable [1]	Average of daily values for 30 consecutiv discharge days [1]
Iron, total	7.0	3.5
Manganese, total	4.0	2.0
Total suspended solids [2].	70.0	35.0
pH [3]	Within the range 6.0 to 9.0.	----------

[1] Based on representative sampling.
[2] In Arizona, Colorado, Montana, New Mexico, North Dakota, South Dakota, Utah, and Wyoming, total suspended solids limitations will be determined on a case-by-case basis, but they must not be greater than 45 mg/l (maximum allowable) and 30 mg/l (average of daily value for 30 consecutive discharge days) based on a representative sampling.
[3] Where the application of neutralization and sedimentation treatment technology results in inability to comply with the manganese limitations set forth, the regulatory authority may allow the pH level in the discharge to exceed to a small extent the upper limit of 9.0 in order that the manganese limitations will be achieved.

(1) Any overflow or other discharge of surface water from the disturbed area within the permit area demonstrated by the permittee to result from a precipitation event larger than a 10-year, 24-hour frequency event will not be subject to the effluent limitations of paragraph (a).

(2) The permittee shall install, operate, and maintain adequate facilities to treat any water discharged from the disturbed area that violates applicable Federal or State laws or regulations or the limitations of paragraph (a). If the pH of waters to to be discharged from the disturbed area is normally less than 6.0, an automatic lime feeder or other neutralization process approved by the regulatory authority shall be installed, operated, and maintained. If the regulatory authority finds (1) that small and infrequent treatment requirements to meet applicable standards do not necessitate use of an automatic neutralization process, and (2) that the mine normally produces less than 500 tons of coal per day, then the regulatory authority may approve the use of a manual system if the permittee ensures consistent and timely treatment.

(b) *Surface-water monitoring.* (1) The permittee shall submit for approval by the regulatory authority a surface-water monitoring program which meets the following requirements:

(i) Provides adequate monitoring of all discharge from the disturbed area.

(ii) Provides adequate data to describe the likely daily and seasonal variation in discharges from the disturbed area in terms of water flow, pH, total iron, total manganese, and total suspended solids and, if requested by the regulatory authority, any other parameter characteristic of the discharge.

(iii) Provides monitoring at appropriate frequencies to measure normal and abnormal variations in concentrations.

(iv) Provides an analytical quality control system including standard methods of analysis such as those specified in 40 CFR 136.

(v) Provides a regular report of all measurements to the regulatory authority within 60 days of sample collection unless violations of permit conditions occur in which case the regulatory authority shall be notified immediately after receipt of analytical results by the permittee. If the discharge is subject to regulation by a Federal or State permit issued in compliance with the Federal Water Pollution Control Act Amendment of 1972 (33 U.S.C. §§ 1251–1378), a copy of the completed reporting form supplied to meet the permit requirements may be submitted to the regulatory authority to satisfy the reporting requirements if the data meet the sampling frequency and other requirements of this paragraph.

(2) After disturbed areas have been regraded and stabilized in accordance with this part, the permittee shall monitor surface water flow and quality. Data from this monitoring shall be used to demonstrate that the quality and quantity of runoff without treatment will be consistent with the requirement of this section to minimize disturbance to the prevailing hydrologic balance and with the requirements of this part to attain the approved postmining land use. These data shall provide a basis for approval by the regulatory authority for removal of water quality or flow control systems and for determining when the requirements of this section are met. The regulatory authority shall determine the nature of data, frequency of collection, and reporting requirements.

(3) Equipment, structures, and other measures necessary to accurately measure and sample the quality and quantity of surface water discharges from the disturbed area of the permit area shall be properly installed, maintained, and operated and shall be removed when no longer required.

(c) *Diversion and conveyance of overland flow away from disturbed areas.* In order to minimize erosion and to prevent or remove water from contacting toxic-producing deposits, overland flow from undisturbed areas may, if required or approved by the regulatory authority, be diverted away from disturbed areas by means of temporary or permanent diversion structures. The following requirements shall be met:

(1) Temporary diversion structures are those used during mining and reclamation. When no longer needed, these structures shall be removed and the area reclaimed. Temporary diversion structures shall be constructed to safely pass the peak runoff from a precipitation event with a 10-year recurrence interval, or a larger event as specified by the regulatory authority.

(2) Permanent diversion structures are those remaining after mining and reclamation and approved for retention by the regulatory authority and other appropriate State and Federal agencies. To protect fills and property and to avoid danger to public health and safety, permanent diversion structures shall be constructed to safely pass the peak runoff

from a precipitation event with a 100-year recurrence interval, or a larger event as specified by the regulatory authority. Permanent diversion structures shall be constructed with gently sloping banks that are stabilized by vegetation. Asphalt, concrete, or other similar linings shall not be used unless specifically required to prevent seepage or to provide stability and are approved by the regulatory authority.

(3) Diversions shall be designed, constructed, and maintained in a manner to prevent additional contributions of suspended solids to streamflow or to runoff outside the permit area to the extent possible, using the best technology currently available. In no event shall such contributions be in excess of requirements set by applicable State or Federal law. Appropriate sediment control measures for these diversions shall include, but not be limited to, maintenances of appropriate gradients, channel lining, revegetation, roughness structures, and detention basins.

(d) *Stream channel diversions.* (1) Flow from perennial and intermittent streams within the permit area may be diverted only when the diversions are approved by the regulatory authority and they are in compliance with local, State, and Federal statutes and regulations. When streamflow is allowed to be diverted, the new stream channel shall be designed and constructed to meet the following requirements:

(i) The average stream gradient shall be maintained and the channel designed, constructed, and maintained to remain stable and to prevent additional contributions of suspended solids to streamflow, or to runoff outside the permit area to the extent possible, using the best technology currently available. In no event shall such contributions be in excess of requirements set by applicable State or Federal law. Erosion control structures such as channel lining structures, retention basins, and artificial channel roughness structures shall be used only when approved by the regulatory agency for temporary diversions where necessary or for permanent diversions where they are stable and will require only infrequent maintenance.

(ii) Channel, bank, and flood-plain configurations shall be adequate to safely pass the peak runoff of a precipitation event with a 10-year recurrence interval for temporary diversions and a 100-year recurrence interval for permanent diversions, or larger events as specified by the regulatory authority.

(iii) Fish and wildlife habitat and water and vegetation of significant value for wildlife shall be protected in consultation with appropriate State and Federal fish and wildlife management agencies.

(2) All temporary diversion structures shall be removed and the affected land regraded and revegetated consistent with the requirements of § 715.14 and § 715.20. At the time such diversions are removed, the permittee shall ensure that downstream water treatment facilities previously protected by the diversion are modified or removed to prevent overtopping or failure of the facilities.

(3) *Buffer zone.* No land within 100 feet of an intermittent or perennial stream shall be disturbed by surface coal mining and reclamation operations unless the regulatory authority specifically authorizes surface coal mining and reclamation operations through such a stream. The area not to be disturbed shall be designated a buffer zone and marked as specified in § 715.12.

(e) *Sediment control measures.* Appropriate sediment control measures shall be designed, constructed, and maintained to prevent additional contributions of sediment to streamflow or to runoff outside the permit area to the extent possible, using the best technology currently available. Sediment control measures may include, but are not limited to, sedimentation ponds, diversion structures, sediment traps, straw dikes, riprap, check dams, vegetative filters, dugout, ponds, and chemical treatment. Sedimentation ponds may be used individually or in a series and shall (either individually or in series) meet the following criteria:

(1) Sedimentation ponds must provide at least a 24-hour detention time and a surface area of at least 1 square foot for each 50 gallons per day of inflow for runoff entering the pond(s) that results from a 10-year, 24-hour precipitation event. Runoff diverted, in accordance with paragraphs (c) and (d) of this section, away from disturbed drainage areas need not be considered in sedimentation pond design. Required sedimentation pond surface area and detention time may be accordingly reduced by the appropriate use of chemical treatment measures such as flocculation and coagulation if approved by the regulatory authority.

(2) An additional sediment storage volume must be provided equal to 0.2 acre-feet for each acre of disturbed area within the upstream drainage area. Upon approval of the regulatory authority, the sediment storage volume may be reduced in an amount, as demonstrated by the permittee, equal to the sediment removed by other appropriate sediment control measures.

(3) Ponds may be of the permanent pool or self-dewatering type. Dewatering-type ponds shall use siphon or other dewatering methods approved by the regulatory authority to prevent discharges of pollutants within the design flow.

(4) Spillway systems shall be properly located to maximize the distances from the point of inflow into the pond to maximize detention times. Spillway systems shall be provided to safely discharge the peak runoff from a precipitation event with a 25-year recurrence interval, or larger event as specified by the regulatory authority.

(5) Sediment shall be removed from sedimentation ponds when the volume of sediment accumulates to 80 percent of the sediment storage volume required. Sediment removal shall be done in a manner that minimizes adverse effects on surface waters due to its chemical and physical characteristics, on infiltration, on vegetation, and on surface and ground water quality. Sediment that has been removed from sedimentation ponds and that meets the requirements for topsoil may be redistributed over graded areas in accordance with § 715.16.

(6) If a sedimentation pond has an embankment that is more than 20 feet in height, as measured from the upstream toe of the embankment to the crest of the emergency spillway, or has a storage volume of 20 acre-feet or more, the following additional requirements shall be met:

(i) An appropriate combination of principal and emergency spillways shall be provided to safely discharge the runoff resulting from a 100-year, 6-hour precipitation event, or larger event as specified by the regulatory authority.

(ii) Ponds shall be designed and constructed with an acceptable static safety factor of at least 1.5 of maximum design flood elevation of the pool to ensure embankment slope stability.

(iii) The minimum top width of the embankment shall not be less than the quotient of $H+35/5$ where H is the height of the embankment as measured from the upstream toe of the top of the embankment.

(iv) Ponds shall have appropriate barriers to control seepage along conduits that extend through the embankment.

(7) All ponds shall be designed and inspected under the supervision of, and certified after construction by a registered professional engineer.

(8) All ponds, including those not meeting the size or other criteria of § 77.216(a) of this title, shall be examined for structural weakness, erosion, and other hazardous conditions in accordance with the inspection requirements contained in § 77.216–3 of this title.

(9) All ponds shall be removed and the affected land regraded and revegetated consistent with the requirements of § 715.14 and § 715.20, unless the regulatory authority approves retention of the ponds pursuant to paragraph (k) of this section.

(f) *Discharge structures.* Discharges from sedimentation ponds and diversions shall be controlled, where necessary, using energy dissipators, surge ponds, and other devices to reduce erosion and prevent deepening or enlargement of stream channels and to minimize disturbances to the hydrologic balance.

(g) *Acid and toxic materials.* Drainage from acid-forming and toxic-forming mine waste materials and soils into ground and surface water shall be avoided by—

(1) Identifying, burying, and treating where necessary, spoil or other materials that, in the judgment of the regulatory authority, will be toxic to vegetation or that will adversely affect water quality if not treated or buried. Such material shall be disposed of in accordance with the provision of § 715.14(j);

(2) Preventing or removing water from contact with toxic-producing deposits;

(3) Burying or otherwise treating all toxic or harmful materials within 30

days, if such materials are subject to wind and water erosion, or within a lesser period designated by the regulatory authority. If storage of such materials is approved, the materials shall be placed on impermeable material and protected from erosion and contact with surface water. Coal waste ponds and other coal waste materials shall be maintained according to § 715.17(g)(4), and § 715.18 shall apply;

(4) Burying or otherwise treating waste materials from coal preparation plants no later than 90 days after the cessation of the filling of the disposal area. Burial or treatment shall be in accordance with § 715.14(j);

(5) Casing, sealing or otherwise managing boreholes, shafts, wells, and auger holes or other more or less horizontal holes to prevent pollution of surface or ground water and to prevent mixing of ground waters of significantly different quality. All boreholes that are within the permit area but are outside the surface coal mining area or which extend beneath the coal to be mined and into water bearing strata shall be plugged permanently in a manner approved by the regulatory authority, unless the boreholes have been approved for use in monitoring.

(6) Taking such other actions as required by the regulatory authority.

(h) *Ground water.* (1) *Recharge capacity of reclaimed lands.* The disturbed area shall be reclaimed to restore approximate premining recharge capacity through restoration of the capability of the reclaimed areas as a whole to transmit water to the ground water system. The recharge capacity should be restored to support the approved postmining land use and to minimize disturbances to the prevailing hydrologic balance at the mined area and in associated offsite areas. The permittee shall be responsible for monitoring according to paragraph (h)(3) of this section to ensure operations conform to this requirement.

(2) *Ground water systems.* Backfilled materials shall be placed to minimize adverse effects on ground water flow and quality, to minimize offsite effects, and to support the approved postmining land use. The permittee shall be responsible for performing monitoring according to paragraph (h)(3) of this section to ensure operations conform to this requirement.

(3) *Monitoring.* Ground water levels, infiltration rates, subsurface flow and storage characteristics, and the quality of ground water shall be monitored in a manner approved by the regulatory authority to determine the effects of surface coal mining and reclamation operations on the recharge capacity of reclaimed lands and on the quantity and quality of water in ground water systems at the mine area and in associated offsite areas. When operations are conducted in such a manner that may affect the ground water system, ground water levels and ground water quality shall be periodically monitored using wells that can adequately reflect changes in ground water quantity and quality resulting from such operations. Sufficient water wells must be used by the permittee. The regulatory authority may require drilling and development of additional wells if needed to adequately monitor the ground water system. As specified and approved by the regulatory authority, additional hydrologic tests, such as infiltration tests and aquifer tests, must be undertaken by the permittee to demonstrate compliance with subparagraphs (1) and (2) of this paragraph.

(i) *Water rights and replacement.* The permittee shall replace the water supply of an owner of interest in real property who obtains all or part of his supply of water for domestic, agricultural, industrial, or other legitimate use from an underground or surface source where such supply has been affected by contamination, diminution, or interruption proximately resulting from surface coal mine operation by the permittee.

(j) *Alluvial valley floors west of the 100th meridian west longitude.* (1) Surface coal mining operations conducted in or adjacent to alluvial valley floors shall be planned and conducted so as to preserve the essential hydrologic functions of these alluvial valley floors throughout the mining and reclamation process. These functions shall be preserved by maintaining or reestablishing those hydrologic and biologic characteristics of the alluvial valley floor that are necessary to support the functions. The permittee shall provide information to the regulatory authority as required in paragraph (j)(3) of this section to allow identification of essential hydrologic functions and demonstrate that the functions will be preserved. The characteristics of an alluvial valley floor to be considered include, but are not limited to—

(i) The longitudinal profile (gradient), cross-sectional shape, and other channel characteristics of streams that have formed within the alluvial valley floor and that provide for maintenance of the prevailing conditions of surface flow;

(ii) Aquifers (including capillary zones and perched water zones) and confining beds within the mined area which provide for storage, transmission, and regulation of natural ground water and surface water that supply the alluvial valley floors;

(iii) Quantity and quality of surface and ground water that supply alluvial valley floors;

(iv) Depth to and seasonal fluctuations of ground water beneath alluvial valley floors;

(v) Configuration and stability of the land surface in the flood plain and adjacent low terraces in alluvial valley floors as they allow or facilitate irrigation with flood waters or subirrigation and maintain erosional equilibrium; and

(vi) Moisture-holding capacity of soils (or plant growth medium) within the alluvial valley floors, and physical and chemical characteristics of the subsoil which provide for sustained vegetation growth or cover through dry months.

(2) Surface coal mining operations located west of the 100th meridian west longitude shall not interrupt, discontinue, or preclude farming on alluvial valley floors and shall not materially damage the quantity or quality of surface or ground water that supplies these valley floors unless the premining land use has been undeveloped rangeland which is not significant to farming on the alluvial valley floors or unless the area of affected alluvial valley floor is small and provides negligible support for the production from one or more farms. This subparagraph (2) does not apply to those surface coal mining operations that—

(i) Were in production in the year preceding August 3, 1977, were located in or adjacent to an alluvial valley floor, and produced coal in commercial quantities during the year preceding August 3, 1977; or

(ii) Had specific permit approval by the State regulatory authority before August 3, 1977, to conduct surface coal mining operations for an area within an alluvial valley floor.

(3)(i) Before surface mining and reclamation operations authorized under paragraph (j)(2) of this section may be issued a new, revised or amended permit, the permittee shall submit, for regulatory authority approval, detailed surveys and baseline data to establish standards against which the requirements of paragraph (j)(1) of this section may be measured and from which the degree of material damage to the quantity and quality of surface and ground water that supply the alluvial valley floors may be assessed. The surveys and data shall include—

(A) A map, at a scale determined by the regulatory authority, showing the location and configuration of the alluvial valley floor;

(B) Baseline data covering a full water year for each of the hydrologic functions identified in paragraph (j)(1) of this section;

(C) Plans showing how the operation will avoid, during mining and reclamation, interruption, discontinuance, or preclusion of farming on the alluvial valley floors and will not materially damage the quantity or quality of water in surface and ground water systems that supply such valley floors;

(D) Historic land use data for the proposed permit area and for farms to be affected; and

(E) Such other data as the regulatory authority may require.

(ii) Surface mining operations which qualify for the exceptions in paragraph (j)(2) of this section are not required to submit the plans prescribed in (i)(C) of this subparagraph.

(4) The holder of a Federal coal lease or the fee holder of any coal deposit located within or adjacent to an alluvial valley floor west of the 100th meridian west from which coal was not produced in commercial quantities between August 3, 1976, and August 3, 1977, and for which no specific permit by the appropriate State or Federal regulatory authority to conduct surface coal mining operations in the alluvial valley floors

has been obtained, may be entitled to an exchange of the Federal coal lease for a lease of other Federal coal deposits under section 510(b)(5) of the Act, or to the conveyance by the Secretary of fee title to other available Federal coal deposits in exchange for the fee title to such deposits under section 206 of the Federal Land Policy and Management Act of 1976 (90 Stat. 2743), if the Secretary determines that substantial financial and legal commitments were made by the operator prior to January 1, 1977, in connection with surface coal mining operations on such lands.

(5) The Secretary may, if he determines that the person is qualified for an exchange of Federal coal leases under the provisions of section 510(b)(5) of the Act or a conveyance of other Federal coal deposits under section 206 of the Federal Land Policy and Management Act, take appropriate steps to complete the exchange of lands. The Secretary may require the person to submit additional information and a formal application for exchange.

(k) *Permanent impoundments.* The permittee may construct, if authorized by the regulatory agency pursuant to this paragraph and § 715.13, permanent water impoundments on mining sites as a part of reclamation activities only when they are adequately demonstrated to be in compliance with § 715.13 and § 715.14 in addition to the following requirements:

(1) The size of the impoundment is adequate for its intended purposes.

(2) The impoundment dam construction is designed to achieve necessary stability with an adequate margin of safety compatible with that of structures constructed under Pub. L. 83-566 (16 U.S.C. 1006).

(3) The quality of the impounded water will be suitable on a permanent basis for its intended use and discharges from the impoundment will not degrade the quality of receiving waters below the water quality standards established pursuant to applicable Federal and State law.

(4) The level of water will be reasonably stable.

(5) Final grading will comply with the provisions of § 715.14 and will provide adequate safety and access for proposed water users.

(6) Water impoundments will not result in the diminution of the quality or quantity of water used by adjacent or surrounding landowners for agricultural, industrial, recreational, or domestic uses.

(l) *Hydrologic impact of roads.* (1) *General.* Access and haul roads and associated bridges, culverts, ditches, and road rights-of-way shall be constructed, maintained, and reclaimed to prevent additional contributions of suspended solids to streamflow, or to runoff outside the permit area to the extent possible, using the best technology currently available. In no event shall the contributions be in excess of requirements set by applicable State or Federal law. All access and haul roads shall be removed and the land affected regraded and revegetated consistent with the requirements of § 715.14 and § 715.20, unless retention of a road is approved as part of a postmining land use under § 715.13 as being necessary to support the postmining land use or necessary to adequately control erosion and the necessary maintenance is assured.

(2) *Construction.* (i) All roads, insofar as possible, shall be located on ridges or on the available flatter and more stable slopes to minimize erosion. Stream fords are prohibited unless they are specifically approved by the regulatory authority as temporary routes across dry streams that will not adversely affect sedimentation and that will not be used for coal haulage. Other stream crossing shall be made using bridges, culverts or other structures designed and constructed to meet the requirements of this paragraph. Roads shall not be located in active stream channels nor shall they be constructed or maintained in a manner that increases erosion or causes significant sedimentation or flooding. However, nothing in this paragraph will be construed to prohibit relocation of stream channels in accordance with paragraph (d) of this section.

(ii) In order to minimize erosion and subsequent disturbances of the hydrologic balance, roads shall be constructed in compliance with the following grade restrictions or other grades determined by the regulatory authority to be necessary to control erosion:

(A) The overall sustained grade shall not exceed $1v:10h$ (10 percent).

(B) The maximum grade greater than 10 percent shall not exceed $1v:6.5h$ (15 percent) for more than 300 feet.

(C) There shall not be more than 300 feet of grade exceeding 10 percent within each 1,000 feet.

(iii) All access and haul roads shall be adequately drained using structures such as, but not limited to, ditches, water barriers, cross drains, and ditch relief drains. For access and haul roads that are to be maintained for more than 1 year, water-control structures shall be designed with a discharge capacity capable of passing the peak runoff from a 10-year, 24-hour precipitation event. Drainage pipes and culverts shall be constructed to avoid plugging or collapse and erosion at inlets and outlets. Drainage ditches shall be provided at the toe of all cut slopes formed by construction of roads. Trash racks and debris basins shall be installed in the drainage ditches wherever debris from the drainage area could impair the functions of drainage and sediment control structures. Ditch relief and cross drains shall be spaced according to grade. Effluent limitations of paragraph (a) of this section shall not apply to drainage from access and haul roads located outside the disturbed area as defined in this section unless otherwise specified by the regulatory authority.

(iv) Access and haul roads shall be surfaced with durable material. Toxic- or acid-forming substances shall not be used. Vegetation may be cleared only for the essential width necessary for road and associated ditch construction and to serve traffic needs.

(3) *Maintenance.* (i) Access and haul roads shall be routinely maintained by means such as, but not limited to, wetting, scraping or surfacing.

(ii) Ditches, culverts, drains, trash racks, debris basins and other structures serving to drain access and haul roads shall not be restricted or blocked in any manner that impedes drainage or adversely affects the intended purpose of the structure.

(m) *Hydrologic impacts of other transport facilities.* Railroad loops, spurs, sidings and other transport facilities shall be constructed, maintained and reclaimed to control diminution or degradation of water quality and quantity and to prevent additional contributions of suspended solids to streamflow, or to runoff outside the permit area to the extent possible, using the best technology currently available. In no event shall contributions be in excess of requirements set by applicable State or Federal law.

(n) *Discharge of waters into underground mines.* Surface and ground waters shall not be discharged or diverted into underground mine workings.

§ 715.18 Dams constructed of or impounding waste material.

(a) *General.* No waste material shall be used in or impounded by existing or new dams without the approval of the regulatory authority. The permittee shall design, locate, construct, operate, maintain, modify, and abandon or remove all dams (used either temporarily or permanently) constructed of waste materials, in accordance with the requirements of this section.

(b) *Construction of dams.* (1) Waste shall not be used in the construction of dams unless demonstrated through appropriate engineering analysis, to have no adverse effect on stability.

(2) Plans for dams subject to this section, and also including those dams that do not meet the size or other criteria of § 77.216(a) of this title, shall be approved by the regulatory authority before construction and shall contain the minimum plan requirements established by the Mining Enforcement and Safety Administration pursuant to § 77.216-2 of this title.

(3) Construction requirements are as follows:

(i) Design shall be based on the flood from the probable maximum precipitation event unless the permittee shows that the failure of the impounding structure would not cause loss of life or severely damage property or the environment, in which case, depending on site conditions, a design based on a precipitation event of no less than 100-year frequency may be approved by the regulatory authority.

(ii) The design freeboard distance between the lowest point on the embankment crest and the maximum water elevation shall be at least 3 feet to avoid overtopping by wind and wave action.

(iii) Dams shall have minimum safety factors as follows:

Case	Loading condition	Minimum safety factor
I	End of construction	1.3
II	Partial pool with steady seepage saturation.	1.5
III	Steady seepage from spillway or decant crest.	1.5
IV	Earthquake (cases II and III with seismic loading).	1.0

(iv) The dam, foundation, and abutments shall be stable under all conditions of construction and operation of the impoundment. Sufficient foundation investigations and laboratory testing shall be performed to determine the factors of safety of the dam for all loading conditions in paragraph (b)(3)(iii) of this section and for all increments of construction.

(v) Seepage through the dam, foundation, and abutments shall be controlled to prevent excessive uplift pressures, internal erosion, sloughing, removal of material by solution, or erosion of material by loss into cracks, joints, and cavities. This may require the use of impervious blankets, pervious drainage zones or blankets, toe drains, relief wells, or dental concreting of jointed rock surface in contact with embankment materials.

(vi) Allowances shall be made for settlement of the dams and the foundation so that the freeboard will be maintained.

(vii) Impoundments created by dams of waste materials shall be subject to a minimum drawdown criteria that allows the facility to be evacuated by spillways or decants of 90 percent of the volume of water stored during the design precipitation event within 10 days.

(viii) During construction of dams subject to this section, the structures shall be periodically inspected by a registered professional engineer to ensure construction according to the approved design. On completion of construction, the structure shall be certified by a registered professional engineer experienced in the field of dam construction as having been constructed in accordance with accepted professional practice and the approved design.

(ix) A permanent identification marker, at least 6 feet high that shows the dam number assigned pursuant to § 77.216–1 of this title and the name of the person operating or controlling the dam, shall be located on or immediately adjacent to each dam within 30 days of certification of design pursuant to this section.

(4) All dams, including those not meeting the size or other criteria of § 77.216(a) of this title, shall be routinely inspected by a registered professional engineer, or someone under the supervision of a registered professional engineer, in accordance with Mining Enforcement and Safety Administration regulations pursuant to § 77.216–3 of this title.

(5) All dams shall be routinely maintained. Vegetative growth shall be cut where necessary to facilitate inspection and repairs. Ditches and spillways shall be cleaned. Any combustible materials present on the surface, other than that used for surface stability such as mulch or dry vegetation, shall be removed and any other appropriate maintenance procedures followed.

(6) All dams subject to this section shall be certified annually as having been constructed and modified in accordance with current prudent engineering practices to minimize the possibility of failures. Any changes in the geometry of the impounding structure shall be highlighted and included in the annual certification report. These certifications shall include a report on existing and required monitoring procedures and instrumentation, the average and maximum depths and elevations of any impounded waters over the past year, existing storage capacity of impounding structures, any fires occurring in the material over the past year and any other aspects of the structures affecting their stability.

(7) Any enlargements, reductions in size, reconstruction or other modification of the dams shall be approved by the regulatory authority before construction begins.

(8) All dams shall be removed and the disturbed areas regraded, revegetated, and stabilized before the release of bond unless the regulatory authority approves retention of such dams as being compatible with an approved postmining land use (§ 715.13).

§ 715.19 Use of explosives.

(a) *General.* (1) The permittee shall comply with all applicable local, State, and Federal laws and regulations and the requirements of this section in the storage, handling, preparation, and use of explosives.

(2) Blasting operations that use more than the equivalent of 5 pounds of TNT shall be conducted according to a time schedule approved by the regulatory authority.

(3) All blasting operations shall be conducted by experienced, trained, and competent persons who understand the hazards involved. Persons working with explosive materials shall—

(i) Have demonstrated a knowledge of, and a willingness to comply with, safety and security requirements;

(ii) Be capable of using mature judgment in all situations;

(iii) Be in good physical condition and not addicted to intoxicants, narcotics, or other similar types of drugs;

(iv) Possess current knowledge of the local, State and Federal laws and regulations applicable to his work; and

(v) Have obtained a certificate of completion of training and qualification as required by State law or the regulatory authority.

(b) *Preblasting survey.* (1) On the request to the regulatory authority of a resident or owner of a manmade dwelling or structure that is located within one-half mile of any part of the permit area, the permittee shall conduct a preblasting survey of the dwelling or structure and submit a report of the survey to the regulatory authority.

(2) Personnel approved by the regulatory authority shall conduct the survey to determine the condition of the dwelling or structure and to document any preblasting damage and other physical factors that could reasonably be affected by the blasting. Assessments of structures such as pipes, cables, transmission lines, and wells and other water systems shall be limited to surface condition and other readily available data. Special attention shall be given to the preblasting condition of wells and other water systems used for human, animal, or agricultural purposes and to the quantity and quality of the water.

(3) A written report of the survey shall be prepared and signed by the person or persons who conducted the survey and prepared the written report. The report shall include recommendations of any special conditions or proposed adjustments to the blasting procedures outlined in paragraph (e) of this section which should be incorporated into the blasting plan to prevent damage. Copies of the report shall be provided to the person requesting the survey and to the regulatory authority.

(c) *Public notice of blasting schedule.* At least 10 days, but not more than 20 days before beginning a blasting program in which explosives that use more than the equivalent of 5 pounds of TNT are detonated, the permittee shall publish a blasting schedule in a newspaper of general circulation in the locality of the proposed site. Copies of the schedule shall be distributed by mail to local governments and public utilities and to each residence within one-half mile of the blasting sites described in the schedule. The permittee shall republish and redistribute the schedule by mail at least every 3 months. Blasting schedules shall not be so general as to cover all working hours but shall identify as accurately as possible the location of the blasting sites and the time periods when blasting will occur. The blasting schedule shall contain at a minimum—

(1) Identification of the specific areas in which blasting will take place. The specific blasting areas described shall not be larger than 300 acres with a generally contiguous border;

(2) Dates and times when explosives are to be detonated expressed in not more than 4-hour increments;

(3) Methods to be used to control access to the blasting area;

(4) Types of audible warnings and all-clear signals to be used before and after blasting; and

(5) A description of possible emergency situations (defined in paragraph (e)(1)(ii) of this section), which have been approved by the regulatory authority, when it may be necessary to blast at times other than those described in the schedule.

(d) *Public notice of changes to blasting schedules.* Before blasting in areas not covered by a previous schedule or whenever the proposed frequency of individual detonations are materially changed, the permittee shall prepare a revised blasting schedule in accordance with the procedures in paragraph (c) of this section. If the change involves only a temporary adjustment of the frequency of blasts, the permittee may use

alternate methods to notify the governmental bodies and individuals to whom the original schedule was sent.

(e) *Blasting procedures.* (1) *General.* (i) All blasting shall be conducted only during the daytime hours, defined as sunrise until sunset. Based on public requests or other considerations, including the proximity to residential areas, the regulatory authority may specify more restrictive time periods.

(ii) Blasting may not be conducted at times different from those announced in the blasting schedule except in emergency situations where rain, lighting, other atmospheric conditions, or operator or public safety requires unscheduled detonation.

(iii) Warning and all-clear signals of different character that are audible within a range of one-half mile from the point of the blast shall be given. All persons within the permit area shall be notified of the meaning of the signals through appropriate instructions and signs posted as required by § 715.12.

(iv) Access to the blasting area shall be regulated to protect the public and livestock from the effects of blasting. Access to the blasting area shall be controlled to prevent unauthorized entry at least 10 minutes before each blast and until the permittee's authorized representative has determined that no unusual circumstances such as imminent slides or undetonated charges exist and access to and travel in or through the area can safely resume.

(v) Areas in which charged holes are awaiting firing shall be guarded, barricaded and posted, or flagged against unauthorized entry.

(vi) Airblast shall be controlled such that it does not exceed 128 decibel linear-peak at any manmade dwelling or structure located within one-half mile of the permit area.

(vii) Except where lesser distances are approved by the regulatory authority (based upon a preblasting survey or other appropriate investigations) blasting shall not be conducted within—

(A) 1,000 feet of any building used as a dwelling, school, church, hospital, or nursing facility;

(B) 500 feet of facilities including, but not limited to, disposal wells, petroleum or gas-storage facilities, municipal water-storage facilities, fluid-transmission pipelines, gas or oil-collection lines, or water and sewage lines; and

(C) 500 feet of an underground mine not totally abandoned except with the concurrence of the Mining Enforcement and Safety Administration.

(2) *Blasting standards.* (i) Blasting shall be conducted to prevent injury to persons, damage to public or private property outside the permit area, adverse impacts on any underground mine, and change in the course, channel, or availability of ground or surface waters outside the permit area.

(ii) In all blasting operations, except as otherwise stated, the maximum peak particle velocity of the ground motion in any direction shall not exceed 1 inch per second at the immediate location of any dwelling, public building, school, church, or commercial or institutional building. The regulatory authority may reduce the maximum peak particle velocity allowed if it determines that a lower standard is required because of density of population or land use, age or type of structure, geology or hydrology of the area, frequency of blasts or other factors.

(iii) The maximum peak particle velocity of ground motion does not apply to property inside the permit area that is owned or leased by the permittee.

(iv) An equation for determining the maximum weight of explosives that can be detonated within any 8 millisecond period is given in paragraph (v). If the blasting is conducted in accordance with this equation, the regulatory authority will consider the vibrations to be within the 1 inch per second limit.

(v) The maximum weight of explosives to be detonated within any 8 millisecond period shall be determined by the formula

$$W = \left(\frac{D}{60}\right)^2$$

where W=the maximum weight of explosives, in pounds, that can be detonated in any 8 millisecond period, and D=the distance, in feet, to the nearest dwelling, school, church, or commercial or institutional building.

For distances between 350 and 5,000 feet, solution of the equation results in the following maximum weight:

Distance, in feet (D):	*Maximum weight, in pounds (W)*
350	34
400	44
500	69
600	100
700	136
800	178
900	225
1,000	278
1,100	336
1,200	400
1,300	469
1,400	544
1,500	625
1,600	711
1,700	803
1,800	900
1,900	1,002
2,000	1,111
2,500	1,736
3,000	2,500
3,500	3,402
4,000	4,444
4,500	5,625
5,000	6,944

(vi) If on a particular site the peak particle velocity continuously exceeds one-half inch per second after a period of 1 second following the maximum ground particle velocity, the regulatory authority shall require the blasting procedures to be revised to limit the ground motion.

(3) *Seismograph measurements.* (i) where a seismograph is used to monitor the velocity of ground motion and the peak particle velocity limit of 1 inch per second is not exceeded, the equation in paragraph (v) need not be used. However, if the equation is not being used, a seismograph record shall be obtained for every shot.

(ii) The use of a modified equation to determine maximum weight of explosives for blasting operations at a particular site may be approved by the regulatory authority on receipt of a petition accompanied by reports including seismograph records of test blasting on the site. However, in no case shall the regulatory authority approve the use of a modified equation where the peak particle velocity limit of 1 inch per second required in paragraph (e)(2)(ii) of this section would be exceeded.

(iii) The regulatory authority may require a seismograph recording of any or all blasts.

(4) *Records of blasting operations.* A record of each blast, including seismograph reports, shall be retained for at least 3 years and shall be available for inspection by the regulatory authority and the public on request. The record shall contain the following data—

(i) Name of permittee, operator, or other person conducting the blast;

(ii) Location, date, and time of blast;

(iii) Name, signature, and license number of blaster-in-charge;

(iv) Direction and distance, in feet, to nearest dwelling, school, church, or commercial or institutional building neither owned or leased by the permittee;

(v) Weather conditions;

(vi) Type of material blasted;

(vii) Number of holes, burden, and spacing;

(viii) Diameter and depth of holes;

(ix) Types of explosives used;

(x) Total weight of explosives used;

(xi) Maximum weight of explosives detonated within any 8 millisecond period;

(xii) Maximum number of holes detonated within any 8 millisecond period;

(xiii) Methods of firing and type of circuit;

(xiv) Type and length of stemming;

(xv) If mats or other protections were used;

(xvi) Type of delay detonator used, and delay periods used;

(xvii) Seismograph records, where required, including—

(A) Seismograph reading, including exact location of seismograph and its distance from the blast;

(B) Name of person taking the seismograph reading; and

(C) Name of person and firm analyzing the seismograph record.

§ 715.20 Revegetation.

(a) *General.* (1) The permittee shall establish on all land that has been disturbed, a diverse, effective, and permanent vegetative cover of species native to the area of disturbed land or species that will support the planned postmining uses of the land approved according to § 715.13. For areas designated as prime farmland, the reclamation procedures of § 716.7 shall apply.

(2) Revegetation shall be carried out in a manner that encourages a prompt vegetative cover and recovery of produc-

tivity levels compatible with approved land uses. The vegetative cover shall be capable of stabilizing the soil surface with respect to erosion. All disturbed lands, except water areas and surface areas of roads that are approved as a part of the postmining land use, shall be seeded or planted to achieve a vegetative cover of the same seasonal variety native to the area of disturbed land. If both the pre- and postmining land use is intensive agriculture, planting of the crops normally grown will meet the requirement. Vegetative cover will be considered of the same seasonal variety when it consists of a mixture of species of equal or superior utility for the intended land use when compared with the utility of naturally occurring vegetation during each season of the year.

(3) On Federal lands, the surface management agency shall be consulted for approval prior to revegetation regarding what species are selected, and following revegetation, to determine when the area is ready to be used.

(b) *Use of introduced species.* Introduced species may be subsituted for native species only if appropriate field trials have demonstrated that the introduced species are of equal or superior utility for the approved postmining land use, or are necessary to achieve a quick, temporary, and stabilizing cover. Such species substitution shall be approved by the regulatory authority. Introduced species shall meet applicable State and Federal seed or introduced species statutes, and shall not include poisonous or potentially toxic species.

(c) *Timing of revegetation.* Seeding and planting of disturbed areas shall be conducted during the first normal period for favorable planting conditions after final preparation. The normal period for favorable planting shall be that planting time generally accepted locally for the type of plant materials selected to meet specific site conditions and climate. Any disturbed areas, except water areas and surface areas of roads that are approved under § 715.13 as part of the postmining land use, which have been graded shall be seeded with a temporary cover of small grains, grasses, or legumes to control erosion until an adequate permanent cover is established. When rills or gullies, that would preclude the successful establishment of vegetation or the achievement of the postmining land use, form in regraded topsoil and overburden materials as specified in § 715.14, additional regrading or other stabilization practices will be required before seeding and planting.

(d) *Mulching.* Mulch shall be used on all regraded and topsoiled areas to control erosion, to promote germination of seeds, and to increase the moisture retention of the soil. Mulch shall be anchored to the soil surface where appropriate, to ensure effective protection of the soil and vegetation. Mulch means vegetation residues or other suitable materials that aid in soil stablization and soil moisture conservation, thus providing micro-climatic conditions suitable for germination and growth, and do not interfere with the postmining use of the land. Annual grains such as oats, rye and wheat may be used instead of mulch when it is shown to the satisfaction of the regulatory authority that the substituted grains will provide adequate stability and that they will later be replaced by species approved for the postmining use.

(e) *Methods of revegetation.* (1) The permittee shall use technical publications or the results of laboratory and field tests approved by the regulatory authority to determine the varieties, species, seeding rates, and soil amendment practices essential for establishment and self-regeneration of vegetation. The regulatory authority shall approve species selection and planting plans.

(2) Where hayland, pasture, or range is to be the postmining land use, the species of grasses, legumes, browse, trees, or forbes for seeding or planting and their pattern of distribution shall be selected by the permittee to provide a diverse, effective, and permanent vegetative cover with the seasonal variety, succession, distribution, and regenerative capabilities native to the area. Livestock grazing will not be allowed on reclaimed land until the seedlings are established and can sustain managed grazing. The regulatory authority, in consultation with the permittee and the landowner or in concurrence with the governmental land-managing agency having jurisdiction over the surface, shall determine when the revegetated area is ready for livestock grazing.

(3) Where forest is to be the postmining land use, the permittee shall plant trees adapted for local site conditions and climate. Trees shall be planted in combination with an herbaceous cover of grains, grasses, legumes, forbs, or woody plants to provide a diverse, effective, and permanent vegetation cover with the seasonal variety, succession, and regeneration capabilities native to the area.

(4) Where wildlife habitat is to be included in the postmining land use, the permittee shall consult with appropriate State and Federal wildlife and land management agencies and shall select those species that will fulfill the needs of wildlife, including food, water, cover, and space. Plant groupings and water resources shall be spaced and distributed to fulfill the requirements of wildlife.

(f) *Standards for measuring success of revegetation.* (1) Success of revegetation shall be measured on the basis of reference areas approved by the regulatory authority. Reference areas mean land units of varying size and shape identified and maintained under appropriate management for the purpose of measuring ground cover, productivity and species diversity that are produced naturally. The reference areas must be representative of geology, soils, slope, aspect, and vegetation in the permit area. Management of the reference area shall be comparable to that which will be required for the approved postmining land use of the area to be mined. The regulatory authority shall approve the estimating techniques that will be used to determine the degree of success in the revegetated area.

(2) The ground cover of living plants on the revegetated area shall be equal to the ground cover of living plants of the approved reference area for a minimum of two growing seasons. The ground cover shall not be considered equal if it is less than 90 percent of the ground cover of the reference area for any significant portion of the mined area. Exceptions may be authorized by the regulatory authority for—

(i) Previously mined areas that were not reclaimed to the standards required by this chapter prior to the effective date of these regulations. The ground cover of living plants for such areas shall not be less than required to control erosion, and in no case less than that existing before redisturbance;

(ii) Areas to be developed immediately for industrial or residential use. The ground cover of living plants shall not be less than required to control erosion. As used in this paragraph, *immediately* means less than 2 years after regrading has been completed for the area to be used; and

(iii) Areas to be used for agricultural cropland purposes. Success in revegetation of cropland shall be determined on the basis of crop production from the mined area compared to the reference area. Crop production from the mined area shall be equal to that of the approved reference area for a minimum of two growing seasons. Production shall not be considered equal if it is less than 90 percent of the production of the reference area for any significant portion of the mined area.

(3) Species diversity, distribution, seasonal variety, and vigor shall be evaluated on the basis of the results which could reasonably be expected using the methods of revegetation approved under paragraph (e) of this section.

(g) *Seeding of stockpiled topsoil.* Topsoil stockpiled in compliance with § 715.16 must be seeded or planted with an effective cover of nonnoxious, quick growing annual and perennial plants during the first normal period for favorable planting conditions or protected by other approved measures as specified in § 715.16.

PART 716—SPECIAL PERFORMANCE STANDARDS

Sec.

716.1 General obligations.
716.2 Steep-slope mining.
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716.4 Special bituminous coal mines.
716.5 Anthracite coal mines.
716.6 Coal mines in Alaska.
716.7 Prime farmland.

AUTHORITY: Secs. 201, 501, 527 and 529, Pub. L. 95-87 Stat. 445 (30 U.S.C. 1201).

§ 716.1 General obligations.

(a) This part establishes special initial performance standards that apply in the following special circumstances—

(1) § 716.2 applies to surface coal mining operations on steep slopes.

(2) § 716.3 applies to surface coal mining operations involving mountaintop removal.

(3) § 716.4 applies to special bituminous coal mines.

(4) § 716.5 applies to anthracite surface coal mining operations.

(5) § 716.6 applies to surface coal mining operations in Alaska.

(6) § 716.7 applies to surface coal mining operations on prime farmlands.

(b) All surface coal mining and reclamation operations subject to this part shall comply with the applicable special performance standards in this part. Such operations shall also comply with all general performance standards in Part 715 of this chapter unless specifically exempted *in this part* from the requirements of Part 715.

§ 716.2 Steep-slope mining.

(a) The permittee conducting surface coal mining and reclamation operations on natural slopes that exceed 20 degrees, or on lesser slopes that require measures to protect the area from disturbance, as determined by the regulatory authority after consideration of soils, climate, the method of operation, geology, and other regional characteristics, shall meet the following performance standards. The standards of this section do not apply where mining is done on a flat or gently rolling terrain with an occasional steep slope through which the mining proceeds and leaves a plain or predominantly flat area; or where the mining is governed by § 716.3.

(1) Spoil, waste materials or debris, including that from clearing and grubbing, and abandoned or disabled equipment, shall not be placed or allowed to remain on the downslope.

(2) The highwall shall be completely covered with spoil and the disturbed area graded to comply with the provisions of § 715.14 of this chapter. Land above the highwall shall not be disturbed unless the regulatory authority finds that the disturbance will facilitate compliance with the requirements of this section.

(3) Material in excess of that required to meet the provisions of § 715.14 of this chapter shall be disposed of in accordance with the requirements of § 715.15 of this chapter.

(4) Woody materials may be buried in the backfilled area only when burial does not cause, or add to, instability of the backfill. Woody materials may be chipped and distributed through the backfill when approved by the regulatory authority.

§ 716.3 Mountaintop removal.

(a) Surface coal mining and reclamation operations that remove entire coal seams running through the upper fraction of a mountain, ridge, or hill by removing all of the overburden and creating a level plateau or gently rolling contour with no highwalls remaining are exempt from the requirements of § 715.14 of this chapter for achieving approximate original contour, if the following requirements are met:

(1) An industrial, commercial, agricultural, residential, or public facility (including recreational facilities) use is proposed for the affected land.

(2) The alternative land use criteria in § 715.13(d) of this chapter are met and the proposal is approved by the regulatory authority.

(3) All other applicable requirements of Part 715 of this chapter can be met.

(b) Surface coal mining and reclamation operations conducted under this section shall comply with the following standards:

(1) An outcrop barrier of sufficient width, consisting of the toe of the lowest coal seam, and its associated overburden shall be retained to prevent slides and erosion.

(2) The final graded top plateau slopes on the mined area shall be less than $1v:5h$ so as to create a level plateau or gently rolling configuration and the outslopes of the plateau shall not exceed $1v:2h$, except where engineering data substantiates and the regulatory authority finds that a minimum static safety factor of 1.5 will be attained.

(3) The resulting level or gently rolling contour shall be graded to drain inward from the outslope except at specific points where it drains over the outslope in protected stable channels.

(4) Damage to natural watercourses below the area to be mined shall be prevented.

(5) Spoil shall be placed on the mountaintop bench as is necessary to achieve the postmining land use approved under § 715.13 of this chapter. All excess spoil material not retained on the mountaintop shall be placed in accordance with the standards of § 715.15 of this chapter.

(c) (1) All permits giving approval for mountaintop removal shall be reviewed not more than 3 years from the date of issuance of the permit, unless the permittee affirmatively demonstrates and the regulatory authority finds that all operations are proceeding in accordance with the terms of the permit and applicable requirements of the Act and the regulations of this part. The terms of the permit shall be in accordance with the requirements of the Act and the regulations of this part.

(2) The terms of a permit for mountaintop removal may be modified by the regulatory authority if it determines that more stringent measures are necessary to prevent or control slides and erosion, prevent damage to natural water courses, avoid water pollution, or to assure successful revegetation.

§ 716.4 Special bituminous coal mines.

(a) *Definition.* Special bituminous coal surface mines as used in this section means those bituminous coal surface mines that are located in the State of Wyoming and that are being mined or will be mined according to the following criteria:

(1) Excavation of the mine pit takes place on a relatively limited site for an extended period of time. For the purposes of this section, mine pit means an open-pit mine in which the surface opening is at least the full size of the excavation and has a contiguous border. The pit generally is quite deep and is formed by the removal of relatively large amounts of overburden to obtain lesser amounts of coal. The term as used in this section applies only to mining operations that extract coal from seams dipping 15 degrees or more from the horizontal.

(2) Excavation of the mine pit follows a coal seam that inclines 15 degrees or more from the horizontal, and as the excavation proceeds downward it expands laterally to maintain stability of the pitwall or as necessary to accommodate the orderly expansion of the total mining operations.

(3) (i) Surface coal mining operations in the mine pit have taken place since January 1, 1972, and

(A) Operations in the mine pit are removing more than one coal seam, and

(B) Mining has begun on the deepest coal seam scheduled to be mined; or

(ii) Surface coal mining operations which may be developed after August 3, 1977, and are conducted on lands immediately adjacent to operations meeting the criteria of paragraph (a) (3) (i).

(4) The amount of material removed from the pit is large in proportion to the surface area disturbed.

(5) There is no practicable alternative to the deep open-pit method of mining the coal.

(6) There is no practicable way to entirely reclaim the land as required by Part 715 of this chapter.

(b) *Requirements for special bituminous coal mines operating prior to July 1, 1973.* Those portions of a special bituminous coal mine approved for operation prior to July 1, 1973, including the orderly expansion of such a mine pit to the extent authorized by State law, shall at a minimum meet the general performance standards of Part 715 of this chapter for all operations conducted on the permit area outside the mine pit and for those operations associated with spoil storage areas. The standards of Part 715 also apply to the mine pit with the exception of § 715.14, which relates to backfilling and grading. Special requirements for backfilling and grading the mine pit area are as follows:

(1) In the final mine area, highwalls will be allowed to remain and benches will be allowed. Details of the benches shall be included in the mine plans submitted to the regulatory authority for approval.

(2) The exposed pit floors will be sloped and graded to provide access to the area, and topsoil shall be applied and the floor area seeded according to the requirements of §§ 715.16 and 715.20. Where water impoundments are included as part of the mine plan, riprap may be used if necessary to prevent erosion.

(3) Spoil piles will be graded and contoured with no more than overall slope of

17 degrees allowed, and terraces may be used to break the slope when it can be shown that terraces will accomplish the required reclamation. For the postmining land use, steeper slopes may be permitted upon approval of the regulatory authority, provided it can be demonstrated that such method will provide the required results.

(c) *Requirements for other special bituminous coal mines.* Those portions of a special bituminous coal mine which do not meet the criteria of paragraph (b) of this section shall, at minimum, meet the general performance standards of Part 715 of this chapter for all operations conducted on the permit area outside the mine pit and for these operations associated with spoil storage areas. The standards of Part 715 also apply to the mine pit with the exception of § 715.14, which relates to backfilling and grading. Special requirements for backfilling and grading the mine pit area are as follows:

(1) *Slope specifications.* Slope specifications for the postmining land use shall be based on an average of the natural slopes measured in the immediate area of the mine site, and the maximum inclination of the slopes in the reclaimed area shall not be greater than this average slope. However, slopes steeper than the average of the natural slopes may be approved by the regulatory authority if it can be demonstrated that returning the mined area to a slope equal to or less than the average natural slope would greatly increase the amount of disturbed land. Measurements of individual slopes, locations at which measurements are made, and the average natural slope as determined from the individual slope measurements shall be submitted for approval to the regulatory authority. The regulatory authority may make an independent slope survey to verify the average natural slope.

(2) *Postmining land uses that do not include permanent water impoundments.* (i) The final mine area shall be backfilled, graded, and contoured to the extent necessary to return the land to the use approved by the regulatory authority.

(ii) All backfilling, grading, and contouring shall be done in a manner to preserve the original drainage system or to provide substitute drainage systems approved by the regulatory authority.

(iii) Terraces or benches may be used only if it can be demonstrated that contouring methods will not provide the required results. Detailed plans of dimensions and design of the terraces or benches, check dams, erosion prevention techniques, and slopes of the terraces or benches and their intervals shall be submitted to the regulatory authority for approval before construction.

(iv) Depressions that will accumulate water shall not be allowed unless they are approved under paragraph (3).

(3) *Postmining land uses that include permanent water impoundments.* (i) The exposed mine pit area shall be sloped, graded, and contoured to blend with the topography of the surrounding terrain and to provide for access to the area. Where necessary to prevent erosion, riprap shall be used.

(ii) Under certain conditions where it can be demonstrated by the permittee that the pitwall can be stabilized by terracing or other techniques, it may be permissible to leave one-half the proposed shoreline, as measured along the circumference, composed of the stabilized pitwall. The remaining part of the shoreline shall be graded and contoured to blend with the topography of the surrounding terrain and to provide access to the area. Detailed explanations of the techniques to be used to stabilize the pitwalls shall be submitted for approval to the regulatory authority. The regulatory authority may verify the effectiveness of the proposed stabilization techniques from a study made by an independent engineering company and based on this information and an onsite inspection, the regulatory authority will then determine the acceptability of the proposed stabilization techniques.

(d) In the event of an amendment or revision to the State of Wyoming's regulatory program, regulations, or decisions made thereunder governing special bituminous coal mines, the Secretary shall issue such additional regulations as necessary to meet the purposes of the Act.

§ 716.5 Anthracite coal mines.

(a) Permittees of anthracite coal surface mines in those States where the mines are regulated by State environmental protection standards shall be subject to the environmental protection standards of the State regulatory program in existence on August 3, 1977, instead of Part 715 of this chapter.

(b) The environmental protection provisions of Title 25, Rules and Regulations, Part 1, Department of Environmental Resources, Commonwealth of Pennsylvania, shall apply to reclamation of anthracite surface coal mines operated in the Commonwealth of Pennsylvania instead of Part 715 of this chapter. In addition, the regulations of the Commonwealth of Pennsylvania pertaining to standards for air and water quality shall apply instead of the regulations of Part 715 of this chapter.

(c) If a State's regulatory program or regulations for anthracite coal mining and reclamation operations in force at the time of this Act are amended, the Secretary, upon receipt of a notice of amendment, shall issue additional regulations as necessary to meet the purposes of this Act.

§ 716.6 Coal mines in Alaska.

(a) Permittees of surface coal mining operations in Alaska from which coal has been mined on or after August 3, 1977, shall conduct operations in a manner that, at a minimum, meets the performance standards of this chapter.

(b) The Secretary, after consultation with the Governor of Alaska, may modify the applicability of any environmental protection standard to any surface coal mining operation if he determines that it is necessary to ensure the continued operation of the mine.

(c) Any person may petition the Secretary to modify the applicability of a performance standard to a coal mine in Alaska. No particular form of petition is required. However, the petition shall be in writing and shall identify clearly—

(1) The performance standard involved;

(2) The alternative methods to be used to protect the environment and public health and safety;

(3) The reasons why a modification is requested with full descriptions of the impacts continued requirements for compliance with the performance standard to be modified would have on mining and reclamation and of the impacts the proposed method would have on the environment and public health and safety; and

(4) The location of the mine.

(d) If the Secretary determines that the petition presents reasonable justification for modifying the performance standard, he may grant a temporary suspension of enforcement of the performance standard, and he shall publish a notice of intention to modify the applicability of the performance standard in the FEDERAL REGISTER and in a newspaper of general circulation in the area of Alaska where the affected coal mine is located. A public hearing shall be held in Alaska and any person may testify for or against the proposed modification. The Secretary, after considering the public comments, and consulting with the Governor of Alaska, shall publish his decision in the FEDERAL REGISTER and in the same newspaper in which the original notice was published.

§ 716.7 Prime farmland.

(a) *Applicability.*

(1) Permittees of surface coal mining and reclamation operations conducted on prime farmland shall comply with the general performance standards of Part 715 of this chapter in addition to the special requirements of this section. Prime farmlands are those lands defined in paragraph (b) of this section that have been used for the production of cultivated crops, including nurseries, orchards, and other specialty crops, and small grains for at least 5 years out of the 20 years preceding the date of the permit application.

(2) The requirements of this section are applicable to any permit issued on or after August 3, 1977. Permits issued before that date and revisions or renewals of those permits need not conform to the provisions of this section regarding actions to be taken before a permit is issued. Permit renewals or revisions shall include only those areas that—

(i) Were in the original permit area or in a mining plan approved prior to August 3, 1977; or

(ii) Are contiguous and under State regulation or practice would have normally been considered as a renewal or revision of a previously approved plan.

(b) *Definition.* Prime farmland means those lands that meet the applicability requirements in paragraph (a) of this section and the specific technical criteria prescribed by the Secretary of Agriculture as published in the FEDERAL REGIS-

TER on August 23, 1977. These criteria are included here for convenience. Terms used in this section are defined in U.S. Department of Agriculture publications: Soil Taxonomy, Agriculture Handbook 436; Soil Survey Manual, Agriculture Handbook 18; Rainfall-Erosion Losses From Cropland, Agriculture Handbook 282; and Saline and Alkali Soils, Agriculture Handbook 60. To be considered prime farmland soils must meet all of the following criteria:

(1) The soils have—

(i) Aquic, udic, ustic, or xeric moisture regimes and sufficient available water capacity within a depth of 40 inches or in the root zone, if the root zone is less than 40 inches deep, to produce the commonly grown crops in 7 or more years out of 10; or

(ii) Xeric or ustic moisture regimes in which the available water capacity is limited but the area has a developed irrigation water supply that is dependable and of adequate quality (a dependable water supply is one in which enough water is available for irrigation in 8 out 10 years for the crops commonly grown); or

(iii) Aridic or torric moisture regimes and the area has a developed irrigation water supply that is dependable and of adequate quality.

(2) The soils have a temperature regime that is frigid, mesic, thermic, or hyperthermic (pergelic and cryic regimes are excluded). These are soils that at a depth of 20 inches have a mean annual temperature higher than 32 degrees F. In addition, the mean summer temperature at this depth in soils with an O horizon is higher than 47 degrees F.; in soils that have no O horizon the mean summer temperature is higher than 59 degrees F.

(3) The soils have a pH between 4.5 and 8.4 in all horizons within a depth of 40 inches or in the root zone if the root zone is less than 40 inches deep.

(4) The soils either have no water table or have a water table that is maintained at a sufficient depth during the cropping season to allow food, feed, fiber, forage, and oilseed crops common to the area to be grown.

(5) The soils can be managed so that, in all horizons within a depth of 40 inches or in the root zone if the root zone is less than 40 inches deep, during part of each year the conductivity of saturation extract is less than 4 mmhos/cm and the exchangeable sodium percentage (ESP) is less than 15.

(6) The soils are not flooded frequently during the growing season (less often than once in 2 years).

(7) The soils have a product of K (erodibility factor) $\times$ percent slope of less than 2.0 and a product of I (soil erodibility) $\times C$ (climatic factor) not exceeding 60.

(8) The soils have a permeability rate of at least 0.06 inch per hour in the upper 20 inches and the mean annual soil temperature at a depth of 20 inches is less than 59 degrees F.; the permeability rate is not a limiting factor if the mean annual soil temperature is 59 degrees F. or higher.

(9) Less than 10 percent of the surface layer (upper 6 inches) in these soils consists of rock fragments coarser than 3 inches.

(c) *Identification of prime farmland.* Prime farmland shall be identified on the basis of soil surveys submitted by the applicant. The regulatory authority also may require data on irrigation, drainage, flood control, and subsurface water management. The requirement for submission of soil surveys may be waived by the regulatory authority if the applicant can demonstrate according to the procedures in paragraph (d) of this section that no prime farmlands are involved. Soil surveys shall be conducted according to standards of the National Cooperative Soil Survey, which include the procedures set forth in U.S. Department of Agriculture Handbooks 436 (Soil Taxonomy) and 18 (Soil Survey Manual), and shall include—

(1) Data on moisture availability, temperature regime, flooding, water table, erosion characteristics, permeability, or other information that is needed to determine prime farmland in accordance with paragraph (b) of this section;

(2) A map designating the exact location and extent of the prime farmland; and

(3) A description of each soil mapping unit.

(d) *Negative determination of prime farmland.* The land shall not be considered as prime farmland where the applicant can demonstrate one or more of the following situations—

(1) Lands within the proposed permit boundaries have been used for the production of cultivated crops for less than 5 years out of 20 years preceding the date of the permit application.

(2) The slope of all land within the permit area is 10 percent or greater.

(3) Land within the permit area is not irrigated or naturally subirrigated, has no developed water supply that is dependable and of adequate quality, and the average annual precipitation is 14 inches or less.

(4) Other factors exist, such as a very rocky surface, or the land is frequently flooded, which clearly place all land within the area outside the purview of prime farmland.

(5) A written notification based on scientific findings and soil surveys that land within the proposed mining area does not meet the applicability requirements in paragraph (a) of this section is submitted to the regulatory authority by a qualified person other than the applicant, and is approved by the regulatory authority.

(e) *Plan for restoration of prime farmland.* The applicant shall submit to the regulatory authority a plan for the mining and restoration of any prime farmland within the proposed permit boundaries. This plan shall be used by the regulatory authority in judging the technological capability of the applicant to restore prime farmlands. The plan shall include—

(1) A description of the original undisturbed soil profile, as determined from a soil survey, showing the depth and thickness of each of the soil horizons that collectively constitute the root zone of the locally adapted crops and are to be removed, stored, and replaced;

(2) The proposed method and type of equipment to be used for removal, storage, and replacement of the soil in accordance with paragraph (g) of this section;

(3) The location of areas to be used for the separate stockpiling of the soil and plans for soil stabilization before redistribution;

(4) If applicable, documentation such as agricultural school studies or other scientific data from comparable areas that supports the use of other suitable material, instead of the A, B or C soil horizon, to obtain on the restored area equivalent or higher levels of yield as non-mined prime farmlands in the surrounding area under equivalent levels of management; and

(5) Plans for seeding or cropping the final graded mine land and the conservation practices to control erosion and sedimentation during the first 12 months after regarding is completed. Proper adjustments for seasons must be made so that final graded land is not exposed to erosion during seasons when vegetation or conservation practices cannot be established due to weather conditions; and

(6) Available agricultural school studies, company data, or other scientific data for comparable areas that demonstrate that the applicant using his proposed method of reclamation will achieve, within a reasonable time, equivalent or higher levels of yield after mining as existed before mining.

(f) *Consultation with Secretary of Agriculture and issuance of permit.* (1) The regulatory authority may grant a permit which shall incorporate the plan submitted under paragraph (e) of this section, if it finds in writing that the applicant—

(i) has the technological capability to restore the prime farmland within the proposed permit area, within a reasonable time, to equivalent or higher levels of yield as nonmined prime farmland in the surrounding area under equivalent levels of management; and

(ii) will achieve compliance with the standards of paragraph (g) of this section.

(2) Before any permit is issued for areas that include prime farmlands, the regulatory authority shall consult with the Secretary of Agriculture. The Secretary of Agriculture will provide a review of the proposed method of soil reconstruction and comment on possible revisions that will result in a more complete and adequate restoration. The Secretary of Agriculture has assigned his responsibilities under this paragraph to the Administrator of the U.S. Soil Conservation Service and the U.S. Soil Conservation Service will carry out the consultation

and review through their State Conservationist, located in each State.

(g) *Special requirements.* For all prime farmlands to be mined and reclaimed, the applicant shall meet the following special requirements:

(1) All soil horizons to be used in the reconstruction of the soil shall be removed before drilling, blasting, or mining to prevent contaminating the soil horizons with undesirable materials. Where removal of soil horizons result in erosion that may cause air and water pollution, the regulatory authority shall specify methods of treatment to control erosion of exposed overburden. The permittee shall—

(i) Remove separately the entire A horizon or other suitable soil materials which will create a final soil having an equal or greater productive capacity than that which existed prior to mining in a manner that prevents mixing or contamination with other material before replacement;

(ii) Remove separately the B horizon of the natural soil or a combination of B horizon and underlying C horizon or other suitable soil material that will create a reconstructed root zone of equal or greater productivity capacity than that which existed prior to mining in a manner that prevents mixing or contamination with other material; and

(iii) Remove separately the underlying C horizons or other strata, or a combination of such horizons or other strata, to be used instead of the B horizon that are of equal or greater thickness and that can be shown to be equal or more favorable for plant growth than the B horizon, and that when replaced will create in the reconstructed soil a final root zone of comparable depth and quality to that which existed in the natural soil.

(2) If stockpiling of soil horizons is allowed by the regulatory authority in lieu of immediate replacement, the A horizon and B horizon must be stored separately from each other. The stockpiles must be placed within the permit area and where they willn ot be disturbed or exposed to excessive erosion by water or wind before the stockpiled horizons can be redistributed on terrain graded to final contour. Stockpiles in place for more than 30 days must meet the requirements of § 715.16(c).

(3) Scarify the final graded land before the soil horizons are replaced.

(4) Replace the material from the B horizon, or other suitable material specified in paragraph (g)(1)(ii) or (g)(1)(iii) of this section in such a manner as to avoid excessive compaction of overburden and to a thickness comparable to the root zone that existed in the soil before mining.

(5) Replace the A horizon or other suitable soil materials, which will create a final soil having an equal or greater productive capacity than existed prior to mining, as the final surface soil layer to the thickness of the original soil as determined in paragraph (g)(1)(i) of this section in a manner that—

(i) Prevents excess compaction of both the surface layer and underlying material and reduction of permeability to less than 0.06 inch per hour in the upper 20 inches of the reconstructed soil profile; and

(ii) Protects the surface layer from wind and water erosion before it is seeded or planted.

(6) Apply nutrients and soil amendments as needed to establish quick vegetative growth.

PART 717—UNDERGROUND MINING GENERAL PERFORMANCE STANDARDS

Sec.

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AUTHORITY: Secs. 201 and 501, Pub. L. 95-87, 91 Stat. 445 (30 U.S.C. 1201).

§ 717.11 General obligations.

(a) *Compliance.* All underground coal mining and associated reclamation operations conducted on lands where any element of the operations is regulated by a State shall comply with the initial performance standards of this part according to the time schedule specified in § 710.11.

(1) For the purposes of this part, *underground coal mining and associated reclamation operations* mean a combination of *surface operations* and *underground operations. Surface operations* include construction, use, and reclamation of new and existing access and haul roads, aboveground repair areas, storage areas, processing areas, shipping areas, and areas upon which are sited support facilities including hoist and ventilating ducts, and on which materials incident to underground mining operations are placed. *Underground operations* include underground construction, operation, and reclamation of shafts, adits, underground support facilities, underground mining, hauling, storage, and blasting.

(2) For the purpose of this part the term *permittee* means the person permitted to conduct underground mining operations by a State or if no permit is issued in the State, the person operating a mine.

(3) For the purpose of this part, *disturbed areas* means surface work areas and lands affected by surface operations including, but not limited to, roads, mine entry excavations, above ground (surface) work areas, such as tipples, coal processing facilities and other operating facilities, waste work and spoil disposal areas, and mine waste impoundments or embankments.

(4) Where State environmental protection standards are adopted for a specific State because they are more stringent than the standards of this part, they will be published in Part 718 of this chapter.

(b) *Authorizations to operate.* A copy of all current permits, licenses, approved plans or other authorizations to operate the mine shall be available for inspection at or near the mine site.

§ 717.12 Signs and markers.

(a) *Specifications.* All signs required to be posted shall be of a standard design that can be seen and read easily and shall be made of durable material, and shall conform to local ordinances and codes. The signs and other markers shall be maintained during all operations to which they pertain.

(b) *Mine and permit identification signs.* Signs identifying the mine area shall be displayed at all points of access to the permit area from public highways. Signs shall show the name, business address, and telephone number of the permittee and identification numbers of current mining and reclamation permits or other authorizations to operate. Such signs shall not be removed until after release of all bonds.

§ 717.13 [Reserved].

§ 717.14 Backfilling and grading of road cuts, mine entry area cuts, and other surface work areas.

(a) Upon completion of underground mining, surface work areas which are involved in excavation, disposal of materials, or otherwise affected, shall be regraded to approximate original contour. The permittee shall transport, backfill and compact fill material to assure stability or to prevent leaching of toxic pollutants. Barren rock or similar materials excess to the mining operations and which are disposed on the land surface shall be subject to the provision of § 717.15 of this part. Roads and support facility areas existing prior to the effective date of this part and used in support of underground mining operations which are subject to this part shall be regraded to the extent deemed feasible by the regulatory authority based on the availability of backfill material and resulting stability of the affected lands after reclamation. As a minimum, the permittee shall be required to:

(1) Retain all earth, rock and other mineral nonwaste materials on the solid portion of existing or new benches, except that the regulatory authority may permit placement of such material at the site of the faceup as a means of disposing of excavated spoil when additional working space is needed to facilitate operations. Such placement of material shall be limited to minimize disturbance of land and to the hydrologic balance. Such fills shall be stabilized with vegetation and shall achieve a minimum static safety factor of 1.5. In no case shall the outslope exceed the angle of repose.

(2) Backfill and grade to the most moderate slope possible to eliminate any highwall along roads, mine entry faces or other areas. Slopes shall not exceed the angle of repose or such lesser slopes as required by the regulatory authority to maintain stability.

(b) On approval by the regulatory authority and in order to conserve soil moisture, ensure stability, and control erosion on final graded slopes, cut-and-fill terraces may be allowed if the terraces are appropriate substitutes for construction of lower grades on the reclaimed lands. The terraces shall meet the following requirements:

(1) The width of the individual terrace bench shall not exceed 20 feet unless specifically approved by the regulatory authority as necessary for stability erosion control, or roads.

(2) The vertical distance between terraces shall be as specified by the regulatory authority to prevent excessive erosion and to provide long-term stability.

(3) The slope of the terrace outslope shall not exceed $1v:2h$ (50 percent). Outslopes which exceed $1v:2h$ (50 percent) may be approved if they have a minimum static safety factor of 1.5 or more and provide adequate control over erosion and closely resemble the surface configuration of the land prior to mining. In no case may highwalls be left as part of terraces.

(4) Culverts and underground rock drains shall be used on the terrace only when approved by the regulatory authority.

(c) All surface operations on steep slopes of 20 degrees or more or on such lesser slopes as the regulatory authority define as a *steep slope* shall be conducted so as not to place any material on the downslope below road cuts, mine working or other benches, other than in conformance with paragraph (a) (1) of this part.

(d) *Regrading or stabilizing rills and gullies.* When rills or gullies deeper than 9 inches form in areas that have been regraded and the topsoil replaced but vegetation has not yet been established, the permittee shall fill, grade, or otherwise stabilize the rills and gullies and reseed or replant the areas according to § 717.20. The regulatory authority shall specify that erosional features of lesser size be stabilized if they result in additional erosion and sedimentation.

(e) *Covering coal and acid-forming, toxic-forming, combustible, and other waste materials; stabilizing backfilled materials; and using waste material for fill.* Any acid-forming, toxic-forming, combustible materials, or any other waste materials as identified by the regulatory authority that are exposed, used, or produced during underground mining and which are deposited on the land surface shall, after placement in accordance with § 717.15 of this part, be covered with a minimum of 4 feet of nontoxic and noncombustible material; or, if necessary, treated to neutralize toxicity, in order to prevent water pollution and sustained combusion, and to minimize adverse effects on plant growth and land uses. Where necessary to protect against upward migration of salts, exposure by erosion, to provide an adequate depth for plant growth, or to otherwise meet local conditions, the regulatory authority shall specify thicker amounts of cover using nontoxic material. Acid-forming or toxic-forming material shall not be buried or stored in proximity to a drainage course so as to cause or pose a threat of water pollution or otherwise violate the provisions of § 717.17 of this part.

(f) *Grading along the contour.* All final grading, preparation of earth, rock and other nonwaste materials before replacement of topsoil, and placement of topsoil in accordance with § 717.20, shall be done along the contour to minimize subsequent erosion and instability. If such grading, preparation or placement along the contour would be hazardous to equipment operators, grading, preparation or placement in a direction other than generally parallel to the contour may be used. In all cases, grading, preparation or placement shall be conducted in a manner which minimizes erosion and provides a surface for replacement of topsoil which will minimize slippage.

§ 717.15 Disposal of excess rock and earth materials on surface areas.

Excess rock and earth materials produced from an underground mine and not disposed in underground workings or used in backfilling and grading operations shall be placed in surface disposal areas in accordance with requirements of § 715.15. Where the volume of such material is small and its chemical and physical characteristics do not pose a threat to either public safety or the environment the regulatory authority may modify the requirements of § 715.15 in accordance with § 717.14(a) (1).

§ 717.16 [Reserved]

§ 717.17 Protection of the hydrologic system.

The permittee shall plan and conduct underground coal mining and reclamation operations to minimize disturbance of the prevailing hydrologic balance in order to prevent long-term adverse changes in the hydrologic balance that could result from underground coal mining operations, both on and off site. Changes in water quality and quantity, in the depth to ground water, and in the location of surface water drainage channels shall be minimized and applicable Federal and State statutes and regulations shall not be violated. The permittee shall conduct operations so as to minimize water pollution and shall, where necessary, use treatment methods to control water pollution. The permittee shall emphasize underground coal mining and reclamation practices that will prevent or minimize water pollution and changes in flows in preference to the use of water treatment facilities prior to discharge to surface waters. Practices to control and minimize pollution include, but are not limited to, diverting water from underground workings or preventing water contact with acid- or toxic-forming materials, and minimizing water contact time with waste materials, maintaining mine barriers to enhance postmining inundation and sealing, establishing disturbed areas through grading, diverting runoff, achieving quick growing stands of temporary vegetation, and lining drainage channels. If treatment is required to eliminate pollution of surface or ground waters, the permittee shall operate and maintain the necessary water treatment facilities as set forth in this section.

(a) *Water quality standards and effluent limitations.* All surface drainage from the disturbed area, including disturbed areas that have been graded, seeded or planted and which remain subject to the requirements of this section, except for drainage from disturbed areas that have met the requirements of § 717.-20 shall be passed through a sedimentation pond or a series of sedimentation ponds prior to leaving the permit area. All waters which flow or are removed from underground operations or underground waters which are removed from other areas to facilitate mining and which discharge to surface waters must be passed through appropriate treatment facilities prior to discharge where necessary to meet effluent limitations.

For purposes of this section only, disturbed areas shall include areas of surface operations but shall not include those areas in which only diversion ditches, sedimentation ponds, or roads are installed in accordance with this section and the upstream area is not otherwise disturbed by the permittee. Disturbed areas shall not include those surface areas overlying the underground working unless those areas are also disturbed by surface operations such as fill (disposal) areas, support facilities areas, or other major activities which create a risk of pollution.

The regulatory authority may grant exemptions from this requirement only when the disturbed drainage area within the total disturbed area is small and if the permittee shows that sedimentation ponds are not necessary to meet effluent limitations of this paragraph and to maintain water quality in downstream receiving waters. Sedimentation ponds required by this paragraph shall be constructed in accordance with paragraph (e) of this section in appropriate locations prior to any mining in the affected drainage area in order to control sedimentation or otherwise treat water in accordance with this paragraph. Discharges from areas disturbed by underground operation and by surface operation and reclamation activities conducted thereon, must meet all applicable Federal and State regulations and, at a minimum, the following numerical effluent limitations:

EFFLUENT LIMITATIONS, IN MILLIGRAMS PER LITER, mg/l EXCEPT FOR pH

Effluent characteristics	Maximum allowable [1]	Average of daily values for 30 consecutive discharge days [1]
Iron, total	7.0	3.5
Manganese, total	4.0	2.0
Total suspended solids. [2]	70.0	35.0
pH [3]	Within the range 6.0 to 9.0.	

[1] Based on representative sampling.
[2] In Arizona, Colorado, Montana, New Mexico, North Dakota, South Dakota, Utah, and Wyoming, total suspended solids limitations will be determined on a case-by-case basis, but they must not be greater than 45 mg/l (maximum allowable) and 30 mg/l (average of daily value for 30 consecutive discharge days) based on a representative sampling.
[3] Where the application of neutralization and sedimentation treatment technology results in inability to comply with the manganese limitations set forth, the regulatory authority may allow the pH level in the discharge to exceed to a small extent the upper limit of 9.0 in order that the manganese limitations will be achieved.

(1) Any overflow or other discharge of surface water from the disturbed area within the permit area demonstrated by the permittee to result from a precipitation event larger than the 10-year 24-hour frequency event will not be subject to the effluent limitations of paragraph (a).

(2) The permittee shall install, operate, and maintain adequate facilities to treat any water discharged from the disturbed area that violates applicable Federal or State regulations or the limitations of paragraph (a). If the pH of waters to be discharged from the disturbed area is normally less than 6.0, an automatic lime feeder or other neutralization process approved by the regulatory authority shall be installed, operated, and maintained. If the regulatory authority finds that small and infrequent treatment requirements to meet applicable standards do not necessitate use of an automatic neutralization process, and the mine normally produces less than 500 tons of coal per day, the regulatory authority can approve the use of a manual system if the permittee agrees to ensure that consistent and timely treatment is carried out.

(b) *Surface water monitoring.* (1) The permittee shall submit for approval by the regulatory authority a surface water monitoring program which meets the following requirements: (i) Provides adequate monitoring of all discharge from the disturbed area and from the underground operations.

(ii) Provides adequate data to describe the likely daily and seasonal variation in discharges from the disturbed area in terms of flow, pH, total iron, total manganese, and total suspended solids and, as requested by the regulatory authority, any other parameter characteristic of the discharge.

(iii) Provides monitoring at appropriate frequencies to measure normal and abnormal variations in concentrations.

(iv) Provides an analytical quality control system including standard methods of analysis such as those specified in 40 CFR 136.

(v) Provides regular reports of all measurements to the regulatory authority within 60 days of sample collection unless violations of permit conditions occur in which case the regulatory authority shall be notified immediately after receipt of analytical results by the permittee. If the discharge is subject to regulation by a Federal or State permit issued in compliance with section 301 of the Federal Water Pollution Control Act Amendment of 1972 (33 U.S.C. § 1311), a copy of the completed reporting form supplied to meet the permit requirements may be submitted to the regulatory authority to satisfy the reporting requirements if the data meet the frequency and other requirements of this paragraph.

(2) Equipment, structures, or other measures necessary to accurately measure and sample the quality and quantity of surface water discharges from the disturbed area of the permit area shall be properly installed, maintained and operated and shall be removed when no longer required.

(c) *Diversion and conveyance of overland flow away from disturbed areas.* In order to minimize erosion and to prevent or remove water from contacting toxic-producing deposits, overland flow from undisturbed areas may, as required or approved by the regulatory authority, be diverted away from disturbed areas by means of temporary or permanent diversion structures. The following requirements shall be met for such diversions:

(1) Temporary diversion structures are those used during mining and reclamation. When no longer needed, these structures shall be removed and the area reclaimed. Temporary diversion structures shall be constructed to safely pass the peak runoff from a precipitation event with a 10-year recurrence interval, or a larger event as specified by the regulatory authority.

(2) Permanent diversion structures are those remaining after mining and reclamation and approved for retention by the regulatory authority and other appropriate State and Federal agencies. To protect fills and property, to prevent water from contacting toxic-producing deposits, and to avoid danger to public health and safety, permanent diversion structures shall be constructed to safely pass the peak runoff from a precipitation event with a 100-year recurrence interval or a larger event as specified by the regulatory authority. Permanent diversion structures shall be constructed with gently sloping banks that are stabilized by vegetation. Asphalt, concrete, or other similar linings shall not be used unless specifically required to prevent seepage or to provide stability and they are approved by the regulatory authority.

(3) Diversions shall be designed, constructed, and maintained in a manner so as to prevent additional contributions of suspended solids to streamflow, or to runoff outside the permit area to the extent possible, using the best technology currently available. In no event shall such contributions be in excess of requirements set by applicable State or Federal law. Appropriate sediment control measures for these diversions shall include, but not be limited to, maintenance of appropriate gradients, channel lining, vegetation, and roughness structures and detention basins.

(d) *Stream channel diversions.* In the event that the regulatory authority permits diversion of streams, the regulations of § 715.17(d) shall apply.

(e) *Sediment control measures.* Appropriate sediment control measures shall be designed, constructed, and maintained to prevent additional contributions of sediment to streamflow or to runoff outside the permit area to the extent possible, using the best technology currently available. Sediment control measures may include, but are not limited to, sedimentation ponds, diversion structures, sediment traps, straw dikes, riprap, check dams, vegetative filters, dugout ponds, and chemical treatment. All ponds shall be designed and constructed to take into account any discharges into the pond from underground operations. Sedimentation ponds may be used individually or in a series and shall (either individually or in series) meet the criteria below:

(1) Sedimentation ponds must provide at least a 24-hour detention time and a surface area of at least 1 square foot for each 50 gallons per day of inflow for runoff entering the pond(s) that results from a 10-year 24-hour precipitation event. Runoff diverted, in accordance with paragraph (c) of this section, away from disturbed drainage areas need not be considered in sedimentation pond design. Required sedimentation pond surface area and detention time may be proportionally reduced by the appropriate use of chemical treatment measures such as flocculation and coagulation if approved by the regulatory authority.

(2) An additional sediment storage volume must be provided equal to 0.2 acre-feet for each acre of disturbed area within the upstream drainage area. Upon approval of the regulatory authority, the sediment storage volume may be reduced in an amount, as demonstrated by the permittee, equal to the sediment removed by other appropriate sediment control measures.

(3) Ponds may be of the permanent pool or self-dewatering type. Dewatering-type ponds shall use siphon or other dewatering methods approved by the regulatory authority to prevent discharges of pollutants within the design flow.

(4) Spillway systems shall be properly located to maximize the distances from the point of inflow into the pond to maximize detention times. Spillway systems shall be provided to safely discharge the peak runoff from a precipitation event with a 25-year recurrence interval, or larger event as specified by the regulatory authority.

(5) Sediment shall be removed from sedimentation ponds when the volume of sediment accumulates to 80 percent of the sediment storage volume required in paragraph (e)(2) of this section. Sediment shall be disposed of in a manner that minimizes adverse effects on surface

waters due to its chemical and physical characteristics, on infiltration, vegetation, or surface or ground water quality.

(6) If a sedimentation pond includes an embankment that is more than 20 feet in height, as measured from the upstream toe of the embankment to the crest of the emergency spillway, or has a storage volume of 20 acre-feet or more, the following additional requirements shall be met:

(i) An appropriate combination of principal and emergency spillways shall be provided to safely discharge the runoff resulting from a 100-year 6-hour precipitation event, or larger event as specified by the regulatory authority.

(ii) Ponds shall be designed and constructed with an acceptable static safety factor of at least 1.5 for the normal pool level to ensure embankment slope stability.

(iii) The minimum top width of the embankment shall not be less than the quotient of $\frac{H+35}{5}$ where H is the height of the embankment as measured from the upstream toe to the top of the embankment.

(iv) Ponds shall have appropriate barriers to control seepage along conduits that extend through the embankment.

(7) All ponds shall be designed and inspected under the supervision of, and certified after construction by, a registered professional engineer.

(8) All ponds, including those not meeting the size or other criteria of § 77.216(a) of this title, shall be examined for structural weakness, erosion, and other hazardous conditions in accordance with the inspection requirements contained in § 77.216–3 of this title.

(9) All ponds shall be removed and the land affected regraded and revegetated consistent with the requirements of § 717.14 and § 717.20.

(f) *Discharge structures.* Discharges from sedimentation ponds and diversion structures shall be controlled, where necessary, using energy dissipators, surge ponds, and other devices to reduce erosion and prevent deepening or enlargement of stream channels and to minimize disturbances to the hydrologic balance.

(g) *Acid and toxic materials.* Drainage to ground and surface waters which emanates from acid-forming or toxic-forming mine waste materials and spoils placed on the land surface shall be avoided by—

(1) Identifying, burying, and treating where necessary, spoil or other materials that, in the judgment of the regulatory authority, will be toxic to vegetation or that will adversely affect water quality if not treated or buried. Such material shall be disposed in accordance with the provision of § 717.14(e);

(2) Preventing or removing water from contact with toxic-producing deposits;

(3) Burying or otherwise treating all toxic or harmful materials within 30 days if such materials are subject to wind and water erosion, or within a lesser period designated by the regulatory authority. If storage of such materials is approved, the materials shall be placed on impermeable material and protected from erosion and contact with surface water. Coal waste ponds and other coal waste materials shall be maintained according to § 717.17(g)(4) and § 717.18 shall apply;

(4) Burying or otherwise treating waste materials from coal preparation plants no later than 90 days after the cessation of the filling of the disposal area. Burial or treatment shall be in accordance with § 717.14(e) of this part;

(5) Casing, sealings, or otherwise managing boreholes, shafts, wells, and auger holes or other more or less horizontal holes to prevent pollution of surface or ground water and to prevent mixing of ground waters of significantly different quality. All boreholes that are within the permit area but are outside the surface coal mining area or which extend beneath the coal to be mined and into water-bearing strata shall be plugged permanently in a manner approved by the regulatory authority, unless boreholes have been approved for use in monitoring.

(h) *Ground water systems.* (1) Underground operations shall be conducted to minimize adverse effects on ground water flow and quality, and to minimize offsite effects. The permittee will be responsible for performing monitoring according to subparagraph (2) of this paragraph to ensure operations conform to this requirement.

(2) Ground water levels, subsurface flow and storage characteristics, and the quality of ground water shall be monitored in a manner approved by the regulatory authority to determine the effects of underground coal mining operations on the quantity and quality of water in ground water systems at the mine area and in associated offsite areas. When operations are conducted in such a manner that may affect the ground water system, ground water levels and ground water quality shall be periodically monitored using wells which can adequately reflect changes in ground water quantity and quality resulting from such operations. Sufficient water wells must be used by the permittee. The regulatory authority may require drilling and development of additional wells if needed to adequately monitor the ground water system. As specified and approved by the regulatory authority, additional hydrologic tests, such as aquifier tests, must be undertaken by the permittee to demonstrate compliance with subparagraph (1) of this paragraph.

(i) *Water rights and replacement.* The permittee shall replace the water supply of an owner of interest in real property who obtains all or part of his supply of water for domestic, agricultural, industrial, or other legitimate use from an underground or surface source where such supply has been affected by contamination, diminution, or interruption proximately resulting from surface coal mine operation by the permittee.

(j) *Hydrologic impact of roads.* (1) *General.* Access and haul roads and associated bridges, culverts, ditches, and road rights-of-way shall be constructed, maintained, and reclaimed so as to the extent possible, using the best technology currently available, prevent additional contributions of suspended solids to streamflow, or to runoff outside the permit area to the extent possible, using the best technology currently available. In no event shall the contributions be in excess of requirements set by applicable State or Federal law. All haul and access roads shall be removed and the land affected shall be regraded and revegetated consistent with the requirements of § 717.14 and § 717.20, unless retention of a road is approved and assured of necessary maintenance to adequately control erosion.

(2) *Construction.* (i) All roads, insofar as possible, shall be located on ridges or on flatter and more stable slopes to minimize erosion. Stream fords are prohibited unless they are specifically approved by the regulatory authority as temporary routes across dry streams that will not adversely affect sedimentation and that will not be used for coal haulage. Other stream crossings shall be made using bridges, culverts, or other structures designed and constructed to meet the requirements of this paragraph. Roads shall not be located in active stream channels nor shall they be constructed or maintained in a manner that increases erosion or causes significant sedimentation or flooding. However, nothing in this paragraph will be construed to prohibit relocation of stream channels in accordance with paragraph (d) of this section.

(ii) In order to minimize erosion and subsequent disturbances of the hydrologic balance, roads shall be constructed in compliance with the following grade restrictions or other grades determined by the regulatory authority to be necessary to control erosion:

(A) The overall sustained grade shall not exceed $1v{:}10h$ (10 percent).

(B) The maximum grade greater than 10 percent shall not exceed $1v{:}6.5h$ (15 percent) for more than 300 feet.

(C) There shall not be more than 300 feet of grade exceeding 10 percent within each 1,000 feet.

(iii) All access and haul roads shall be adequately drained using structures such as, but not limited to, ditches, water barriers, cross drains, and ditch relief drains. For access and haul roads that are to be maintained for more than 1 year, water-control structures shall be designed with a discharge capacity capable of passing the peak runoff from a 10-year, 24-hour precipitation event. Drainage pipes and culverts shall be constructed to avoid plugging or collapse and erosion at inlets and outlets. Drainage ditches shall be provided at the toe of all cut slopes formed by construction of roads. Trash racks and debris basis shall be installed in the drainage ditches wherever debris from the drainage area could impair the functions of drainage and sediment control structures. Ditch relief and cross drains shall be spaced according to grade. Effluent limitations of paragraph (a) of

this section shall not apply to drainage from access and haul roads located outside the disturbed area as defined in this section unless otherwise specified by the regulatory authority.

(iv) Access and haul roads shall be surfaced with durable material. Toxic- or acid-forming substances shall not be used. Vegetation may be cleared only for the essential width necessary for road and associated ditch construction and to serve traffic roads.

(3) *Maintenance.* (i) Access and haul roads shall be routinely maintained by means such as, but not limited to, wetting, scraping, or surfacing.

(ii) Ditches, culverts, drains, trash racks, debris basins, and other structures serving to drain access and haul roads shall not be restricted or blocked in any manner that impedes drainage or adversely affects the intended purpose of the structure.

(4) Access roads constructed for and used only to provide infrequent service to surface facilities, such as ventilators or monitoring devices shall be exempt from the requirements of subparagraph (2) of this paragraph provided adequate stabilization to control erosion is achieved through use of alternative measures.

(k) *Hydrologic impacts of other transport facilities.* Railroad loops, spurs, conveyors, or other transport facilities shall be constructed, maintained, and reclaimed to prevent additional contributions of suspended solids to streamflow, or to runoff outside the permit area to the extent possible, using the best technology currently available and to control other diminution or degradation of water quality and quantity. In no event shall contributions be in excess of requirements set by applicable State or Federal law.

(l) *Discharge of waters into underground mines.* Surface and ground waters shall not be discharged or diverted into underground mine workings.

§ 717.18 Dams constructed of or impounding waste material.

(a) *General.* No waste material shall be used in or impounded by existing or new dams without the approval of the regulatory authority. The permittee shall design, locate, construct, operate, maintain, modify, and abandon or remove all dams (used either temporarily or permanently) constructed of waste materials, in accordance with the requirements of this section.

(b) *Construction of dams.* (1) Waste shall not be used in the construction of dams unless demonstrated through appropriate engineering analysis, to have no adverse effect on stability.

(2) Plans for dams subject to this section, and also including those dams that do not meet the size or other criteria of § 77.216(a) of this title, shall be approved by the regulatory authority before construction and shall contain the minimum plan requirements established by the Mining Enforcement and Safety Administration pursuant to § 77.216–2 of this title.

(3) Construction requirements are as follows: (i) Design shall be based on the flood from the probable maximum precipitation event unless the permittee shows that the failure of the impounding structure would not cause loss of life or severely damage property or the environment, in which case, depending on site conditions; a design based on a precipitation event of no less than 100-year frequency may be approved by the regulatory authority.

(ii) The design freeboard distance between the lowest point on the embankment crest and the maximum water elevation shall be at least 3 feet to avoid overtopping by wind and wave action.

(iii) Dams shall have minimum safety factors as follows:

Case	Loading condition	Minimum safety factor
I	End of construction	1.3
II	Partial pool with steady seepage saturation.	1.5
III	Steady seepage from spillway or decant crest.	1.5
IV	Earthquake (cases II and III with seismic loading).	1.0

(iv) The dam, foundation, and abutments shall be stable under all conditions of construction and operation of the impoundment. Sufficient foundation investigations and laboratory testing shall be performed to determine the factors of safety of the dam for all loading conditions in paragraph (b)(3)(iii) of this section and for all increments of construction.

(v) Seepage through the dam, foundation, and abutments shall be controlled to prevent excessive uplift pressures, internal erosion, sloughing, removal of material by solution, or erosion of material by loss into cracks, joints, and cavities. This may require the use of impervious blankets, pervious drainage zones or blankets, toe drains, relief wells, or dental concreting of jointed rock surface in contact with embankment materials.

(vi) Allowances shall be made for settlement of the dams and the foundation so that the freeboard will be maintained.

(vii) Impoundments created by dams of waste materials shall be subject to a minimum drawdown criteria that allows the facility to be evacuated by spillways or decants of 90 percent of the volume of water stored during the design precipitation event within 10 days.

(viii) During construction of dams subject to this section, the structures shall be periodically inspected by a registered professional engineer to ensure construction according to the approved design. On completion of construction, the structure shall be certified by a registered professional engineer experienced in the field of dam construction as having been constructed in accordance with accepted professional practice and the approved design.

(ix) A permanent identification marker, at least 6 feet high that shows the dam number assigned pursuant to § 77.216–1 of this title and the name of the person operating or controlling the dam, shall be located on or immediately adjacent to each dam within 30 days of certification of design pursuant to this section.

(4) All dams, including those not meeting the size or other criteria of § 77.216(a) of this title, shall be routinely inspected by a registered professional engineer, or someone under the supervision of a registered professional engineer, in accordance with Mining Enforcement and Safety Administration regulations pursuant to § 77.216–3 of this title.

(5) All dams shall be routinely maintained. Vegetative growth shall be cut where necessary to facilitate inspection and repairs. Ditches and spillways shall be cleaned. Any combustible materials present on the surface, other than that used for surface stability such as mulch or dry vegetation, shall be removed and any other appropriate maintenance procedures followed.

(6) All dams subject to this section shall be recertified annually as having been constructed and modified in accordance with current prudent engineering practices to minimize the possibility of failures. Any changes in the geometry of the impounding structure shall be highlighted and included in the annual recertification report. These certifications shall include a report on existing and required monitoring procedures and instrumentation, the average and maximum depths and elevations of any impounded waters over the past year, existing storage capacity of impounding structures, any fires occurring in the material over the past year and any other aspects of the structures affecting their stability.

(7) Any enlargements, reductions in size, reconstruction or other modification of the dams shall be approved by the regulatory authority before construction begins.

(8) All dams shall be removed and the disturbed areas regraded, revegetated, and stabilized before the release of bond unless the regulatory authority approves retention of such dams as being compatible with an approved post-mining land use (§ 715.13).

§ 717.19 [Reserved]

§ 717.20 Topsoil handling and revegetation.

(a) Topsoil shall be removed as a separate operation from areas to be disturbed by surface operations, such as roads and areas upon which support facilities are to be sited. Selected overburden materials may be used instead of, or as a substitute for topsoil where the resulting soil medium is determined by the regulatory authority to be equal to or more suitable for revegetation. Topsoil shall be segregated, stockpiled, and protected from wind and water erosion, or contaminants. Disturbed areas no longer required for the conduct of mining operations shall be regraded, topsoil distributed, and revegetated.

(b) The permittee shall establish on all land that has been disturbed by mining operations a diverse, effective, and permanent vegetative cover capable of self-regeneration and plant succession, and adequate to control soil erosion. Introduced species may be substituted for native species if approved by the regulatory authority. Introduced species shall meet applicable State and Federal seed or introduced species statutes, and may not include poisonous or potentially toxic species.

PART 718—ADOPTION OF STATE STANDARDS

Sec.
718.1 Procedures for adoption.

AUTHORITY: Secs. 201 and 501, Pub. L. 95-87, 91 Stat. 445 (30 U.S.C. 1201).

§ 718.1 Procedures for adoption.

(a) Any State law or regulation which is determined by the Secretary under the procedures in this section to be a more stringent performance standard for regulation of surface coal mining and reclamation operations than that provided under a performance standard in Part 715, 716, or 717 of this chapter shall be adopted by the Secretary and applied in that State instead of the requirements of the standards in Part 715, 716, or 717.

(b) A State may request the Secretary to review the provisions of any State law or regulation to determine whether such law or regulation provides a more stringent performance standard than comparable provisions in Part 715, 716, or 717 of this chapter. No particular form of request is required. However, the request shall be in writing and shall include the text of the State law or regulation, identification of the comparable performance standard in Part 715, 716, or 717 of this chapter, and an analysis of the reasons why the State law or regulation is a more stringent standard.

(c) If the Secretary determines that the requirements of State law or regulation may be more stringent than the comparable performance standard in Part 715, 716, or 717 of the chapter, rulemaking shall be initiated under the procedures of section 501 of the Act for adoption of the standard.

PART 720—STATE ENFORCEMENT ACTIVITIES

Sec.
720.11 Enforcement authority.
720.12 Permits.
720.13 Reporting obligations.

AUTHORITY: Secs. 201, 501, and 502, Pub. L. 95-87, 91 Stat. 445 (30 U.S.C. § 1201).

§ 720.11 Enforcement authority.

Nothing in the Act or these regulations shall be interpreted to preclude a State from exercising its authority to enforce State law, regulations, and permit conditions, unless compliance with the State law, regulations, or permit condition will preclude compliance with these regulations.

§ 720.12 Permits.

(a) On or after February 4, 1978, if a State is enforcing the performance standards of this Chapter that State shall incorporate terms in initial permits that comply with those standards.

(b) On or after May 4, 1978, if a State is enforcing the performance standards of this Chapter, that State shall incorporate terms in revised or renewed permits that comply with these standards.

§ 720.13 Reporting obligations.

(a) During the initial regulatory program, each State regulatory authority shall submit to the Office, within 5 days after its completion, a copy of each State report which contains observations of the condition of the mine site and relates to the obligations imposed by these regulations. In order to protect preparation for hearings and enforcement proceedings, the Director and the State regulatory authority may enter into agreements as to procedures for the special handling of investigative and enforcement reports and other materials.

(b) Any State issuing an initial permit to conduct surface coal mining operations on or after February 4, 1978, and a revised or renewed permit on or after May 4, 1978, shall submit a copy of the application and the permit to the Office.

PART 721—FEDERAL INSPECTIONS

Sec.
721.11 Extent.
721.12 Right of entry.
721.13 Inspections based on citizen requests.
721.14 Failure to give notice and lack of reasonable belief.

AUTHORITY: Sec. 201, 501 and 502, Pub. L. 95-87, 91 Stat. 445 (30 U.S.C. § 1201).

§ 721.11 Extent.

The authorized representative of the Secretary shall conduct inspections of surface coal mining and reclamation operations subject to regulation under the Act—

(a) On the basis of not less than two consecutive State inspection reports indicating a violation of the Act, regulations or permit conditions required by the Act;

(b) On the basis of information provided by a State or any person which gives rise to a reasonable belief that the provisions of the Act, regulations or permit conditions required by the Act are being violated, or that a condition or practice exists which creates an imminent danger to the health or safety of the public, or is causing or can reasonably be expected to cause significant, imminent environmental harm to land, air, or water resources; and

(c) On a random basis of at least one complete inspection each 6 months. A complete inspection is an onsite review of the operator's compliance with all applicable standards in these regulations within the entire area disturbed or affected by mining.

§ 721.12 Right of entry.

(a) Authorized representatives of the Secretary, without advance notice and upon presentation of appropriate credentials and without a search warrant, shall have the right of entry to, upon, or through any surface coal mining and reclamation operations or any premises in which any records required to be maintained are located.

(b) The authorized representatives may at reasonable times, and without delay, have access to and copy any records, and inspect any monitoring equipment or method of operation required under this Act, the regulations or the permit.

§ 721.13 Inspection based on citizen requests.

(a) *Citizen reports.* (1) Any person who believes that there is a violation of the Act, regulations or permit conditions required by the Act or that any imminent danger or harm exists may report this information to the Office of Surface Mining Reclamation and Enforcement. Written reports must be signed and include a phone number where the reporting party can be contacted. Oral reports will be accepted but must be followed by a written and signed statement including the information reported. The complaint or other information shall be considered as having a reasonable basis if it alleges facts which, if proven to be true, would be sufficient to show a violation of the Act, regulations or permit. Unless the Office has reason to believe that the information is incorrect, or determines that even if true it would not constitute a violation, the Office shall conduct an inspection within 15 days of receipt of the complaint. If the complaint alleges an imminent danger or harm, the inspection shall be conducted promptly.

(2) The identity of any person supplying information to the Office relating to possible violations or imminent dangers or harms shall remain confidential with the Office, if requested by the person supplying the information, unless disclosure is required under the Freedom of Information Act (5 U.S.C. § 552) or by other Federal law.

(b) *Right to accompany the authorized representative of the Secretary.* (1) If a Federal inspection is conducted as a result of information provided to the Office, the person who provided the information shall be notified when the inspection is to occur and the person will be allowed to accompany the authorized representative of the Secretary during the inspection.

(2) Any person accompanying an authorized representative of the Secretary has a right of entry to, upon and through the mining and reclamation operations about which he supplied information, only if he is in the presence of and is under the control, direction and supervision of the authorized representative while on the mine property.

(c) *Notification of Results of Investigation.* Within 10 days of the inspection or, if no inspection, within 15 days of the complaint, the Office shall notify the person in writing of the following—

(1) The results of the investigation, including a description of any inspection which occurred and any enforcement action taken; copies of Federal inspection reports, notices of violation, and cessation orders may be forwarded to the person in satisfaction of this requirement.

(2) If no inspection was conducted, an explanation of the reason for not inspecting;

(3) A statement as to the person's right to informal review of the actions or inactions of the Office.

(4) The permittee shall receive copies of all such reports which have not already been given to the permittee, except that the name of the complainant shall be removed.

(d) *Review of action of local offices.* A person who does not agree with the action taken by the Office on their report may request the Regional Director to review the complaint and actions taken. The Regional Director shall advise the person in writing, within 30 days, of the results of the review. Informal review under this subsection shall not affect any rights to formal review or a citizen's suit.

§ 721.14 Failure to give notice and lack of reasonable belief.

No notice of violation or cessation order may be vacated by reason of failure to give notice required by the Act or these regulations prior to the inspection; or by reason of a subsequent determination that prior to the inspection the Office did not have information sufficient to create a reasonable belief that a violation had occurred.

PART 722—ENFORCEMENT PROCEDURES

Sec.

722.1 Scope.
722.11 Imminent hazards.
722.12 Non-imminent hazard violations.
722.13 Failure to abate.
722.14 Service of notice.
722.15 Review at minesite of cessation orders.
722.16 Pattern of violation.
722.17 Inability to comply.

AUTHORITY: Secs. 201, 501, and 502, Pub. L. 95-87, 91 Stat. 445 (30 U.S.C. § 1201).

§ 722.1 Scope.

The regulations of this part set forth general procedures governing issuance of orders of cessation, notices of violation, and orders to show cause under section 521 of the Act.

§ 722.11 Imminent dangers and harms.

(a) If an authorized representative of the Secretary finds conditions or practices, or violations of applicable performance standards, which create an imminent danger to the health or safety of the public, the authorized representative shall immediately order a cessation of surface coal mining and reclamation operations or that portion of the operation relevant to the condition, practice, or violation.

(b) If an authorized representative of the Secretary finds conditions or practices, or violations of applicable performance standards, which are causing or can reasonably be expected to cause significant, imminent environmental harm to land, air, or water resources, the authorized representative shall immediately order a cessation of surface coal mining and reclamation operations or that portion of the operation relevant to the condition, practice or violation.

(c) An authorized representative of the Secretary shall impose affirmative obligations on an operator which the authorized representative deems necessary to abate the condition, practice, or violation if—

(i) a cessation order is issued under paragraph (a) or (b) of this section; and

(ii) the cessation of mining or reclamation activities will not completely abate the imminent danger or harm or eliminate the practices or conditions that contributed to the imminent danger or harm.

(d) When imposing affirmative obligations under this section, the authorized representative of the Secretary shall require abatement of the imminent danger or harm in the most expeditious manner physically possible. The affirmative obligation shall include a time by which abatement shall be accomplished and may include, among other things, the use of existing or additional personnel and equipment.

(e) Reclamation operations not directly the subject of the order or affirmative obligation shall continue during any cessation order.

(f) An authorized representative of the Secretary shall terminate a cessation order issued under paragraph (a) or (b) of this section by written notice when the authorized representative determines that the conditions or practices or violations that contributed to the imminent danger to life or the environment have been eliminated.

§ 722.12 Non-imminent danger or harm.

(a) If an authorized representative of the Secretary finds a violation which is not covered by section 722.11 of this Part, the authorized representative shall issue a notice of violation fixing a reasonable time for abatement.

(b) An authorized representative of the Secretary may extend the time to abate a violation by written notice if the failure to abate within the time set was not caused by the permittee's lack of diligence.

(c) An authorized representative of the Secretary may establish interim steps in an abatement period. If the permittee fails to meet any interim step within the time set, the authorized representative may extend the time set for meeting the interim step, in accordance with this section, or may issue a cessation order pursuant to § 722.13 of this Part.

(d) The total time for abatement as originally fixed and subsequently extended shall not exceed 90 days.

§ 722.13 Failure to abate.

An authorized representative of the Secretary shall order cessation of surface coal mining and reclamation operations, or the portion relevant to the violation, when a notice of violation has been issued under § 722.12 of this Part and the permittee fails to abate the violation within the time originally fixed or subsequently extended. In a cessation order issued under this section, the authorized representative shall impose affirmative obligations to abate the violation in the manner provided in § 722.11 of this Part. Reclamation operations not directly the subject of the order or affirmative obligation shall continue during any cessation order. A cessation order issued under this section shall be terminated as provided in § 722.11 of this Part.

§ 722.14 Service of notice.

Notices and orders issued under this part shall be given to the permittee or his designated agent. If no designated agent is found at the mine site, service will be made upon the person who, based on reasonable inquiry by the authorized representative of the Secretary, appears to be in charge of the mining or reclamation operation. The person receiving service shall be responsible for any immediate compliance actions required by the notice or order. Service is complete on delivery at the mine. However, a copy of each notice or order shall be mailed to the permittee within 48 hours.

§ 722.15 Review at minesite of cessation orders.

(a) Within 30 days after the permittee has received any cessation order issued under this part, a representative of the Office may conduct an informal hearing at the minesite or within such reasonable proximity to the mine that it may be visited during the conduct of the hearing. No hearing will be required where the condition, practice, or violation in question has been abated or the permittee waives the hearing. If no hearing is held because of a waiver, the cessation order shall not expire.

(b) Any request made to the Office for a substantial modification or vacation of a cessation order shall be deemed a request for an informal hearing under this section.

(c) Notice of the time, place and subject matter of the hearing shall be given to the permittee, any citizen who filed a report which led to the cessation order to be reviewed and the State regulatory authority. Notice of the hearing also shall be posted at the appropriate district or field office and at the mine site and, to the extent possible, in a newspaper in the area of the mine.

(d) The requirements of section 554 of Title 5 of the United States Code shall not govern the conduct of the hearings required by this section. The representative of the Office may accept oral or written arguments and any other relevant information from any person attending.

(e) Within 15 days of the close of the informal hearing, the Office shall affirm, modify, or vacate the order. The decision shall be in writing and shall be sent to the permittee, any citizen who filed a report which led to the cessation order reviewed, and the State regulatory authority.

(f) Informal review under this subsection shall not affect the rights of any person to request formal review under

section 525(a)(1) of the Act. A request for informal review under this section of the Act shall not affect the 30-day time period for filing a request for formal review under section 525(a)(1) of the Act.

§ 722.16 Pattern of violations.

(a) The regulations of this section set forth the procedures governing the suspension or revocation of State permits and rights to mine under this Act based on a pattern of violations arising during Federal inspections during the initial regulatory program.

(b) *Definitions.* As used in this section—

(1) *"Violations of the same or related requirements of the Act, regulations or permit conditions"* means noncompliance with any single section of Parts 715, 716 or 717 of this Chapter.

(2) *"Violations of different requirements of the Act, regulations, or permit conditions"* means noncompliance with different sections of Parts 715, 716 or 717 of this Chapter.

(3) *"Unwarranted failure to comply"* means the failure of a permittee to prevent the occurrence of any violation of his permit or any requirement of the Act or these regulations due to indifference, lack of diligence, lack of reasonable care; or the failure to abate any violation of such permit, the Act or regulations due to indifference, lack of diligence, or lack of reasonable care.

(4) *"Willful violation"* means an intentional action or omission which violates the Act, regulations or permit conditions required under the Act.

(5) *"Inspection"* as used in this section means any visit to the mine.

(c) *Order to show cause.* (1) If the Director determines that a pattern of violations of any requirements of the Act, the regulations, or a permit condition imposed under the Act or regulations exists, or has existed, and that such violations are caused by the unwarranted failure of the permittee or were willful violations, the Director shall issue an order to the permittee to show cause why the permit should not be suspended or revoked.

(2) The Director may determine that a pattern of violations exists or has existed, after considering the circumstances, including—

(i) The number of willful violations or violations caused by unwarranted failure to comply with the same or related requirements of the Act, regulations, or permit conditions during two or more Federal inspections;

(ii) The number of willful violations or violations caused by unwarranted failure to comply with different requirements of the Act, regulations, or permit conditions; and

(iii) The extent to which the violations were isolated departures from lawful conduct.

(3) Violations of the same or related requirements of the Act, regulations, or permit conditions required by the Act during three or more Federal inspections within any 12-month period which were either caused by the unwarranted failure of the permittee to comply with the Act, the regulations or permit conditions required by the Act, or were willful violations, shall constitute a pattern of violations. A show cause order shall issue unless the Director finds that it would not further enforcement of the performance standards of the Act.

(d) *Suspension or revocation of permit.* (1) The order to show cause shall be issued and a public hearing, if requested, shall be conducted under the procedures of 43 CFR Part 4.

(2) If the Secretary finds that a pattern of violations exists or has existed, the permit and right to mine under this Act shall be either suspended or revoked and the permittee directed to complete necessary corrective measures and reclamation operations.

§ 722.17 Inability to comply.

(a) Neither a notice of violation nor a cessation order issued under this part may be vacated because of inability to comply.

(b) A permittee may not be deemed to have shown good cause for not suspending or revoking a permit by showing inability to comply.

(c) Unless caused by lack of diligence, inability to comply may be considered in mitigation of the amount of a civil penalty under Part 723 of this chapter and of the duration of the suspension of the permit under section 722.16 of this Part.

PART 723—CIVIL PENALTIES

Sec.

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723.19 Availability of records.

AUTHORITY: Secs. 201, 501 and 502, Pub. L. 95-87, 91 Stat. 445 (30 U.S.C. 1201).

§ 723.1 Scope.

This Part covers the assessment of civil penalties under section 518 of the Act for violations of a permit condition, any provision of Title V of the Act, or any implementing regulations. This Part governs when a civil penalty is assessed, how the amount is determined and sets forth applicable procedures. This Part applies to cessation orders and notices of violation issued under Part 722 of this chapter during a Federal inspection.

§ 723.2 Objective.

Civil penalties are assessed under section 518 of the Act to deter violations of the Act and to insure the maximum compliance with the Act on the part of the coal mining industry.

§ 723.11 When assessment made.

(a) The Office will review each notice of violation and cessation order in accordance with the assessment procedures described in this part to determine whether a civil penalty will be assessed, the amount of the penalty, and whether each day of a continuing violation will be deemed a separate violation for purposes of the total penalty assessed.

(b) The Office shall assess a civil penalty for each violation contained in a cessation order.

(c) In determining whether to assess a civil penalty for a violation not covered by subsection (b) above, the Office shall consider—

(1) The permittee's history of previous violations at the particular coal mining operation;

(2) The seriousness of the violation.

(3) Whether the permittee is negligent; and

(4) The demonstrated good faith of the permittee in attempting to achieve rapid compliance after notification of the violation. The Office shall make this determination by use of a point system described in section 723.12 of this Part.

§ 723.12 Whether to assess after a notice of violation.

(a) *General.* The Office shall determine whether to assess a penalty following the issuance of a notice of violation by a point system that takes into account the four criteria in section 723.11(c) of this Part. Points are assigned based on each of the four criteria. If the total is more than 30 points, a penalty shall be assessed.

(b) *History of previous violations.* The Office shall assign one point for each past violation, and five points for each past cessation order issued as a result of a violation at the particular coal mining operation, up to a maximum of 30 points. Each violation which underlies a cessation order shall be counted separately from the cessation order itself. For purposes of history of previous violations, all violations and cessation orders issued within one year preceding the violation under consideration shall be counted unless—

(1) The violation or cessation order is the subject of pending administrative or judicial review or;

(2) The violation or cessation order has been vacated because of a determination that the violation did not occur. In the event that administrative or judicial review is sought, the period of time during which the contested notice or order was under review shall not be counted in computing the 1-year period preceding the notice or order. The Office shall count each violation without regard to whether it led to a civil penalty assessment.

(c) *Seriousness.* The Office shall assign up to 30 points based on the seriousness of the violation according to the following schedules:

(1) *Probability of occurrence.* The probability of the occurrence of the event which a violated standard is designed

to prevent may account for a maximum of 15 penalty points. (An example of the concept of the phrase "the event which a violated standard is designed to prevent" is as follows: Mishandling of topsoil is a violation of the topsoil standard in section 715.16 of this chapter; however, delay or failure in revegetation and resulting environmental harm are the events which the topsoil standard in section 715.16 of this chapter is designed to prevent.) The Office shall use the following definitions and schedules—

Probability of Occurrence:	Points
None or insignificant	0–5
Unlikely	5–10
Likely	10–15
Occurred	15

(2) *Extent of potential or actual damage.* The extent of the potential or actual damage in terms of area and impact on the public or environment may account for a maximum of 15 penalty points based on the following—

(i) If the damage or impact which the violated standard is designed to prevent would remain within the permit area (or in the case of a deep mine, the area of surface structures), the Office shall assign zero to seven points depending on the duration and extent of the damage or impact.

(ii) If the damage or impact against which the violated standard is designed to prevent would extend outside the permit area (or in the case of a deep mine, the area of surface structures), the Office shall assign eight to fifteen points depending on the duration and extent of the damage or impact.

(3) In the case of a violation of a requirement of the Act, the regulations, or a permit to keep records, give notice, or conduct any measuring or monitoring, the Office may, as an alternative to the use of subsections (1) and (2) above, assign up to 15 points for seriousness based upon the extent to which enforcement is obstructed by the violation.

(d) *Negligence.* (1) The Office shall assign up to 25 points based on the degree of fault of the permittee, either through act or omission, in causing or failing to correct the condition or practice which is a violation. A violation which occurs through no negligence shall not be assigned penalty points for negligence. A violation which is caused by negligence shall be assigned 12 points or less depending on the degree of negligence. A violation which occurs through a greater degree of fault than negligence shall be assigned 13 through 25 penalty points depending on the degree of fault.

(2) In determining the degree of negligence involved in a violation and the number of penalty points to be assigned, the following definitions apply—

(i) *No negligence* means an inadvertent violation of the Act, regulations or permit conditions which was unavoidable by the exercise of reasonable care.

(ii) *Negligence* means the failure of a permittee to prevent the occurrence of any violation of his permit or any requirement of the Act or the regulations due to indifference, lack of diligence, or lack of reasonable care, or the failure to correct any violation of such permit or the Act or the regulations due to indifference, lack of diligence or lack of reasonable care.

(iii) Examples of greater degree of fault than negligence are reckless, knowing or intentional conduct.

(3) In calculating points to be assigned for negligence, the actions of all persons working on the mine site shall be attributed to the permittee or operator.

(e) *Good faith in attempting to achieve compliance.* (1) The Office shall subtract or add points based on the degree of good faith of the permittee in attempting to achieve rapid compliance after notification of the violation. The points shall be assigned according to the following schedule—

Degree of Good Faith:	Points
Rapid	−10
Normal	0
Lack of good faith	10

(2) In determining the permittee's degree of good faith in attempting to achieve rapid compliance, the following definitions apply—

(i) *Rapid compliance* means that the permittee took extraordinary measures to abate the violation in the shortest possible time and that abatement was achieved before the time set for abatement.

(ii) *Normal compliance* means the permittee abated the violation within the time given for abatement.

(iii) *Lack of good faith* means the permittee did not show diligence in attempting to abate the violation and the violation was not timely abated.

(3) If the consideration of this criteria is impractical because of the length of the abatement period, the assessment may be made without considering this criteria. Any such assessment may be reconsidered upon the permittee's request after abatement is completed.

§ 723.13 Determination of amount of penalty.

The Office shall determine the amount of any civil penalty by converting the total number of points assigned under section 723.12 of this section to a dollar amount according to the following schedule:

1—20.	24—480.
2—40.	25—500.
3—60.	26—600.
4—80.	27—700.
5—100.	28—800.
6—120.	29—900.
7—140.	30—1,000.
8—160.	31—1,100.
9—180.	32—1,200.
10—200.	33—1,300.
11—220.	34—1,400.
12—240.	35—1,500.
13—260.	36—1,600.
14—280.	37—1,700.
15—300.	38—1,800.
16—320.	39—1,900.
17—340.	40—2,000.
18—360.	41—2,100.
19—380.	42—2,200.
20—400.	43—2,300.
21—420.	44—2,400.
22—440.	45—2,500.
23—460.	46—2,600.
47—2,700.	59—3,900.
48—2,800.	60—4,000.
49—2,900.	61—4,100.
50—3,000.	62—4,200.
51—3,100.	63—4,300.
52—3,200.	64—4,400.
53—3,300.	65—4,500.
54—3,400.	66—4,600.
55—3,500.	67—4,700.
56—3,600.	68—4,800.
57—3,700.	69—4,900.
58—3,800.	70 and above 5,000.

§ 723.14 Assessment of separate violations for each day.

(a) If a cessation order is issued for failure to abate a violation within the time set in a prior notice of violation the Office shall assess separately each day the violation underlying the cessation order remains unabated following expiration of the abatement period in the notice of violation. The daily penalty shall be the amount assessed for the violation or $750.00, whichever is greater. The daily assessment of a penalty shall not be made for any period that the obligation to abate is suspended.

(b) The Office may assess separately each day of any continuing violation. In making this determination, the Office may consider the factors listed in section 723.11 of this Part and any economic benefit to the permittee which resulted from a failure to comply.

(c) The Office shall separately assess a minimum of 2 days for any continuing violation which is assigned more than 70 points under section 723.12 of this Part.

§ 723.15 Waiver of use of formula to determine civil penalty.

The Director, upon his own initiative or upon written request received within the time set in section 723.16(a) of this part, may elect to waive in whole or in part the use of the formula contained in this part in determining the civil penalty for violation of the Act, if he determines that a waiver will further abatement of violations of the Act. A grant or denial of waiver may be reversed by the Office of Hearings and Appeals, if such grant or denial is determined to be an abuse of discretion.

§ 723.16 Procedures for assessment of civil penalties.

(a) Within 10 days of service of a notice or order, the permittee may submit information in writing pertaining to the violation involved to the Assessment Office and to the inspector who issued the notice or order. The Office shall consider any information so submitted in determining the facts surrounding the violation and the amount of the penalty.

(b) The Office shall serve the permittee by certified mail, return receipt requested, within 30 days of the issuance of the notice or order, with a copy of the proposed assessment and of the worksheets showing the computation.

§ 723.17 Procedure for conference.

(a) If a written request from the permittee is received within 15 days from receipt of a proposed assessment, the Office shall arrange for a conference to review the assessment. The permittee may submit additional material for con-

sideration during the conference. The Office may contact the permittee to discuss the assessment prior to the conference if necessary to expedite the review.

(b) The Office shall consider all relevant information on the violation in question presented by the permittee and may recalculate either up or down or vacate the proposed penalty. No information as to which the permittee claims confidentiality shall be considered as a basis for reduction of a proposed assessment. When new facts warrant the imposition of a higher penalty, it shall be proposed in the manner provided in § 723.15 of this Part. Every change in a proposed assessment shall be fully documented in the file including a written explanation of the reason the penalty has changed.

(c) Notice of the time and place of the conference shall be posted at the Office of Surface Mining Reclamation and Enforcement field office with jurisdiction over the mine at least 5 days prior to the conference. Any person shall have a right to attend the conference and participate.

(d) If the issues are resolved, the agreement shall be in writing and signed by the party assessed and the representative of the Office. If payment is not received within 30 days, the office may—

(1) Enter the agreed upon amount as a final order of the Secretary; or

(2) Rescind the agreement and reinstate the original proposed assessment.

(e) A reduction of a proposed civil penalty assessment of more than 25 percent and more than $500 agreed to during a conference shall be approved by the Director or his designee before it is final and binding on the Secretary.

§ 723.18 Request for hearing.

(a) Within 30 days from receipt of the proposed assessment, the permittee may request a hearing before the Office of Hearings and Appeals by filing a petition and tendering full payment of the proposed assessment to be held in escrow.

(b) The timely filing of a request for a conference under § 723.17 of this Part suspends the running of the 30-day period for requesting a hearing. The suspension shall continue until the completion of the conference, which shall be held within 60 days from the date of the request for the conference. The permittee shall have 15 days after completion of the conference or after any disapproval by the Director or his designee under § 723.17(e), whichever occurs later, to request a public hearing.

(c) The Office of Hearings and Appeals conducts the hearings and issues orders or otherwise terminates the petition pursuant to its procedures in 43 CFR Part 4. The Office of Hearings and Appeals may determine whether a violation occurred. When determining the amount of the penalty, the Office of Hearings and Appeals shall use the point system and conversion table contained in this Part, except in cases in which the Office has waived the use of the point system and conversion table pursuant to section § 723.15 of this part.

§ 723.19 Availability of records.

All records and files created or used in the assessment process under this Part shall be available for public inspection.

PART 725—REIMBURSEMENTS TO STATES

Sec.

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AUTHORITY: Secs. 201, 501, and 502, Pub. L. 95-87, 91 Stat. 445 (30 U.S.C. 1201).

§ 725.1 Scope.

This part sets forth policies and procedures for reimbursements to States for costs of enforcing the initial performance standards set forth in this chapter.

§ 725.2 Objectives.

The objectives of assistance under this part are:

(a) To assist the States in meeting the increased costs of administering the initial performance standards.

(b) To encourage the States to build strong reclamation and enforcement programs.

§ 725.3 Authority.

Section 502(e)(4) of the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201) authorizes the Secretary to reimburse States for costs of enforcing the performance standards of the initial regulatory program.

§ 725.4 Responsibility.

(a) The Director shall administer the grant program for reimbursements to States for costs of enforcing performance standards during the initial regulatory program.

(b) The Regional Director of each of the Office regions shall receive, review, and approve grant applications under this part.

§ 725.5 Definitions.

As used in this Part, the following terms have the specified meanings:

Agency means the State agency designated by the Governor to receive and administer grants under this part.

Base program means the State program to regulate surface coal mining prior to August 3, 1977.

§ 725.11 Eligibility.

(a) *Assumption of responsibility.* To be eligible for a grant for reimbursements for the cost of enforcing performance standards during the initial regulatory program the State shall assume responsibility for enforcement of the initial regulatory program including the specific responsibilities identified under parts 710.4(b) and 720 of this chapter.

(b) *Designation of state agency.* In order to receive a grant for reimbursements for costs of enforcing performance standards during the initial regulatory program, the Governor of a State shall designate in writing one agency to submit grant applications, receive and administer grants under this part.

(c) *Periods covered by reimbursement grants.* An agency may apply for a reimbursement grant for any period during the initial regulatory program and for a reasonable start-up period beginning no earlier than August 3, 1977.

§ 725.12 Coverage of grants.

An agency may use grant money under this part to cover costs in excess of the base program for administering and enforcing the initial regulatory program. The Regional Director shall determine the base program from the State fiscal year budget in effect on August 3, 1977. Costs of the following items are eligible for reimbursement—

(a) Incorporation of the initial performance standards of this chapter in new permits issued by the State.

(b) Modification of existing permits to include the initial performance standards of this chapter.

(c) Additional inspections required to enforce the initial performance standards of this chapter.

(d) Inspections which are more detailed than inspections before the initial regulatory program.

(e) Responses to complaints related to the initial performance standards of this chapter.

(f) Enforcement actions required to secure compliance with the initial performance standards of this chapter.

(g) Additional administrative activities and supporting costs related to hiring additional inspectors and other personnel, revising permits, conducting inspections, preparing, copying and submitting reports required by part 720, and submitting applications for reimbursement grants under this part.

(h) Additional equipment required for inspection or support of inspections, as follows:

(1) An agency may charge any required item of equipment to the grant on a use basis in accordance with the principles set forth in Federal Management Circular 74-4, "Cost principles applicable to grants and contracts with State and local governments" (34 CFR 255).

(2) An agency may purchase equipment, excluding aircraft, with grant funds where cost recovery through use charges is prohibited, made impractical or more costly than purchase by existing State laws or procedures.

§ 725.13 Amount of grants.

The Office shall pay up to 100 percent of the costs to the agency in excess of the base program for administering and

enforcing the performance standards during the initial regulatory program.

§ 725.14 Grant periods.

The Regional Director shall approve a grant for a period of 1 year or less. The Regional Director shall fund a program that extends over more than 1 year by consecutive annual grants.

§ 725.15 Grant application procedures.

(a) The agency may submit its application (3 copies) for a grant to the Regional Director no later than March 1, 1978, for the first year and no later than September 1 of 1978 and each year thereafter.

(b) The agency shall use the short form application for nonconstruction programs and other procedures specified by Office of Management and Budget Circular No. A–102, "Uniform administrative requirements for grants-in-aid to State and local governments" (42 FR 45828). No preapplication is required.

(c) The agency shall include in Part III of the standard application sufficient information to enable the Regional Director to determine the agency's base program and increases over the base program eligible for reimbursement grants. The agency shall include the following information, plus any other relevant data:

(1) A summary of the State permit, inspection and enforcement program prior to the addition of the requirements of the Act of 1977, including—

(i) Permit requirements and the system for issuing permits;

(ii) Mining and reclamation plan requirements;

(iii) Coverage and frequency of inspections;

(iv) Actions required to enforce mining and reclamation requirements;

(v) The number and nature of responses to complaints; and

(vi) Other regulatory activities and related administrative functions affected by the performance standards of the initial regulatory program of this chapter.

(2) A statement of the number of employees and annual budget required to carry out functions described in paragraph (c) (1) of this section.

(3) A copy of all State constitutional, statutory and regulatory provisions applicable to the enforcement and administration of the initial regulatory program.

(4) An opinion of the State's chief legal officer as to whether and to what extent the State is authorized to enforce and administer the initial regulatory program.

(5) A statement of the additional work required to enforce the initial regulatory program for each of the agency activities described in paragraph (c) (1) of this section.

(6) The additional staff and funds required for the increased workload described in paragraph (c) (5) of this section.

(7) The number and types of major equipment (equipment with a unit acquisition cost of $1000 or more) which the State plans to purchase with grant funds.

(d) The Regional Director may waive the resubmission of information required by paragraphs (c) (2), (c) (3) and (c) (4) of this section in applications for a second or third reimbursement grant.

(e) The Regional Director shall notify the agency within thirty days after the receipt of a complete application, or as soon thereafter as possible, whether it is or is not approved. If the application is not approved, the Regional Director shall set forth in writing the reasons it is not approved, and may propose modifications if appropriate. The agency may resubmit the application within thirty days. The Regional Director shall process the revised application as an original application.

§ 725.16 Grant agreement.

(a) If a Regional Director approves an agency's grant application, the Regional Director shall prepare a grant agreement which includes—

(1) The approved scope of the program to be covered by the grant, including functions to be accomplished by other agencies.

(2) The base program budget and estimated costs in excess of the base program.

(3) The amount of the grant.

(4) Commencement and completion dates for the segment of the program covered by this grant and for major phases of the program to be completed during the grant period.

(5) Permissible transfers of funds to other State agencies.

(b) The Regional Director shall limit grants under this part to the additional costs to an agency for administering and enforcing the initial regulatory program.

(c) The Regional Director may permit the agency to assign functions and funds to other State agencies. The Regional Director shall require the grantee agency to retain responsibility for overall administration of the grant, including use of funds, accomplishment of functions and reporting.

(d) Except as may be provided by the grant agreement, costs may not be incurred prior to the execution of the agreement.

(e) The Regional Director shall transmit four copies of the grant agreement, by certified mail, return receipt requested, to the agency for signature. The agency shall execute the grant agreement and return all copies within 3 calendar weeks after receipt, or within an extension of such time that may be granted by the Regional Director.

(f) The Regional Director shall sign the grant agreement upon its return from the agency and return one copy to the agency. The grant is effective and constitutes an obligation of Federal funds in the amount and for the purposes stated in the grant agreement at the time the Regional Director signs the agreement.

(g) Neither the approval of a program nor the award of any grant will commit or obligate the United States to award any continuation grant or to enter into any grant amendment, including grant increases to cover cost overruns.

§ 725.17 Grant amendments.

(a) A grant amendment is a written alteration to the grant amount, grant terms or conditions, budget or period, or other administrative, technical, or financial agreement whether accomplished on the initiative of the agency or the Regional Director or by mutual action of the agency and the Regional Director.

(b) The agency shall promptly notify the Regional Director in writing by certified mail, return receipt requested, of events or proposed changes which may require a grant amendment, such as—

(1) Rebudgeting;

(2) Changes which may affect the approved scope or objective of a program; or

(3) Changes which may increase or substantially decrease the total cost of a program.

(c) The Regional Director shall approve or disapprove each proposed amendment within thirty days of receipt, or as soon thereafter as possible, and shall notify the agency in writing of the approval or disapproval of the amendment.

(d) The grant amendment establishes the effective date of the action. If no date is specified in the grant amendment then the date the Regional Director signs the amendment will be the effective date of the action.

§ 725.18 Grant reduction and termination.

(a) *Conditions for reduction or termination.* (1) If an agency fails to carry out its responsibilities pursuant to § 710.4 (b) and part 720 of this chapter the Regional Director shall reduce or terminate the grant. (2) If an agency violates the terms of a grant agreement, the Regional Director may reduce or terminate the grant. (3) If an agency fails to enforce the initial performance standards of this chapter the Regional Director may reduce or terminate the grant. (4) If an agency is not in compliance with the following nondiscrimination provisions, the Regional Director shall terminate the grant—

(i) Title VI of the Civil Rights Act of 1964 (78 Stat. 252), Nondiscrimination in Federally Assisted Programs, which provides that no person in the United States shall on the grounds of race, color or national origin be excluded from participation in, be denied the benefits of or be subjected to discrimination under any program or activity receiving Federal financial assistance, and the implementing regulations at 43 CFR 17.

(ii) Executive Order 11246, as amended by Executive Order 11375, Equal Employment Opportunity, requiring that employees or applicants for employment not be discriminated against because of race, creed, color, sex or national origin,

and the implementing regulations at 41 CFR 60.

(iii) Section 504 of the Rehabilitation Act of 1973, as amended by Executive Order 11914, Nondiscrimination With Respect to the Handicapped in Federally Assisted Programs.

(5) If an agency fails to enforce the financial interest provisions of part 705 of this chapter the Director shall terminate the grant.

(6) If an agency fails to submit reports required by this part or Parts 705 and 720 of this chapter the Director shall reduce or terminate the grant.

(b) *Grant reduction and termination procedures.* (1) The Regional Director shall give at least ten days written notice to the agency by certified mail, return receipt requested, of intent to reduce or terminate a grant. The Regional Director shall include in the notice the reasons for the proposed action and the proposed effective date of the action.

(2) The Regional Director shall afford the agency opportunity for consultation and remedial action prior to reducing or terminating a grant.

(3) The Regional Director shall notify the agency of the termination or reduction of the grant in writing by certified mail, return receipt requested.

(4) Upon termination the agency shall refund or credit to the United States that portion of the grant money paid or owed to the agency and allocated to the terminated portion of the grant. However any portion of the grant that is required to meet commitments made prior to the effective date of termination shall be retained by the agency.

(5) Upon termination, the agency shall reduce the amount of outstanding commitments insofar as possible and report to the Regional Director the uncommitted balance of funds awarded under the grant.

(6) Upon notification of intent to terminate, the agency shall not make any new commitments without the approval of the Regional Director.

(7) The Regional Director may allow termination costs as determined by applicable Federal cost principles listed in Federal Management Circular 74–4.

(c) *Appeals.* (1) An Agency may appeal the Regional Director's decision to reduce or terminate a grant to the Director within 30 days of the Regional Director's decision.

(2) An Agency shall include in an appeal—

(i) The decision being appealed, and

(ii) The facts which the Agency believes justify a reversal or modification of the decision.

(3) The Director shall act on appeals within 30 days of their receipt, or as soon thereafter as possible.

§ 725.19 Audit.

The Office of Audit and Investigations, U.S. Department of the Interior is responsible for audits of reimbursement grants and will arrange for audits as appropriate.

§ 725.20 Administrative procedures.

The Agency shall follow administrative procedures governing accounting, payment, property, and related requirements contained in Office of Management and Budget Circular No. A–102.

§ 725.21 Allowable costs.

(a) The Regional Director shall determine costs which may be reimbursed according to Federal Management Circular 74–4.

(b) Costs must be in conformity with any limitations, conditions, or exclusions set forth in the grant agreement or this part.

(c) Costs must be allocated to the grant to the extent of benefit properly attributable to the period covered by the grant.

(d) Costs must not be allocated to or included as a cost of any other Federally assisted program.

§ 725.22 Financial management.

(a) The agency shall account for grant funds in accordance with the requirements of Office of Management and Budget Circular A–102. An agency shall use generally accepted accounting principles and practices, consistently applied. Accounting for grant funds must be accurate and current.

(b) The agency shall adequately safeguard all funds, property, and other assets and shall assure that they are used solely for authorized purposes.

(c) The agency shall provide a comparison of actual amounts spent with budgeted amounts for each grant.

(d) When advances are made by a letter-of-credit method, the agency shall make drawdowns from the U.S. Treasury through its commercial bank as closely as possible to the time of making the disbursements.

(e) The agency shall support accounting records by source documentation.

(f) The agency shall design a systematic method to assure timely and appropriate resolution of audit findings and recommendations.

§ 725.23 Reports.

(a) The agency shall, for each grant made under this part, submit annually to the Regional Director a Financial Status Report in accordance with Office of Management and Budget Circular A–102, Attachment H. This report shall be accompanied by a performance report prepared according to Attachment I of OMB Circular A–102.

(b) The Regional Director shall require through the grant agreement that annual reports also provide the relation of financial information to performance and productivity data, including unit cost information.

§ 725.24 Records.

(a) The agency shall maintain complete records in accordance with Office of Management and Budget Circular No. A–102. This includes books, records, documents, maps, and other evidence and accounting procedures and practices, sufficient to reflect properly—

(1) The amount, receipt, and disposition by the agency of all assistance received for the program.

(2) The total costs of the program, including all direct and indirect costs of whatever nature incurred for the performance of the program for which the grant has been awarded.

(b) Subgrantees and contractors, including contractors for professional services, shall maintain books, documents, papers, maps, and records which are pertinent to a specific grant award.

(c) The agency's records and the records of its subgrantees and contractors, including professional services contracts, shall be subject at all reasonable times to inspection, reproduction, copying, and audit by the Office, the Department of the Interior, the Comptroller General of the United States, the Department of Labor, or any authorized representative.

(d) For completed or terminated grants, the agency, subgrantees and contractors shall preserve and make their records available to the Office, the Department of the Interior, the Comptroller General of the United States, Department of Labor, or any authorized representative pursuant to OMB Circular A–102.

§ 725.25 Disclosure of information.

All grant applications received by the Regional Director constitute agency records. As such, their release may be requested by any member of the public under the Freedom of Information Act (5 U.S.C. 552), and shall be disclosed unless exempt from disclosure under 5 U.S.C. 552(b).

PART 740—GRANTS FOR PROGRAM DEVELOPMENT AND ADMINISTRATION AND ENFORCEMENT

Sec.

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AUTHORITY: Secs. 201, 501, and 502, Pub. L. 95–87, 91 Stat. 445 (30 U.S.C. 1201).

§ 740.1 Scope.

This part sets forth policies and procedures for grants to States to—

(a) Develop State programs for the regulation and control of surface coal mining and reclamation operations;

(b) Administer and enforce State programs for the regulation and control of surface coal mining and reclamation operations; and

(c) Administer cooperative agreements for State regulation of surface coal mining and reclamation operations on Federal lands.

§ 740.2 Objectives.

The objectives of assistance under this part are—

(a) To assist the States in meeting the costs of administering reclamation and enforcement programs consistent with the Act;

(b) To encourage the States to build strong reclamation and enforcement programs; and

(c) To encourage the States to assume jurisdiction over the regulation of surface coal mining and reclamation operations.

§ 740.3 Authority.

Section 705 of the Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201) authorizes the Secretary to make grants to States for developing, administering, and enforcing State regulatory programs.

§ 740.4 Responsibility.

(a) The Director shall administer the State grant program for the development, administration, and enforcement of State programs under this part.

(b) The Regional Director of each of the Office regions shall receive, review, and approve grant applications under this part.

§ 740.5 Definitions.

As used in this part, agency means the State agency designated by the Governor to receive and administer grants under this part.

§ 740.11 Eligibility for program development grants.

(a) *Designation of State agency.* In order to receive a program development grant the Governor of a State shall designate in writing to the Director one agency to submit the grant applications, and to receive and administer the grants.

(b) *Periods covered by program development grants.* (1) An agency may apply for a program development grant for any period for which it does not have an approved State program. This is limited to periods during—

(i) The initial development of a State program;

(ii) The revision of a State program which has been disapproved by the Secretary; and

(iii) The revision of a State program from which the Secretary has withdrawn his approval.

(2) The Director shall limit grants for (b)(1) (ii) and (iii) of this paragraph to the costs of making revisions necessary to secure approval of the State programs.

(3) The Director shall not approve grants for costs incurred prior to August 3, 1977.

(c) *Limits on duration of grants.* (1) The Regional Director shall limit a State's program development grants to a maximum period of 18 months unless at least one of the following conditions exists—

(i) The 18-month period is insufficient because new legislation is required.

(ii) The State requests extension of the grant period, for a reason found appropriate by the Regional Director.

(2) If one of the two conditions in this paragraph exists, the Director may extend the grant period to a maximum of 24 months.

§ 740.12 Eligibility for administration and enforcement grants.

(a) *Approved program required.* In order to receive a grant to administer and enforce a State program, the State must have an approved State regulatory program.

(b) *Designation of a State agency.* In order to receive a grant to administer and enforce a State program, the Governor must designate a single agency to receive and administer administration and enforcement grants, including cooperative agreement grants described in section 740.16 of this part.

(c) *Nondiscrimination.* The agency shall monitor the compliance activity of its subrecipients with respect to the nondiscrimination provisions in section 740.21(a)(4) of this part.

§ 740.13 Submission of estimated annual budgets and allocation of funds.

(a) *Program development grants.* As early as possible prior to the Federal fiscal year in which the program development grant will be requested an agency shall submit to the Regional Director a summary of its program development budget. The Director will use these budget summaries in preparing the Federal budget estimates which he is required to submit.

(b) *Administration and enforcement grants.* (1) For the fiscal years beginning on and after October 1, 1980, the agency shall submit to the Regional Director 18 months prior to the Federal fiscal year for which the grant will be requested, a projection of its regulatory program budget, including the costs of administering State-Federal cooperative agreements pursuant to § 211.75 of this title, and any aircraft which the agency proposes to acquire.

(2) For the fiscal year beginning October 1, 1979, and each year thereafter, the agency shall submit to the Regional Director a current regulatory program budget 3 months prior to the beginning of the Federal fiscal year for which a grant will be requested.

(c) *Allocation of funds.* (1) The Director shall allocate to the agencies the full amount requested and approved in the States' revised or actual budgets provided that the amount available in the Federal budget is sufficient.

(2) If the funds available to the Director for grants are insufficient to cover the total grant needs, including cooperative agreement grants, the Director shall allocate the funds available according to the proportion of each agency's budget to the total of all agencies' budgets.

(3) Allocation of a specific amount of funds to an agency does not assure that grants for that amount will be approved. Each agency must apply for and secure approval of grants in accordance with the requirements of this part.

(4) On July 1 of each year the Director shall reallocate any funds which are not requested by agencies as of June 1 of that year. Such funds shall be allocated only to those agencies which have received less than the allowable percentage of their eligible costs.

(5) Agencies which are allocated additional funds on July 1 may have until August 15 to submit new or revised grant applications for the additional amounts.

§ 740.14 Coverage of grants.

(a) *Program development grants.* An agency may use grant money under this part to cover the costs of developing—

(1) New or revised State laws, regulations, and procedures;

(2) Revised or expanded inspection systems;

(3) Training programs for inspectors and other personnel;

(4) New or revised organizational structures;

(5) Information and communications systems, including data processing systems;

(6) A planning process including a data base and information system to receive and act upon petitions to designate lands unsuitable for mining;

(7) An application for the initial administration and enforcement grant to the extent not covered by indirect costs or other cost items;

(8) Other components necessary to obtain an approved State program, as mutually agreed upon by the Regional Director and the agency receiving a grant.

(b) *Administration and enforcement grants.* An agency may use grant money under this part to cover the costs of—

(1) Administering an approved State regulatory program;

(2) Providing supporting and administrative services required by the State regulatory program;

(3) Providing equipment required for the regulatory program and its support, either through use charges or direct purchase. Equipment charges and purchases will be allowed in accordance with Federal Management Circular 74-4, "Cost principles applicable to grants and contracts with State and local governments," (34 CFR 255) and Office of Management and Budget Circular No. A-102, "Uniform administrative requirements for grants-in-aid to State and local governments" (42 FR 45828).

§ 740.15 Amount of grants.

(a) *Amount of program development grants.* (1) For the first year of a program development grant the Regional Director shall approve grants for not more than 80 percent of the total of agreed upon costs pursuant to Section 740.14(a).

(2) For the second year of a program development grant the Regional Director

shall approve grants for not more than 60 percent of the total agreed upon costs pursuant to Section 740.14(a).

(b) *Amount of administration and enforcement grants.* (1) If no program development grant has been awarded, the Regional Director may approve the first administration and enforcement grant for not more than 80 percent of the agreed upon costs for administration and enforcement of the program.

(2) If a program development grant has been awarded for only one year, the Regional Director may approve an administration and enforcement grant for 60 percent of the agreed upon costs for administration and enforcement of the program.

(3) If a program development grant has been awarded for more than 1 year but less than 2 years, the Regional Director may approve the first administration and enforcement grant for 60 percent for that proportion remaining in the second year and for 50 percent for the proportion allocated to the third year.

(4) For the third and following years, the Regional Director may approve administration and enforcement grants for 50 percent of the agreed upon costs for administration and enforcement of the program.

§ 740.16 Special provisions for states with cooperative agreements.

(a) *Eligibility.* The Director may approve additional grants to States which have cooperative agreements pursuant to section 211.75 of this title for State regulation of surface coal mining and reclamation operations on Federal lands. This includes—

(1) States which had cooperative agreements on August 3, 1977, which have been modified to comply with the initial regulatory program; and

(2) States which enter into cooperative agreements following approval of the State's regulatory program.

(b) *Coverage of grants.* An agency may use cooperative agreements grants to carry out the functions assigned to the State under the agreement.

(c) *Amount of grants.* The Regional Director may approve grants for the approximate amount which he determines the Federal Government would have expended for regulation of coal mining on the Federal lands being regulated by the State, except that no grant may exceed the actual costs to the State.

(d) *Grant periods.* The Regional Director shall approve a grant for a period of 1 year or less. The Regional Director shall fund a program that extends over more than 1 year by consecutive annual grants.

(e) *Application procedures.* (1) States with cooperative agreements in effect on August 3, 1977, may apply for cooperative agreement grants using the procedures set forth in section 740.18 (a), (b) and (d).

(2) States with cooperative agreements established in conjunction with approved State regulatory programs may apply for cooperative agreement grants by including a supplement to an annual administration and enforcement grant application submitted according to section 740.18. The State shall include in the supplemental section:

(i) A separate Part II for the costs of the cooperative agreement; and

(ii) A separate Part III describing the specific activities required by the cooperative agreement for the period for which the grant is requested.

(f) *Other requirements.* The procedures and requirements set forth in sections 740.17 through 740.26 are applicable to cooperative agreement grants.

§ 740.17 Grant periods.

The Regional Director shall approve a grant for a period of 1 year or less. The Regional Director shall fund a program that extends over more than 1 year by consecutive annual grants.

§ 740.18 Grant application procedures.

(a) The agency may submit its application (3 copies) to the Regional Director for a grant as soon as it is notified by the Regional Director that funds are available, but not later than May 31 of each calendar year.

(b) The agency shall use the short form application for nonconstruction programs and other procedures specified by Office of Management and Budget Circular No. A–102. No preapplication is required.

(c) For program development grant applications, agencies shall include in Part III of the standard application—

(1) An analysis and evaluation of the current State laws and changes required therein to conform to the requirements of the Surface Mining Control and Reclamation Act of 1977, unless previously submitted under Part 725;

(2) A description of the changes expected to be required in State regulations, organization, staffing, training and other policies and operations in order to develop a State program which can be approved; and

(3) A program to develop the legislation, regulations, procedures, organization, staffing, training materials, and other program elements necessary to obtain program approval.

(d) For administration and enforcement grants and cooperative agreement grants, agencies shall include in Part III of the standard application:

(i) A description of the specific operations in the approved program which will be implemented during the period for which the grant is requested.

(ii) A description and justification of any major equipment (equipment which has a unit acquisition cost of $1,000 or more) which the agency proposes to acquire with the grant.

(e) The Regional Director shall notify the agency within thirty days after the receipt of a complete application, or as soon thereafter as possible, whether it is or is not approved. If the application is not approved, the Regional Director shall set forth in writing the reasons for disapproval, and may propose modifications if appropriate. The agency may resubmit the application within thirty days. The Regional Director shall process the revised application as an original application.

§ 740.19 Grant agreement.

(a) If the Regional Director approves an agency's grant application, the Regional Director shall prepare a grant agreement which includes—

(1) The approved scope of the program to be covered by the grant;

(2) The approved budget, including the Federal share;

(3) Commencement and completion dates for the segment of the program covered by the grant and for major phases of the program to be completed during the grant period; and

(4) Permissible transfers of funds to other State agencies.

(b) The Regional Director may permit an agency to assign functions and funds to other State agencies. The Regional Director shall require the grantee agency to retain responsibility for overall administration of the grant, including use of funds, accomplishment of functions and reporting.

(c) Pre-agreement costs for program development grants shall be allowed only as specified in the grant agreement.

(d) The Regional Director shall transmit four copies of the grant agreement by certified mail, return receipt requested, to the agency for signature. The agency shall execute the grant agreement and return all copies of it within 3 calendar weeks after receipt, or within an extension of such time that may be granted by the Regional Director.

(e) The Regional Director shall sign the grant agreement upon its return from the agency and return one copy to the agency. The grant is effective and constitutes an obligation of Federal funds in the amount and for the purposes stated in the grant agreement at the time the Regional Director signs the agreement.

(f) Neither the approval of a program nor the award of any grant will commit or obligate the United States to award any continuation grant or enter into any grant amendment, including grant increases to cover cost overruns.

§ 740.20 Grant amendments.

(a) A grant amendment is a written alteration in the grant amount, grant terms or conditions, budget or period, or other administrative, technical, or financial agreement whether accomplished on the initiative of the agency or the Regional Director, or by mutual action of the agency and the Regional Director.

(b) The agency shall promptly notify the Regional Director in writing by certified mail, return receipt requested, of events or proposed changes which may require a grant amendment, such as—

(1) Rebudgeting;

(2) Changes which may affect the approved scope or objective of a program; or

(3) Changes which may increase or substantially decrease the total cost of a program.

(c) The Regional Director shall approve or disapprove each proposed amendment within thirty days of receipt, or as soon thereafter as possible, and shall notify the agency in writing of the approval or disapproval of the amendment.

(d) The grant amendment establishes the effective date of the action. If no date is specified in the grant amendment then the date the Regional Director signs the amendment will be the effective date of the action.

§ 740.21 Grant reduction and termination.

(a) *Conditions for reduction or termination.* (1) If an agency violates the terms of a grant agreement, the Regional Director may reduce or terminate the grant.

(2) If an agency fails to implement, enforce or maintain an approved program, or cooperative agreement, the Regional Director shall terminate the administration and enforcement grant or cooperative agreement grant.

(3) If an agency fails to implement, enforce or maintain only a part of the program, the Regional Director shall reduce the grant to the amount of the program being operated by the agency.

(4) If an agency is not in compliance with the following nondiscrimination provisions, the Regional Director shall terminate the grant—

(i) Title VI of the Civil Rights Act of 1964 (78 Stat. 252), Nondiscrimination in Federally Assisted Programs, which provides that no person in the United States shall on the grounds of race, color or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal Financial assistance, and the implementing regulations at 43 CFR 17.

(ii) Executive Order 11246, as amended by Executive Order 11375, Equal Employment Opportunity, requiring that employees or applicants for employment not be discriminated against because of race, creed, color, sex, or national origin, and the implementing regulations at 41 CFR 60.

(iii) Section 504 of the Rehabilitation Act of 1973, as amended by Executive Order 11914, Nondiscrimination With Respect to the Handicapped in Federally Assisted Programs.

(5) If an agency fails to enforce the financial interest provisions of part 705 of this chapter the Director shall terminate the grant.

(6) If an agency fails to submit reports required by this part or parts 705 and 720 of this chapter the Director shall reduce or terminate the grant.

(b) *Grant reduction and termination procedures.* (1) The Regional Director shall give at least 10 days written notice to the agency by certified mail, return receipt requested, of intent to reduce or terminate a grant. The Regional Director shall include in the notice the reasons for the proposed action and the proposed effective date of the action.

(2) The Regional Director shall afford the agency opportunity for consultation and remedial action prior to reducing or terminating a grant.

(3) The Regional Director shall notify the agency of the termination or reduction of the grant in writing by certified mail, return receipt requested.

(4) Upon termination the agency shall refund or credit to the United States that portion of the grant money paid or owed to the agency and allocated to the terminated portion of the grant. However any portion of the grant that is required to meet commitments made prior to the effective date of termination shall be retained by the agency.

(5) The agency shall reduce the amount of outstanding commitments insofar as possible and report to the Regional Director the uncommitted balance of funds awarded under the grant.

(6) Upon notification of intent to terminate the agency shall not make any new commitments without the approval of the Regional Director.

(7) The Regional Director may allow termination costs as determined by applicable Federal cost principles listed in Federal Management Circular 74–4.

(c) *Appeals.* (1) An agency may appeal the Regional Director's decision to reduce or terminate a grant to the Director within 30 days of the Regional Director's decision.

(2) An agency shall include in an appeal—

(i) The decision being appealed, and

(ii) The facts which the agency believes justify a reversal or modification of the decision.

(3) The Director shall act upon appeals within 30 days of their receipt, or as soon thereafter as possible.

§ 740.22 Audit.

The agency shall arrange for independent audit not less frequently than once every two years, pursuant to the requirements of Office of Management and Budget Circular No. A–102. The audits will be performed in accord with the "Standards for Audit of Governmental Organizations, Programs, Activities, and Functions" published by the Comptroller General of the United States and audit guides provided by the Department of the Interior.

§ 740.23 Administrative Procedures.

The agency shall follow administrative procedures governing accounting, payment, property and related requirements contained in Office of Management and Budget Circular No. A–102.

§ 740.24 Allowable costs.

(a) The Regional Director shall determine costs which may be reimbursed according to Federal Management Circular 74–4.

(b) Costs must be in conformity with any limitations, conditions, or exclusions set forth in the grant agreement or this part.

(c) Costs must be allocated to the grant to the extent of benefit properly attributable to the period covered by the grant.

(d) Costs must not be allocated to or included as a cost of any other federally assisted program.

§ 740.25 Financial management.

(a) The agency shall account for grant funds in accordance with the requirements of Office of Management and Budget Circular No. A–102. Agencies shall use generally accepted accounting principles and practices, consistenly applied. Accounting for grant funds must be accurate and current.

(b) The agency shall adequately safeguard all funds, property, and other assets and shall assure that they are used solely for authorized purposes.

(c) The agency shall provide a comparison of actual amounts spent with budgeted amounts for each grant.

(d) When advances are made by a letter-of-credit method, the agency shall make drawdowns from the U.S. Treasury through its commercial bank as closely as possible to the time of making the disbursements.

(e) The agency shall support accounting records by source documentation.

(f) The agency shall design a systematic method to assure timely and appropriate resolution of audit findings and recommendations.

§ 740.26 Reports.

(a) The agency shall, for each grant made under this part, submit annually to the Regional Director a Financial Status Report in accordance with Office of Management and Budget Circular No. A–102, Attachment H. This report shall be accompanied by a performance report prepared according to Attachment I of OMB Circular No. A–102.

(b) The Regional Director shall require through the grant agreement that annual reports provide the relation of financial information to performance and productivity data, including unit cost information.

§ 740.27 Records.

(a) The agency shall maintain complete records in accordance with Office of Management and Budget Circular No. A–102. This includes books, documents, maps, and other evidence and accounting procedures and practices, sufficient to reflect properly—

(1) The amount, receipt, and disposition by the agency of all assistance received for the program.

(2) The total costs of the program, including all direct and indirect costs of whatever nature incurred for the performance of the program for which the grant has been awarded.

(b) Subgrantees and contractors, including contractors for professional services, shall maintain books, documents, papers, maps, and records which are pertinent to a specific grant award.

(c) The agency's records and the records of its subgrantees and contractors, including professional services contracts, shall be subject at all reasonable times

to inspection, reproduction, copying, and audit by the Office, the Department of the Interior, the Comptroller General of the United States, the Department of Labor or any authorized representative.

(d) For completed or terminated grants the agency, subgrantees, and contractors shall preserve and make their records available to the Office, the Department of the Interior, the Comptroller General of the United States, Department of Labor, or any authorized representative pursuant to OMB Circular No. A-102.

§ 740.28 Disclosure of information.

All grant applications received by the Regional Director constitute agency records. As such, their release may be requested by any member of the public under the Freedom of Information Act, 5 U.S.C. 552, and shall be disclosed unless exempt from disclosure under 5 U.S.C. 552(b).

PART 795—SMALL OPERATOR ASSISTANCE

Sec.

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AUTHORITY: Sec. 201, 501, and 502, Pub. L. 95-87 91 Stat. 445 (30 U.S.C. 1201).

§ 795.1 Scope.

This part comprises the small operator assistance program (Program) and governs the procedures for providing assistance to qualified small mine operators who request assistance under section 507 (c) of the Act, for—

(a) The determination of the probable hydrologic consequences of mining and reclamation, under section 507(b) (11) of the Act; and

(b) The statement of physical and chemical analyses of test borings or core samples, under section 507(b) (15) of the Act.

§ 795.2 Objective.

The objective of this part is to meet the intent of section 507(c) of the Act by—

(a) Providing financial and other necessary assistance to qualified small operators; and

(b) Assuring that the regulatory authority shall have sufficient information to make a reasonable assessment of the probable cumulative impacts of all anticipated mining upon the hydrology of the area and particularly upon water availability.

§ 795.3 Authority.

The Secretary shall provide financial and other assistance under section 507 (c) of the Act to the extent funds are appropriated by Congress specifically for this Program.

§ 795.4 Responsibilities.

(a) *General.* Once the regulatory authority initiates the Program, it shall—

(1) Review requests for assistance and determine qualified operators;

(2) Develop and maintain a list of qualified laboratories, and select and pay laboratories for services rendered;

(3) Conduct periodic on-site evaluations of the Program activities with the appropriate small operator; and

(4) Participate with the Office in data coordination activities with the U.S. Geological Survey, U.S. Environmental Protection Agency, and other appropriate agencies or institutions.

(b) *State.* A State shall include a Program within its proposed State regulatory program for approval by the Secretary.

(c) *Office.* The Office shall develop oversight policies and procedures to implement the Program. These shall include policies and procedures for—

(1) Data acquisition, analysis and interpretation;

(2) Interstate coordination and exchange of data;

(3) Model contract stipulations; and

(4) National certification of labs.

(d) The Office and the regulatory authority shall insure that applicable equal opportunity in employment provisions are included within any contract or other procurement documents.

§ 795.5 Definitions.*

As used in this part—

Monitoring means the collection of environmental data by either continuous or periodic sampling methods.

Probable cumulative impacts means the expected total qualitative, and quantitive, direct and indirect effects of mining and reclamation activities on the hydrologic regime.

Probable hydrologic consequence means the projected result of proposed surface coal mining and reclamation operations which may reasonably be expected to change the quantity or quality of the surface and ground water; the surface or ground water flow, timing and pattern; the stream channel conditions; and the aquatic habitat on the permit area and other affected areas.

§ 795.11 Small Operator Assistance Program initiation procedures.

(a) The State shall notify the Office not less than six months prior to submission of its State regulatory program for approval under section 503 of the Act. The notification shall include—

(1) A statement of the intent to submit a proposed State regulatory program;

(2) A summary description of actions taken to develop a State regulatory program for approval and a summary schedule of actions to be taken; and

(3) A declaration of whether—

(i) The State elects to receive funding and commence the administration of the Small Operator Assistance Program, or

(ii) The State elects to have the Office administer the Small Operator Assistance Program on behalf of the State through a cooperative arrangement until such time as the proposed State regulatory program is approved.

(b) If the State elects to administer the Small Operator Assistance Program, it may submit a grant application for funding of the program under the procedures of Part 740 of this chapter. The Office shall review the State's grant application and information provided under paragraph (a) of this section and approve or disapprove the State's request.

(c) If the State elects to have the Office administer the Small Operator Assistance Program, the Office shall implement the Small Operator Assistance Program within the State.

§ 795.12 Program services.

To the extent possible with available funds, the regulatory authority shall for qualified small operators who request assistance—

(a) Select and pay a qualified laboratory to—

(1) Determine for the operator the probable hydrologic consequences of the mining and reclamation operations both on and off the proposed permit area in accordance with § 795.16.

(2) Prepare a statement of the results of test borings or core samplings in accordance with § 795.16.

(b) Collect and provide general hydrologic information on the basin or subbasin areas within which the anticipated mining will occur. The information provided shall be limited to that required to relate the basin or subbasin hydrology to the hydrology of the proposed permit area.

§ 795.13 Eligibility for assistance.

An applicant is eligible for assistance if he—

(a) Intends to apply for a permit pursuant to the Act; and

(b) Establishes that the probable total actual and attributed production of the applicant for each year of the permit will not exceed 100,000 tons. Production from the following operations shall be attributed to the permittee—

(1) All coal produced by operations beneficially owned entirely by the applicant or controlled, by reason of ownership, direction of the management or in any other manner whatsoever, by the applicant.

(2) The pro rata share, based upon percentage of beneficial ownership, of coal produced by operations in which the applicant owns more than a 5 percent interest.

(3) All coal produced by persons who own more than 5 percent of the applicant or who directly or indirectly control the applicant by reason of stock ownership, direction of the management or in any other manner whatsoever.

(4) The pro rata share of coal produced by operations owned or controlled by the person who owns or controls the applicant.

§ 795.14 Filing for assistance.

Each applicant shall submit the following information to the regulatory authority at any time after initiation of the Small Operator Assistance Program

within the State in which mining is proposed—

(a) A statement of intent to file a permit application;

(b) The names and addresses of—

(1) The potential permit applicant;

(2) The potential operator if different from the applicant.

(c) A schedule of the estimated total production of coal from the proposed permit area and all other locations from which production is attributed to the applicant under 795.13. The schedule shall include for each location—

(1) The name under which coal is or will be mined;

(2) The permit number and Mining Enforcement and Safety Administration identification number;

(3) The actual coal production for the year preceding the application for assistance and that portion of the production attributed to the applicant; and

(4) The estimated coal production for each year of the proposed permit and that portion attributed to the applicant.

(d) A description of—

(1) The method of surface coal mining operation proposed;

(2) The anticipated starting and termination dates of mining operations;

(3) The number of acres of land to be affected by the proposed mining; and

(4) A general statement on the probable depth and thickness of the coal resource.

(e) A U.S. Geological Survey topographic map of 1:24,000 scale or larger or other topographic map of equivalent detail which clearly shows—

(1) The area of land to be affected and the natural drainage above and below the affected area;

(2) The names of property owners within the area to be affected and of adjacent lands;

(3) The location of existing structures and developed water sources within the area to be affected and on adjacent lands;

(4) The location of existing and proposed test boring or core samplings; and

(5) The location and extent of known working of any underground mines.

(f) Copies of documents which show that—

(1) The applicant has a legal right to enter and commence mining within the permit area; and

(2) A legal right of entry has been obtained for the Office, regulatory authority and laboratory personnel to inspect the lands to be mined and adjacent lands which may be affected to collect environmental data or install necessary instruments.

§ 795.15 Application approval and notice.

(a) If the regulatory authority finds the applicant eligible, and it does not have information readily available which would preclude issuance of a permit to the applicant for mining in the area proposed, it shall—

(1) Determine the minimum data requirements necessary to meet the provisions of § 795.16.

(2) Select the services of one or more qualified laboratories to perform the required work. A copy of the contract or other appropriate work order and the final approved report shall be provided to the applicant.

(b) The regulatory authority shall inform the applicant in writing if the application is denied and shall state the reasons for denial.

(c) The granting of assistance under this part shall not be a factor in decisions by the regulatory authority on a subsequent permit application.

§ 795.16 Data requirements.

(a) *General.* This section describes the minimum requirements for the collection of data to meet the objective of the program. The regulatory authority shall determine the data collection requirements for each applicant or group of applicants. Data collection and analysis may proceed concurrently with the development of mining and reclamation plans by the operator. The data requirements will be based on—

(1) The extent of currently available hydrologic and core analysis data for the applicable area provided by the regulatory authority; and

(2) The data collection and analysis guidelines developed and provided by the Office.

(b) *Specific Provisions.* (1) A determination of the probable hydrologic consequences of the mining and reclamation operations, both on- and off-site, shall be made by a qualified laboratory. The data for this determination shall include—

(i) The existing and projected surface and ground water seasonal flow regime, including water level and water table evaluations. The regulatory authority shall specify duration and return frequencies to be used in the determination.

(ii) The existing and projected seasonal quality of the surface and ground water regime. This shall include measurements and estimates of dissolved and suspended solids, pH, iron, manganese, surface and channel erosion and other water quality parameters specified by the regulatory authority.

(2) A statement of the result of test borings or core samplings from the proposed permit area, including—

(i) Logs from any drill holes including identification of each stratum and water level penetrated;

(ii) The coal seam thickness and its chemical analysis including sulfur content;

(iii) The chemical analysis of potentially acid or toxic forming sections of the overburden, and the chemical analysis of the stratum lying immediately underneath the coal to be mined.

(c) *Exemptions.* The statement by a qualified laboratory under paragraph (b) (2) of this section may be waived by the regulatory authority by a written determination that such requirements are unnecessary with respect to the specific permit application.

(d) *Data Availability.* Data collected under this Program shall be made available to all interested persons, except information related to the chemical and physical properties of coal. Information regarding the mineral or elemental content of the coal which is potentially toxic in the environment shall be made available.

§ 795.17 Qualified laboratories.

(a) *General.* (1) As used in this section, *qualified laboratory* means a designated public agency, private consulting firm, institution, or analytical laboratory which can provide the required determination or statement under this Program.

(2) The Office shall establish and periodically publish in the FEDERAL REGISTER a list of qualified laboratories which may be used by regulatory authorities under the procedures of this section. A State regulatory authority may designate qualified laboratories under procedures included in an approved State regulatory program.

(3) Persons who desire to be included in the list of qualified laboratories established by the Office shall apply to the Office and provide such information as is necessary to establish the qualifications required by paragraph (b) of this section.

(b) *Basic Qualifications.* (1) To qualify for designation, the laboratory shall demonstrate that it—

(i) Is staffed with experienced, professional personnel in the fields of hydrology, mining engineering, aquatic biology, geology or chemistry applicable to the work to be performed.

(ii) Is capable of collecting necessary field data and samples.

(iii) Has adequate space for material preparation, cleaning and sterilizing necessary equipment, stationary equipment, storage, and space to accommodate periods of peak work loads.

(iv) Meets the requirements of the Occupational Safety and Health Act or the equivalent State safety and health program.

(v) Has the financial capability and business organization necessary to perform the work required.

(vi) Has analytical, monitoring and measuring equipment capable of meeting the applicable standards and methods contained in—

(A) *Standard Methods for the Examination of Water and Waste Water, 14th Edition,* 1975. This publication is available from the American Public Health Association, 1015 18th Street, NW., Washington, D.C. 20036.

(B) *Methods for Chemical Analysis of Water and Wastes,* 1974. This publication is available from the Office of Technology Transfer, U.S. Environmental Protection Agency, Industrial Environmental Research Laboratory, Cincinnati, Ohio 45268. These standards are hereby incorporated by reference.

(vii) Has the capability of making hydrologic field measurements and analytical laboratory determinations by acceptable hydrologic engineering or analytical methods, or by those appropriate methods or guidelines for data

acquisition recommended by the Office or other Federal or State agencies.

(2) The qualified laboratory shall be capable of performing either the determination or statement under paragraphs § 795.16 (b)(1) or (b)(2). Subcontractors may be used to provide the services required provided their use is defined in the application for designation and approved by the Office.

§ 795.18 Assistance funding.

(a) *Use of funds.* Funds authorized for this Program shall not be used to cover State administrative costs or the costs of test boring or core sampling.

(b) *Allocation of funds.* The regulatory authority shall to the extent practicable establish a formula for allocating funds among eligible small operators if available funds are less than those required to provide the services pursuant to this Part. This formula shall include such factors as the applicant's—

(1) Anticipated date of filing a permit application;

(2) Anticipated date for commencing mining; and

(3) Performance history.

§ 795.19 Applicant liability.

(a) The applicant shall reimburse the regulatory authority for the cost of the laboratory services performed pursuant to this Part if the applicant—

(1) Submits false information;

(2) Fails to submit a permit application within 1 year from the date of receipt of the approved laboratory report;

(3) Fails to mine after obtaining a permit; or

(4) If the regulatory authority finds that the applicant's actual and attributed annual production of coal exceeds 100,000 tons during any year of mining under the permit for which the assistance is provided.

(b) The regulatory authority may waive the reimbursement obligation if it finds that the applicant at all times acted in good faith. The incorporations by reference in this part were approved by the Director, Office of the FEDERAL REGISTER on November 11, 1977 and are on file in the FEDERAL REGISTER Library.

PART 830—PROTECTION OF EMPLOYEES

Sec.

830.1 Scope.
830.11 Protected activity.
830.12 Procedures for filing an application for review of discrimination.
830.13 Investigation and conference.
830.14 Requests for formal hearing.
830.15 Formal adjudicatory proceedings.

AUTHORITY. Secs. 201, 501, 502 and 703, Pub. L. 95-87, Stat. 445 (30 U.S.C. 1201).

§ 830.1 Scope.

This part establishes procedures regarding—

(a) The reporting of acts of discriminatory discharge or other acts of discrimination under the Act caused by any person. Forms of discrimination include, but are not limited to: Firing, suspension, transfer or demotion, denial or reduction of wages and benefits, coercion by promises of benefits or threats of reprisal, and interference with the exercise of any rights afforded under the Act;

(b) The investigation of applications for review and holding of informal conferences about the alleged discrimination; and

(c) The request for formal hearings with the Office of Hearings and Appeals.

§ 830.11 Protected activity.

(a) No person shall discharge or in any other way discriminate against or cause to be fired or discriminated against any employee or any authorized representative of employees because that employee or representative has—

(1) Filed, instituted or caused to be filed or instituted any proceedings under the Act by—

(i) Reporting allege violations or dangers to the Secretary, the State Regulatory Authority, or the employer or his representative.

(ii) Requesting an inspection or investigation; or

(iii) Taking any other action which may result in a proceeding under the Act.

(2) Made statements, testified, or is about to do so—

(i) In any informal or formal adjudicatory proceeding;

(ii) In any informal conference proceeding;

(iii) In any rulemaking proceeding;

(iv) In any investigation, inspection or other proceeding under the Act;

(v) In any judicial proceeding under the Act.

(3) Has exercised on his own behalf or on behalf of others any right granted by the Act.

(b) Each employer conducting operations which are regulated under this Act, shall within 30 days from the effective day of these regulations, provide a copy of this part to all current employees and to all new employees at the time of their hiring.

§ 830.12 Procedures for filing an application for review of discrimination.

(a) *Who may file.* Any employee, or any authorized representative of employees, who believes that he has been discriminated against by any person in violation of section 830.11(a) of this part may file an application for review. For the purpose of these regulations, an application for review means the presentation of a written report of discrimination stating the reasons why the person believes he has been discriminated against and the facts surrounding the alleged discrimination.

(b) *Where to file.* The employee or representative may file the application for review at any location of the Office and each office shall maintain a log of all filing.

(c) *Time for filing.* The employee or representative shall file an application for review within 30 days after the alleged discrimination occurs. An application is considered filed—

(1) On the date delivered if delivered in person to the Office, or

(2) On the date mailed to the Office.

(d) *Running of the time of filing.* The time for filing begins when the employee knows or has reason to know of the alleged discriminatory activity.

§ 830.13 Investigation and conference procedures.

(a) Within 7 days after receipt of any application for review, the Office shall mail a copy of the application for review to the person alleged to have caused the discrimination, shall file the application for review with the Office of Hearings and Appeals and shall notify the employee and the alleged discriminating person that the Office will investigate the complaint. The alleged discriminating person may file a response to the application for review within 10 days after he receives the copy of the application for review. The response shall specifically admit, deny or explain each of the facts alleged in the application unless the alleged discriminating person is without knowledge in which case he shall so state.

(b) The Office shall initiate an investigation of the alleged discrimination within 30 days after receipt of the application for review. The Office shall complete the investigation within 60 days of the date of the receipt of the application for review. If circumstances surrounding the investigation prevent completion within the 60-day period, the Office shall notify the person who filed the application for review and the alleged discriminating person of the delay, the reason for the delay, and the expected completion date for the investigation.

(c) Within 7 days after completion of the investigation the Office shall invite the parties to an informal conference to discuss the findings and preliminary conclusions of the investigation. The purpose of this informal conference is to attempt to conciliate the matter. If a complaint is resolved at an informal conference, the terms of the agreement will be recorded in a written document that will be signed by the alleged discriminating person, the employee and the representative of the Office. If the Office concludes on the basis of a subsequent investigation that any party to the agreement has failed in any material respect to comply with the terms of any agreement reached during an informal conference, the Office shall take appropriate action to obtain compliance with the agreement.

(d) Following the investigation and any informal conference held, the Office shall complete a report of investigation which shall include a summary of the results of the conference. Copies of this report shall be available to the parties in the case.

§ 830.14 Request for hearing.

(a) If the Office determines that a violation of this part has probably occurred and was not resolved at an informal conference, the Director shall request a hearing on the employee's behalf before

the Office of Hearings and Appeals within 10 days of the scheduled informal hearing. The parties shall be notified of the determination. If the Director declines to request a hearing the employee shall be notified within 10 days of the scheduled informal conference and informed of his right to request a hearing on his own behalf.

(b) The employee may request a hearing with the Office of Hearings and Appeals after 60 days have elapsed from the filing of his application.

§ 830.15 Formal adjudicatory proceedings.

(a) Formal adjudication of a complaint filed under this part shall be conducted in the Office of Hearings and Appeals under 43 CFR Part 4.

(b) A hearing shall be held as promptly as possible consistent with the opportunity for discovery provided for under 43 CFR Part 4.

(c) Upon a finding of violation of section 830.11 of this part, the Secretary shall order the appropriate affirmative relief including, but not limited to, the rehiring or reinstatement of the employee or representative of employees to his former position with compensation. At the request of the employee a sum equal to the aggregate amount of all costs and expenses including attorneys' fees which have been reasonably incurred by the employee for, or in connection with, the institution and prosecution of the proceedings shall be assessed against the person committing the violation.

(d) On or after 10 days after filing an application for review under this part the Secretary or the employee may seek temporary relief in the Office of Hearings and Appeals under 43 CFR Part 4.

[FR Doc.77-35049 Filed 12-5-77;2:30 pm]

[4310-05]

PART 837—ABANDONED MINE RECLAMATION FUND—FEE COLLECTION AND COAL PRODUCTION REPORTING

Final Rules

AGENCY: Office of Surface Mining Reclamation and Enforcement, Department of the Interior.

ACTION: Final rules.

SUMMARY: These regulations provide each coal mine operator with methods to determine his reclamation fee obligation to the Abandoned Mine Reclamation Fund (fund), provide instructions for the proper payment of the reclamation fee, and provide for the maintenance of production records.

EFFECTIVE DATE: December 8, 1977.

ADDRESS: Director, Office of Surface Mining Reclamation and Enforcement, U.S. Department of the Interior, Washington, D.C. 20240, 202-343-4237.

FOR FURTHER INFORMATION CONTACT:

Paul Reeves, 202-343-4237.

SUPPLEMENTARY INFORMATION: Proposed rules implementing section 402 of the Surface Mining Control and Reclamation Act of 1977 were published in the FEDERAL REGISTER on September 7, 1977. Public hearings on the proposed rules were held on September 20, 1977. At the close of the comment period on October 7, 1977, comments had been received from 21 commenters.

The purpose of these regulations is to provide the operator with the method by which his reclamation fee will be determined and inform him of his obligation to maintain adequate production records to verify his payment.

The Office of Surface Mining Reclamation and Enforcement (OSM) has made a number of changes of a non-substantive editorial nature. Changes also have been made in response to public comments.

EDITORIAL CHANGES

1. The definition of coal preparation has been deleted because use of the phrase in § 837.16 has been dropped. Records must be kept which reflect the amount of all coal consumed by an operator for any purpose. The intent is made clearer by merely dropping the term.

2. "Parr's formula" referred to in the definition of lignite has been reprinted verbatim to avoid possible confusion and the necessity to cross-reference. It should be noted that the Annual Book of ASTM Standards is the accepted work in the field, and formulae in the publication must be relied on for determination of the other factors in the formula.

Other changes have been made in the regulations and are discussed in relation to the specific comments received.

COMMENTS

1. One commenter suggested that subbituminous coal with a calorific value of less than 8300 Btu's per pound, moist, and mineral-matter-free should qualify for the lower fee applicable to lignite. This comment was not accepted. The statutory definition of lignite requires that the coal must meet not only the calorific value specification but also be "consolidated" and "lignitic". Subbituminous coal does not fulfill these conditions regardless of its Btu value.

2. Several commenters raised questions as to who is an operator responsible for payment of the fee. Section 402 of the Act requires that all operators pay the fee. Section 701 of the Act defines "operator" as the "person * * * engaged in coal mining who removes * * *" the coal. Commenters pointed out that in some cases the one who removes the coal is actually a contractor who may be paid only for his services and who has no ownership or beneficial interest in the coal. The number and variety of business arrangements employed in the coal industry make it difficult to further define "operator" without considering the specific facts of particular cases. We believe that Congress intended the burden of fee payment to fall upon the person who stands to benefit directly from the sale, transfer, or use of the coal. This intent will guide the Office in making decisions as to who is liable for the fee. The identification of operators will be made in light of the realities of the business world and will not turn solely on a literal interpretation of the word "removes".

OSM intends to send a preprinted Coal Production and Reclamation Fee Report form to all operators who are listed on the Mining Enforcement and Safety Administration's (MESA's) operator-mine identification number list. By using MESA's list, a dual identification system will not be necessary, and administrative and recordkeeping costs to the government and the coal mine operators will be reduced. OSM will make adjustments to the MESA list as necessary.

It is anticipated that many of the problems of determining liability for the fee among parties to particular business arrangements will be alleviated as production and supply contracts are negotiated and renegotiated. Contractual agreement for determining liability for the fee may be a helpful guide in determining liability for the fee. It should be emphasized, however, that the Office intends to collect the proper reclamation fee for each ton of coal produced for sale, transfer, or use.

3. One commenter recommended that the fee not be paid on reclaimed coal since the mining of such coal reduces an existing environmental impact of past mining and thereby achieves a purpose of the Act. The recommendation has not been accepted. The Act requires that all coal mining operations subject to the Act be liable for payment of the fee and defines these operations to include the mining of reclaimed coal. It is the intent of the regulations to impose the fee only once on each ton of coal; however, it is the operator's obligation to maintain records showing previous payment of the reclamation fee on reclaimed coal deposits.

4. Two commenters argued that because operators conducting mining operations on previously mined and unreclaimed lands would enhance the recovery of these lands, such operators should receive a credit to offset their total fee obligation. This recommendation has not been accepted because the Act requires that operators of all coal mining operations pay the fee.

5. Two commenters argued that the proposed regulation requiring an operator of an in situ mining operation to pay a reclamation fee should be changed since such a requirement exceeds the rulemaking authority provided under the Act. The provision remains in the final rules. Adequate authority to promulgate such a requirement exists since the Act requires that all mining operations be subject to the fee at an appropriate rate and the process of in situ distillation or retorting is included within the definition of surface coal mining operations.

6. Several commenters questioned the definition of the word "value" and requested that the definition be more specific. It was suggested that the term "value" exclude all royalties, severance

taxes, other taxes and this reclamation fee. In the final rules, "value" has been redefined to clarify that gross value is determined at the time of initial bona fide sale, transfer of ownership, or use and this is consistent with the determination of when the fee is to be computed. Further, it is only logical and equitable that the reclamation fee required by these regulations not be considered in the computation of the value, because without including the fee in the calculation of value, the lower percentage rate fee may apply. Severance taxes and royalties are costs of doing business analogous to other costs and must be considered in the determination of the value of the coal.

7. One commenter asked whether the regulations required the fee to be paid on clean coal or run-of-mine coal. Section 837.12 (a) and (b) of the regulations specify that the fee be paid on each ton of coal produced for sale, transfer, or use and that the fee shall be determined at the time of initial bona fide sale, transfer of ownership, or use by the operator. For example, if the initial transaction is based on the weight of run-of-mine coal then the reclamation fee must be paid for each ton of run-of-mine coal sold, transferred, or used. If the initial transaction is based on the weight of clean coal, then the reclamation fee must be paid on each ton of clean coal sold, transferred, or used.

8. A number of comments requested that some allowances be made for situations where shipping receipts indicating actual tonnage are not received in time to report production during the calendar quarter in which the fee is due. A suggested solution was that estimated fee payments be permitted with later adjustments made as necessary. No change is made because Section 402(b) of the Act requires payment "no later than thirty days after the end of each calendar quarter."

9. Comments were received requesting that persons operating more than one mine be permitted to submit a single reporting form and a single check to cover all operations. This recommendation was partially accepted. For effective enforcement and administrative purposes, it is necessary to have a separate production report for each mine. A single check covering multiple operations, accompanied by a separate report for each mine, is permitted by the final regulations and should reduce paperwork to some extent.

10. Numerous comments objected to the requirement in § 837.16 that "any" book or record be made available for inspection and copying to the fee compliance officer. The concern was for overly broad inspection rights and the confidentiality of business information copied by the officer. The regulations have been revised to expressly limit the fee compliance officer's right to inspect such books and records necessary to substantiate the accuracy of reports and payments. This provision makes clear that the standard for such inspection is relevancy. Further, the right to copy price information is limited to those cases where the fee is based on percentage of value. If the flat cents-per-ton fee is paid, price information is not relevant. Customer identity cannot be similarly protected because it may be necessary to verify tonnage with customers. Information copied will be subject to disclosure in accordance with the Freedom of Information Act.

11. One commenter interpreted § 837.16 to require the maintenance of production records at each mine site and requested that the regulations be altered to permit centralized record collection where a central accounting procedure is used. Section 837.16(b) requires that the fee compliance officer shall have access to the mine in order to verify compliance. Section 837.16(c) requires that the fee compliance officer be afforded access to necessary books and records. Neither paragraph requires that records be kept at a specific location. Records may be kept at centralized locations, and the operator will be required to identify the location of all such records on the Coal Production and Reclamation Fee Report form.

12. Several commenters suggested that operators not be required to maintain voluminous records for seven years. Actual truck receipts need not be kept for the full term, but normal business records which include the information required to be kept by § 837.16 must be kept. The retention period was shortened from seven years to six years in conformity with the Federal statute of limitations applicable to enforcement actions.

Effective Date

It is the Department's policy in most cases to make final regulations effective 30 days after the date of publication. However, these regulations are effective on the date of publication because section 402 of the Act requires that the fee be paid on coal produced in the fourth calendar quarter of 1977.

Information Collection Provisions

Section 837.15 prescribes the use of OSM Form 837–1, each calendar quarter, to report information determined by this Department to be necessary to the performance of its responsibilities under the Act. The General Accounting Office, pursuant to 44 U.S.C. 3512, has determined that use of this form does not impose an unreasonable burden on operators, and, accordingly, § 837.15 is effective on December 8, 1977.

Section 837.16 requires all operators to collect and retain certain information. By publication of these final regulations, this Department has determined that such information is necessary to the performance of its responsibilities under the Act and must be collected and retained. Accordingly, the requirements of § 837.16 are adopted, subject only to review by the General Accounting Office, pursuant to 44 U.S.C. 3512, to assure that they impose a minimum burden upon operators in the manner in which the information is proposed to be obtained. This § 837.16 will be effective January 29, 1978 or on the date of GAO clearance, whichever is earlier.

Drafting Information

The principal authors of these final regulations are George Williams, Surface Mining Task Force, and Edward Clair, Office of the Solicitor, Department of the Interior.

Dated: December 1, 1977.

Leo M. Krulitz,
Solicitor of the Interior.

In consideration of the comments received and pursuant to the authority of sections 201(c) and 402 of the Surface Mining Control and Reclamation Act of 1977, 30 CFR Chapter VII is amended by adding a new Part 837, to read as follows:

Sec.
837.1 Scope.
837.2 Objectives.
837.3 Responsibility.
837.5 Definitions.
837.11 Applicability.
837.12 Reclamation fee.
837.13 Fee computations.
837.14 Determination of percentage based fees.
837.15 Reclamation fee payment.
837.16 Production records.

Authority: Sec. 201, Pub. L. 95–87, 91 Stat. 445 (30 U.S.C. 1201).

§ 837.1 Scope.

This part sets out the procedures for the collection of fees for the Abandoned Mine Reclamation Fund (fund).

§ 837.2 Objectives.

The objectives of this part are to establish—

(a) Methods for determining the reclamation fee payable on coal production.

(b) Procedures for paying the reclamation fee to the Director.

(c) Requirements for production recordkeeping and reporting.

§ 837.3 Responsibility.

(a) The Secretary of the Interior administers the fund.

(b) The Director, under the general direction of the Assistant Secretary, Energy and Minerals, is responsible for administering the provisions of this part.

§ 837.5 Definitions.

As used in this part—

Anthracite, bituminous and subbituminous coal means all coals other than lignite coal.

Calendar quarter means a 3-month period within a calendar year. The first calendar quarter begins on January 1 of a calendar year and ends on the last day of March. The second calendar quarter begins on the first day of April and ends on the last day of June. The third calendar quarter begins on the first day of July and ends on the last day of September. The fourth calendar quarter begins on the first day of October and ends on the last day of December.

Fee compliance officer means any person authorized by the Secretary to exercise his authority in matters relating to this part.

In situ coal mining means the process of recovering energy from coal in its natural geological location by igniting the coal seam and recovering the gas at the wellhead.

Lignite coal means consolidated lignitic coal having less than 8,300 British thermal units per pound, moist, and mineral-matter-free. British thermal units per pound, moist and mineral-matter-free, are determined by Parr's formula, page 213, equation 3, D–388 (reapproved 1972), Part 26, 1976 Annual Book of ASTM Standards as follows:

Moist, Mm-free Btu=
(Btu−50S)/[100−(1.08A+0.55S)]×100
where:
Mm=mineral matter
Btu=British thermal units per pound (calorific value)
A=percentage of ash, and
S=percentage of sulfur
"Moist" refers to coal containing its natural inherent or bed moisture, but not including water adhering to the surface of the coal.

Reclaimed coal means coal recovered from a deposit that is not in its original geological location. Examples of these deposits are refuse piles or culm banks; refuse, culm or retaining dams and ponds that are or have been used during the mining or preparation process; and stream coal deposits.

Surface coal mining means the extraction of coal from the earth by removing the materials over the coal seam before recovering the coal and includes auger coal mining.

Ton means 2,000 pounds avoirdupois (0.90718 metric ton).

Underground coal mining means the extraction of coal from the earth by developing entries from the surface to the coal seam before recovering the coal by underground extraction methods and includes in situ mining.

Value means gross value at the time of initial bona fide sale, transfer of ownership, or use by the operator, but does not include the reclamation fee required by this part.

§ 837.11 Applicability.

The regulations in this Chapter apply to all surface coal mining and reclamation operations except—

(a) The extraction of coal by a landowner for his own non-commercial use from land owned or leased by him;

(b) The extraction of coal for commercial purposes by surface mining which affects two acres or less during the life of the mine;

(c) The extraction of coal as an incidental part of Federal, State, or local government-financed highway or other construction; and

(d) The extraction of coal incidental to the extraction of other minerals where coal does not exceed 16⅔ percent of the mineral tonnage removed for commercial use or sale.

§ 837.12 Reclamation fee.

(a) The operator shall pay a reclamation fee on each ton of coal produced for sale, transfer, or use, including the products of in situ mining.

(b) The fee shall be determined by the weight and value at the time of initial bona fide sale, transfer of ownership, or use by the operator.

(c) If the operator combines surface mined coal, including reclaimed coal, with underground mined coal before the coal is weighed for fee purposes, the higher reclamation fee shall apply, unless he can substantiate the amount of coal produced by each mining method by acceptable engineering calculations or other reports which the Director may require.

(d) In computing the tons of coal produced for reclamation fee purposes in the fourth calendar quarter of 1977, the operator may deduct the tons of coal immediately available for sale, transfer, or use on September 30, 1977, from that coal sold, transferred or used during the fourth calendar quarter of 1977. If the operator makes this deduction, he shall attach to his fourth quarter, 1977, OSM form 837–1, a sworn and notarized statement of the amount of coal immediately available for sale, transfer or use on September 30, 1977, and the quantity of such coal produced by surface and underground mining respectively.

§ 837.13 Fee computations.

(a) *Surface mining fees.* The fee for anthracite, bituminous, and subbituminous coal, including reclaimed coal, is 35 cents per ton unless the value of such coal is less than $3.50 per ton, in which case the fee is 10 percent of the value.

(1) If the value of a ton of coal is equal to or greater than $3.50 per ton, multiply the number of tons produced in the calendar quarter by $0.35. Example: If the tonnage is 1,000, then 1,000 tons×$0.35=$350, which is the fee.

(2) If the value of a ton of coal is less than $3.50 per ton, multiply the value of a ton of coal by the total number of tons produced in the calendar quarter by 0.1. Example: If the value of a ton of coal is $2 and the tonnage is 1,000, then $2×1,000 tons×0.1=$200.

(b) *Underground mining fees.* The fee for anthracite, bituminous, and subbituminous coal is 15 cents per ton unless the value of such coal is less than $1.50 per ton, in which case the fee is 10 percent of the value.

(1) If the value of a ton of coal is equal to or greater than $1.50 per ton, multiply the number of tons produced in the calendar quarter by $0.15. Example: If the tonnage is 1,000, then 1,000 tons×$0.15=$150, which is the fee.

(2) If the value of a ton of coal is less than $1.50 per ton, multiply the value of a ton of coal by the total number of tons produced in the calendar quarter by 0.1. Example: If the value of a ton of coal is $1 and the tonnage is 1,000, then $1×1,000 tons ×0.1=$100, which is the fee.

(c) *Surface and underground mining fees for lignite coal.* The fee for lignite coal is 10 cents per ton unless the value of such coal is less than $5 per ton, in which case the fee charged is 2 percent of the value.

(1) If the value of a ton of lignite is equal to or greater than $5 per ton, multiply the number of tons produced in a calendar quarter by $0.10. Example: If the tonnage is 1,000, then 1,000 tons ×$0.10=$100, which is the fee.

(2) If the value of a ton of lignite is less than $5 per ton, multiply the value of a ton of lignite by the total number of tons produced in the calendar quarter by 0.02. Example: If the value is $4 and the tonnage is 1,000, then $4×1,000 tons×0.02=$80, which is the fee.

(d) *In situ coal mining fees.* The fee for in situ mined coal, except lignite coal, is 15 cents per ton based on Btu's per ton in place equated to the gas produced at the site. The fee for in situ mined lignite is 10 cents per ton based on the Btu's per ton of coal in place equated to the gas produced at the site. For example, if the Btu value of in situ coal is determined to be 23 million Btu's per ton, then for every 23 million Btu's of gas produced at the wellhead, one ton of coal will be deemed produced for the purposes of this part.

(1) The Btu value of a ton of in place coal shall be determined by analyses, certified by an independent laboratory, of the coal seam that is effected for potential Btu value of a ton of in place coal.

(2) For anthracite, bituminous, and subbituminous coal the fee shall be computed as follows: $F=(G/C)\times V_1$.

(3) For lignite coal the fee shall be computed as follows: $F=(G/L)\times V_2$.

(4) For the purposes of this paragraph:

F=Reclamation fee.
C=Million Btu's per ton of coal in place.
L=Million Btu's per ton of lignite in place.
G=Gas produced at the wellhead in million Btu's.
V_1=$0.15/ton equivalent; or if the value of a ton of coal equivalent is less than $1.50, multiply the value by 0.1 and substitute the result for V_1 in the appropriate formula.
V_2=$0.10/ton equivalent, or if the value of a ton of lignite equivalent is less than $5 multiply the value by 0.02 and substitute the result for V_2 in the appropriate formula.

§ 837.14 Determination of percentage based fees.

(a) If the operator submits a fee based on a percentage of the value of coal, he shall include with his fee and production report documentation supporting the alleged coal value. Based on this information and any additional documentation, including examination of the operator's books and records, that the Director may require, the Director may accept the valuation submitted by the operator, or may determine the value of the coal.

(b) If the Director determines that a higher fee shall be paid, the operator shall submit the additional fee plus statutory interest within thirty days of

notification by the Director that an additional fee payment is due.

§ 837.15 Reclamation fee payment.

(a) Each operator shall pay the reclamation fee on a calendar quarter basis.

(b) The fee for the fourth calendar quarter of 1977 shall be paid no later than January 30, 1978.

(c) Each operator shall use OSM Form 837–1, Coal Production and Reclamation Fee Report form, for each quarterly payment period for each mine.

(d) The reclamation fee payment for each calendar quarter shall be paid no later than 30 calendar days after the end of the calendar quarter. Delinquent payments are subject to an interest charge at the statutory rate.

(e) The OSM Form 837–1 and check or money order for each coal mine or check or money order for all of the operator's mines represented by individually enclosed OSM Forms 837–1 shall be made payable to Director, Office of Surface Mining Reclamation and Enforcement and shall be sent in the same envelope to:

Office of Surface Mining Reclamation and Enforcement, U.S. Department of the Interior, P.O. Box 25065—DFC, Denver, Colo. 80225.

§ 837.16 Production records.

(a) Each operator shall maintain, on a current basis, books and records that contain at least the following information and data—

(1) Tons of coal sold or transferred, amount received per ton, name of party to whom sold or transferred, and the date of each sale or transfer.

(2) Tons of coal used by the operator and date of consumption.

(3) For in situ coal mining operations, total Btu value of gas produced, the Btu value of a ton of coal in place certified by an independent laboratory, and the amount received for gas sold, transferred or used.

(b) The fee compliance officer shall have access to the mine for the purpose of determining compliance with the regulations in this part.

(c) Each operator shall make any book or record necessary to substantiate the accuracy of reports and payments available at reasonable times for inspection and copying by the fee compliance officer. If the fee is paid at the maximum rate, the fee compliance officer shall not copy information relative to price. All information copied will be protected in accordance with the Freedom of Information Act.

(d) The operator shall maintain books and records for a period of 6 years from the end of the calendar quarter in which the fee was due.

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federal register

TUESDAY, DECEMBER 13, 1977

PART III

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Health Care Financing Administration

Public Health Service

■

PROPOSED RESTRICTIONS APPLICABLE TO STERILIZATIONS FUNDED BY THE DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

[4110-35]

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Health Care Financing Administration

[45 CFR Part 205]

[42 CFR Part 50]

PROPOSED RESTRICTIONS APPLICABLE TO STERILIZATIONS FUNDED BY THE DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

AGENCY: Health Care Financing Administration, Public Health Service, Department of Health, Education, and Welfare.

ACTION: Proposed rules.

SUMMARY: The Department proposes new rules to govern Federal financial participation in sterilizations funded through various Departmental programs. These proposed rules are appropriate because of the Department's accumulating experience with the current rules governing sterilizations and in light of a recent court decision. The intended effect of these proposed rules is to specify the precise circumstances under which Federal Funds may be used for sterilization purposes. Current policies remain in full force pending adoption of these proposed rules.

DATES: Comments must be received on or before March 13, 1977.

FOR FURTHER INFORMATION CONTACT:

For the Public Health Service: Marilyn L. Martin, Room 722H (Hubert H. Humphrey Building), 200 Independence Avenue SW., Washington, D.C. 20201, 202-245-7581. For the Health Care Financing Administration: Emily J. Nichols, Room 4513, Switzer Building, 330 C Street SW., Washington, D.C. 20201, 202-245-0701 (HCFA).

SUPPLEMENTARY INFORMATION: The Department of Health, Education, and Welfare proposes new rules to govern Federal financial participation in sterilizations funded through various Departmental programs. These rules revise existing rules at 42 CFR 50.201-204 and 45 CFR 205.35, and supplant the current moratorium on sterilizations of people under 21 or mentally incompetent, first declared by the Secretary on July 27, 1973, see 38 FR 20930 (August 3, 1973). New rules are appropriate in light of the Department's accumulating experience with the current rules governing sterilizations and in light of the recent decision of the United States Court of Appeals for the District of Columbia Circuit in *Relf* v. *Weinberger*, No. 74-1797 (decided September 13, 1977). In that case, the court took note of the Department's professed intention to issue new rules and of its obligation to utilize informal rulemaking procedures.

STATUTORY PROVISIONS PERTAINING TO STERILIZATIONS

The Department funds family planning services, including sterilizations, under several Federal statutes. Three agencies within the Department are responsible for administering programs under which sterilizations are performed—the Medicaid Bureau (MMB) of the Health Care Financing Administration (HCFA), the Public Health Service (PHS), and the Administration for Public Services (APS) of the Office of Human Development Services (OHDS).

1. THE MEDICAID PROGRAM

The medical assistance (Medicaid) program under title XIX of the Social Security Act, 42 U.S.C. 1396, et seq., which is administered by MMB, provides for Federal matching of reimbursements for sterilizations pursuant to section 1902(a)(13) and 1905(a)(4)(C) of the Act, 42 U.S.C. 139a(a)(13) and 1396d(a)(4)(C). Those provisions require State Medicaid plans to provide "family planning services and supplies furnished (directly or under arrangements with others) to individuals of childbearing age (including minors who can be considered to be sexually active) who are eligible under the State plan and who desire such services and supplies * * *". The Medicaid Bureau has not defined family planning services by regulation; however, MMB policy has been to consider sterilization as a federally funded family planning service.

2. THE TITLE XX SOCIAL SERVICES PROGRAM

Title XX of the Social Security Act, which is administered by APS, authorizes grants to States for social services, including family planning services. See section 2002(a)(1) of the Act, 42 U.S.C. 1397a(a)(1). Regulations at 45 CFR 228.63, applicable to title XX published in the FEDERAL REGISTER at 42 FR 5861 (January 31, 1977), provide that "(c) where a State authorizes sterilization as a family planning service, it must comply with the provisions of 45 CFR 205.35."

3. THE AFDC PROGRAM IN THE 50 STATES AND THE DISTRICT OF COLUMBIA

While title XX itself does not mandate the provision of family planning services, title IV-A effectively does mandate such services in a State's title XX plan. In order for a State to qualify for Federal financial participation under title IV-A of the Social Security Act (Aid to Families with Dependent Children), the State's plan must provide that family planning services will be provided under title XX. Section 402(a)(15) of the Social Security Act, 42 U.S.C. 602(a)(15), as amended by Pub. L. 93-647 (the enacting title XX legislation), requires that the State's title IV-A plan provide:

> As part of the program of the State for the provision of services under title XX * * * for the development of a program, for (persons eligible for AFDC benefits) for preventing or reducing the incidence of births out of wedlock and otherwise strengthening family life, and for implementing such program by assuring that in all appropriate cases (including minors who can be considered to be sexually active) family planning services are offered to them and are provided promptly * * * to all individuals voluntarily requesting such services, but acceptance of family planning services provided under the plan shall be voluntary on the part of such members and individuals and shall not be a prerequisite to eligibility for or the receipt of any other services under the plan * * *

4. THE AFDC AND AGED, BLIND AND DISABLED PROGRAMS IN GUAM, PUERTO RICO, AND THE VIRGIN ISLANDS

In Guam, Puerto Rico, and the Virgin Islands, five titles of the Social Security Act are relevant to the provision of sterilizations. Titles I, X, XIV and XVI, providing for grants for assistance and services to the aged, blind and disabled, are now in effect only for Guam, Puerto Rico and the Virgin Islands. (In all other jurisdictions those titles have been superseded by the new title XVI (Supplemental Security Income) and title XX (Social Services.)) Each of those titles provides, at subsection (c)(1) of sections 3, 1003, 1403 and 1603, 42 U.S.C. 303(c)(1), 1203 (c)(1), and 1353(c)(1) and 381, respectively, that in order to qualify for Federal payments the State plan must provide that the State agency must make available "at least those services to help them attain or retain capability for [self-support or] self-care which are prescribed by the Secretary." (The bracketed words do not appear in title I.) 45 CFR 222.59, applicable to the original adult titles, authorizes family planning as an optional service under those titles. 45 CFR 222.7 (also applicable to the original adult titles) provides that "eligible individuals must be free to determine whether to accept or reject services from the agency."

Title IV-A reads virtually identically for Guam, Puerto Rico and the Virgin Islands as for the other States except that the provision in section 402(a)(15) referring to title XX does not apply. In these jurisdictions section 402(a)(15) requires that the title IV-A plan itself must provide for family planning services.

5. PROGRAMS ADMINISTERED BY THE PUBLIC HEALTH SERVICE

Title V of the Social Security Act, which is administered by PHS, requires each State, as a condition to the receipt of formula grant funds for maternal and child health and crippled children's services, to include in its State plan a program of family planning service projects. The program or project must offer reasonable assurance, particularly in areas with concentrations of low-income families, of satisfactorily helping to reduce the incidence of handicapping conditions caused by complications associated with childbearing and to reduce infant and maternal mortality. See section 505(a)(8) of the Act, 42 U.S.C. 705(a)(8).

The Public Health Service also funds sterilizations under title X of the Public Health Service Act, which authorizes the Secretary to make grants and contracts for family planning projects which offer a "broad range of acceptable and effective family planning methods." Section 1001(a), 42 U.S.C. 300(a). In addition, family planning services are included in the care offered by community health

centers under section 330 of the Public Health Service Act, 42 U.S.C. 254c, and in the migrant workers health program under section 319 of the Act, 42 U.S.C. 247d.

Public Health Service personnel perform sterilizations in PHS hospitals, in the Indian Health Service, and in other direct programs. Although these rules govern only federally funded sterilizations, they will be made applicable to these direct programs by administrative directive.

Finally, section 205 of Pub. L. 94–63, 42 U.S.C. 300a–8, makes it a felony, punishable by a fine up to $1000, and by imprisonment of up to one year, or both, to coerce any person to undergo an abortion or sterilization through the threat of withholding any service or program receiving Federal financial assistance.

Current Policies

Departmental policies with regard to Federal financial participation in sterilizations are found in the existing rules, 42 CFR 50.201–50.204 and 45 CFR 205.35, and in the moratorium on any sterilization of individuals under 21 or legally incapable of consenting to be sterilized declared by the Secretary on July 27, 1973, 38 FR 20930 (August 3, 1973). These policies are still in effect and will remain in full force until the date these proposed rules become effective. In brief those policies are:

1. Federal financial participation is available only in the sterilization of people at least 21 years old who are mentally competent under State law. In other words, Federal funding is not available for any sterilization of a person who is either under 21 or who is mentally incompetent.

2. Federal financial participation is available in the sterilization of people over at least 21 years old only where informed consent, as defined and required by the current rules, is obtained. In all except so-called "therapeutic" sterilizations, informed consent must be obtained at least 72 hours prior to the sterilization.

Discussion of the Major Issues

1. The competing policies and the need for public comment

Regulation of Federal financial participation in sterilizations is governed by two principles. First, Congress, is enacting the various programs through which sterilizations are funded, recognized sterilization as a valid family planning technique and intended it to be freely available to the population eligible for family planning assistance. Equally significant, however, is that in virtually every provision in which the Congress authorized Federal funding of sterilization, it also required that the acceptance of such services be voluntary. See, e.g., Social Security Act sections 402, 508, and 1905(a), 42 U.S.C. 602, 708, and 1396(d), and Public Health Service Act section 1007, 42 U.S.C. 300a–5. See also S. Rep. No. 1230, 92d Cong., 2d Sess. 295–98 (1972) (legislative history to 1972 family planning services amendments to Social Security Act). Thus, the Congress wrote into law its determination that no person be coerced, through direct or devious means, into undergoing a sterilization.

The Department fully appreciates the importance each of these twin policies. Mature people, understanding the nature and consequences of sterilization procedures, should have access to sterilizations unimpeded by unnecessary procedural requirements. At the same time, the Department is aware of serious allegations of cases in which patients were coerced into being sterilized, and the Department is equally committed to preventing abuses wherever sterilizations are paid for with Federal funds. Thus, the Department seeks to prevent situations in which a patient decides to undergo a sterilization because of lack of information as to the nature and consequences of the procedure, because of lack of mental capacity to understand those nature and consequences, because of fear that refusal to be sterilized will result in reprisals such as withdrawal of Federal benefits, or because of susceptibility to duress at times of extreme stress associated with labor, childbirth or hospitalization. In drafting proposed rules, the Department has sought readily enforceable rules that minimize the opportunities for sterilization abuse. Consequently, the proposed rules contain few provisions for exceptions or allowances for special circumstances.

There is an inevitable tension between the dual policies of making sterilizations freely available and of preventing sterilization abuse. As a general matter, the greater the access to sterilizations the greater the possibilities for abuse. Similarly, stringent procedural requirements to control abuse may artificially inhibit patient demand for sterilizations, whereas the absence of such procedures may constitute an invitation for abuse. The policy balance must be struck separately with regard to virtually each and every regulatory option. Where to strike that balance, however, depends to some degree upon informed predictions as to its consequences, with regard to both sterilization availability and steriliaztion abuse.

The Department has found, however, that existing information does not permit precise predictions as to the effects of proposed choices. Indeed, there is serious question whether it is even possible to generate the type of comprehensive data that would permit "scientific" policy making in this difficult area. Systematic data on sterilization abuse, for exmaple, are extremely difficult to collect. First, there is the difficulty of defining sterilization "abuse"; some may argue that every violation, no matter how technical, of existing requirements constitutes abuse, while others might argue that only certain requirements are so fundamental that their violation is abusive. Second, assuming it is possible to define "abuse" satisfactorily, there is no mechanism whereby instances of abuse may be regularly and systematically identified, since abusers cannot be expected to report their conduct and those abused may not have the means or knowledge necessary to bring instances of abuse to the attention of those studying the problem.

The Department is therefore particularly eager to receive comments on these proposed rules, recognizing that individual case histories, no matter how compelling, with respect to both the need for sterilization and with respect to sterilization abuse may not accurately portray the actual consequences of alternative policy choices. Comments will be especially helpful if they are addressed to demonstrating why a particular balance between availability and abuse-prevention policies should be drawn at a given place. Comments should explain why any alternative choices are more likely to minimize overall hardships. Comments should explain why, for example, there would be more suffering because of the unavailability of sterilizations for people under 21 than there would be because of sterilization abuse if some lower minimum age were used in the final rules. The Department recognizes that such information may be difficult to provide, but to the extent available it would greatly inform the Department's exercise of its discretion. In the absence of systematic data, the Department will be forced to rely on anecdotal evidence and its own assessment of the risks and benefits of alternative policy choices. To be sure, however, the Department is also interested in receiving comments that reflect individual experiences and views with respect to these proposed rules. Finally, since the Department expects final rules to be applied administratively to programs in which the Department itself provides sterilizations as in the Indian Health Service, the Department solicits comments from people with an interest in those programs.

Among the issues as to which the Department seeks comments are:

1. The appropriateness of the definition of sterilization.

2. The appropriateness of excluding hysterectomy as a family planning technique.

3. The appropriateness of a 30-day waiting period.

4. The effectiveness of the consent procedures envisioned by the proposed rules.

5. The appropriateness of establishing 21 as the minimum age for Federally funded sterilizations.

6. The appropriateness of funding sterilizations of mental incompetents with the capacity to give informed consent.

7. The effectiveness of procedures in the proposed rules designed to ensure that mental incompetents are not sterilized without their informed consent.

8. The appropriateness of not financially participating in the sterilization of mental incompetents incapable of giving informed consent to be sterilized.

9. The appropriateness of extending special procedures to the sterilization of institutionalized people.

It is understood that this list of issues is by no means exhaustive, and the Department solicits comments of whatever nature on all aspects of these proposed rules.

2. SECTION-BY-SECTION ANALYSIS

Each section of the proposed rules is set out in this part of the Notice, followed by a brief discussion of its requirements. Generally, the text is set out as it will appear in both titles 42 and 45 of the Code of Federal Regulations, with the bracketed section numbers applicable to title 42. Where the text of the proposed rules differ, they are set out separately, with the title 45 rules appearing first.

§ 205.35–1 *Applicability.*

Text of proposed rule.

This section applies to programs administered under Titles I, IV–A, X, XIV, XVI, XIX, and XX of the Social Security Act.

§ 50.201 *Applicability.*

Text of proposed rule:

The provisions of this subpart are applicable to programs or projects for health services which are supported in whole or in part by Federal financial assistance, whether by grant or contract, administered by the Public Health Service.

These paragraphs state the programs to which the proposed rules are applicable. It is anticipated that these rules will be made applicable by administrative directive to programs in which the Department directly provides sterilizations, as in the Indian Health Service.

§ 205.35–2 [§ 50.202] *Definitions.*

Text of proposed rule:

(a) "Sterilization" means any medical procedure or operation for the purpose of rendering an individual permanently incapable of reproducing.

The definition in the proposed rules makes no distinction between so-called "therapeutic" and "non-therapeutic" sterilizations. Any procedure performed for the purpose of rendering the patient permanently incapable of reproducing, regardless of whether the procedure is performed for medical reasons or for the convenience of the patient, will therefore be subject to the proposed rules. Thus, for example, a tubal ligation, whether performed because of concern that a pregnancy could endanger the health of the patient or because the patient did not wish to bear any more children would be subject to the procedures specified in the proposed rules.

The statutes authorizing Federal financial participation in sterilization nowhere distinguish between "therapeutic" and "non-therapeutic" sterilizations, and, as both the District Court and the Court of Appeals noted in the *Relf* case, it is unlikely that Congress intended that procedures designed to ensure informed consent would apply to one but not the other. *See Relf* v. *Weinberger*, No. 74–1797, slip. op. at 11 n.6 (D.C. Cir. September 13, 1977).

The Department thinks it unlikely, however, that Congress, by enacting legislation designed to promote family planning for convenience and other purposes, intended in doing so to impose identical procedural requirements on all medical procedures which have the effect of rendering a patient permanently incapable of reproducing. Some procedures ought not to be considered "sterilizations," even though sterility might result. Thus, for example, a removal of a cancerous uterus would not be deemed a sterilization, for it would not be performed for the purpose of rendering the patient incapable of reproducing, even though it would have that unavoidable effect.

The proposed rules do not define sterilization to include other forms of birth control, that is, procedures that render a person only temporarily incapable of reproducing.

Text of proposed rule:

(b) "Informed consent" (to a sterilization procedure) means a written authorization to be sterilized given by the person to be sterilized and given voluntarily and with an understanding of the nature and consequences of the procedure to be performed.

The definition of informed consent encompasses the two elements of voluntary action: (1) It must be knowing, that is the patient must fully understand the nature of the procedure and the significance of his/her action and (2) it must be entirely a product of the patient's free will. For purposes of these rules, informed consent must be given in writing in the manner specified by the rules.

Text of proposed rule:

(c) *"Consent form"* means a written document which states the requirements for informed consent as set forth in section 205.-35–3 [50.203].

Authorized consent forms must be used for giving informed consent under the proposed rules. Procedures for completing the consent forms are discussed elsewhere in this Notice.

Text of proposed rule:

(d)) "A mentally incompetent individual" means one who has been declared mentally incompetent by a Federal, State, or local court, or who is in fact mentally incompetent under Federal or State law.

This definition includes includes all people who have been adjudicated incompetent by Federal or State courts and those who are in fact incompetent under Federal or State law but who have never been so adjudicated.

Text of proposed rule:

(e) "A sterilization review committee" means a committee designated by the State Agency to review, approve, or deny applications for sterilization as required by this section. The committee must include a physician (other than the one proposing to perform the sterilization), attorney, social worker, and patient advocate.

And

50.202(e) "A sterilization review committee" means a committee designated by the program or project to review, approve, or deny applications for sterilization as required by this section. The committee must include a physician (other than the one proposing to perform the sterilization), attorney, social worker, and patient advocate.

Under one version of the proposed rules, sterilization review commitees would review applications for sterilizations by mentally incompetent patients and patients in institutions to determine their capability to give informed consent and whether they have in fact given their informed consent to be sterilized. Under another version, review commitees would review applications for sterilizations only by patients in institutions. The commitee would be composed of a physician, an attorney, a social worker, and another person who would advocate the patient's position. Because there is wide variation in conditions in various States with respect to such matters as the numbers and geographical dispersion of patients who, although mentally incompetent would nonetheless seek to be sterilized, and the presence of existing mechanisms to which a sterilization review committee could be appended, it is proposed to leave to the States, programs or projects the creation of mechanisms for the establishment and operation of such committees. In addition, procedures already required by State law may well be adequate to satisfy the review committee requirement. If at all possible, the Department does not desire to supplant or duplicate existing mechanisms.

The Department recognizes, however, that the nature and composition of sterilization review committees is a matter as to which there may be substantial variation of opinion. For this reason, the Department solicits comments on at least the following questions:

1. Is there a need for sterilization review committees, and if so, is the committee as envisioned by the proposed

2. Should the composition of the committee be in accordance with the formulation of the proposed rules?

3. Should final rules specify in greater detail the composition, responsibilities, and procedures for sterilization review committees? Specifically, should final rules specify such matters as the number of committees each State, program, or project must establish, their geographical location, whether they must be permanent or ad hoc bodies, and internal administrative procedures designed to ensure confidential treatment of patient records and effective liaison with State agencies and courts?

4. What State or local review committee procedures are now in effect, and how do they operate to prevent sterilization abuse?

5. Should the rule allow States, programs, or projects to utilize existing committee structures and procedures for the purpose of reviewing sterilization, subject to Departmental approval?

Text of proposed rule:

(f) "Hysterectomy" means a medical procedure or operation for the purpose of removing the uterus.

This item states the generally accepted medical definition of hysterectomy.

Text of proposed rule:

§ 50.202(g) The "Public Health Service" means the Health Services Administration, Health Resources Administration, National Institutes of Health, Center for Disease Control, Alcohol, Drug Abuse and Mental Health Administration, and all of their constituent agencies.

§ 50.202(h) The "Secretary" means the Secretary of Health, Education, and Welfare and any other officer or employee of the Department of Health, Education, and Welfare to whom the authority involved has been delegated.

These definitions are self-explanatory.

§ 205.35–3. [§ 50.203] *Consent Procedures.*

Text of proposed rule:

Informed consent does not exist unless a consent form is completed voluntarily and in accordance with all the requirements of this paragraph.

This sentence states the general rule that for the purposes of these rules a person will not be deemed to have given his/her informed consent to be sterilized unless a consent form is completed in accordance with all the requirements of this section.

Text of proposed rule:

(a) *Preparing to Obtain Informed Consent.* An individual who obtains informed consent for a sterilization procedure must provide orally *all* of the following information or advice to the individual who is to be sterilized:

(1) Advice that the individual is free to withhold or withdraw his/her consent to the procedure at any time prior to the sterilization without affecting his/her right to future care or treatment, and without loss or withdrawal of any Federally-funded program benefits to which the individual might be otherwise entitled;

(2) A description of available alternative methods of family planning and birth control;

(3) A full description of the benefits or advantages he/she may expect to gain as a result of the sterilization;

(4) Advice that the sterilization procedure is considered to be irreversible;

(5) A thorough explanation of the specific sterilization procedure to be performed;

(6) A full description of the discomforts and risks which may accompany and follow the performing of the procedure including an explanation of the type and possible effects of any anesthetic to be used;

(7) Advice that the sterilization will not be performed for at least 30 days; and

(8) An opportunity to ask and have answered any questions he/she may have concerning the sterilization procedure.

This item explains the information that a prospective patient must have for his/her assent to be sterilized to be deemed "informed". This provision, however, in no way limits the information that should be given to a patient seeking sterilization if in the judgment of the physician or the person who obtains the patient's consent form more information should be provided.

The patient's consent should be secured under circumstances free of pressure or coercion. Generally, a patient's consent should not be secured while the patient is in labor, during or immediately following delivery, or in conjunction with an abortion.

Although the patient will be provided much of the information in writing, the proposed rules require all information also to be given orally. Both the District Court in the *Relf* case and a recent report by the General Accounting Office concerning sterilization practices in the Indian Health Service concluded that essential information must be communicated orally, especially for people of limited literacy.

Foremost among the information that must be provided is the advice that a patient is free not to be sterilized. The patient must be advised that he/she is free not to consent or to withdraw consent previously given, and that a refusal to be sterilized will not result in the withdrawal of any Federally-funded program benefit, nor will such a refusal affect the patient's right to future care or treatment (including sterilization). It is expected that this advice will be communicated at the outset of any discussion of sterilization with a prospective patient.

The patient must be given all the important facts about sterilization. He/she must be told that sterilization is different from all other forms of birth control because it is irreversible. The patient must be told about both the advantages and disadvantages of sterilization, and about the nature and availability of alternative forms of birth control. Birth control information should include methods available to both the patient and his/her partner.

The patient must also be told of the nature of the surgical procedure that is proposed. This advice must contain a thorough explanation of the procedure and a full description of its discomforts and risks, particularly as compared to other sterilization procedures. The patient also should be adivsed about discomforts and risks that relate to the particular anesthetic to be used.

The patient should also be told that the sterilization will not be performed for at least 30 days, and that he/she may withdraw his/her consent at any time prior to the sterilization.

Finally, the patient must be offered an opportunity to ask and have answered any questions concerning the proposed sterilization.

The Department solicits comments concerning the necessity of providing patients with the foregoing information and as to what additional information, if any, should also be provided.

(b) *Filling out the consent form.*

The items in this paragraph are designed to ensure that the information required by the preceding paragraph is in fact communicated to the patient and that the patient's consent is in fact voluntary.

Text of proposed rule:

(1) *Language of the consent form.* The consent form should be in the primary language of the patient. If the consent form is not in the primary language of the patient, an interpreter must be made available to assist the individual.

Text of proposed rule:

(2) *Provisions for the handicapped.* Suitable arrangements must be made to ensure that consent information is effectively communicated to blind, deaf, and other handicapped patients.

These two items are designed to ensure that information necessary for informed consent is communicated to those whose primary language is other than English and to handicapped people. Where possible, the consent form should be in the primary language of the patient; if this is not possible, an interpreter must be made available. If the patient is blind, the consent form should be read to him/her, and similar arrangements must be made to ensure effective communication of consent material to deaf patients and to patients with other handicaps.

(3) *Signatures on the consent form.* The consent form must be signed and dated by:

(i) The patient; and

(ii) The interpreter, if one is provided; and

(iii) The individual who obtains the consent of the patient; and

(iv) The physician who will perform the sterilization procedure.

(4) *Required certifications.* (i) The person securing the patient's consent must certify by signing the consent form that, before the patient signed the consent form, he/she advised that patient had no Federal benefits may be withdrawn because of the patient's decision not to be sterilized, that he/she explained orally the elements of informed consent as set forth on the consent form, and that the patient, to the best of his/her knowledge and belief, appeared mentally competent and knowingly and voluntarily consented to be sterilized.

(ii) The physician performing the sterilization must certify by signing the consent form that, immediately prior to the performance of the sterilization, he/she advised the patient that no Federal benefits may be withdrawn because of the patient's decision not to be sterilized, that he/she explained orally the elements of informed consent as set forth on the consent form, and that the patient, to the best of his/her knowledge and belief, appeared mentally competent and knowingly and voluntarily consented to be sterilized. The physician will further certify that, to the best of his/her knowledge and belief, at least 30 days passed from the date upon which the patient signed the consent form until the date upon which the sterilization was performed.

(iii) The physician performing the sterilization must, in cases where court orders are required by this section, certify, by signing the consent form, that he/she was provided with a copy of the court order prior to the performance of the sterilization.

The proposed rules would require various signatures on the consent form to provide evidence that the requirements of the rules have been met. The patient's signature would be his/her expression of informed consent, and the interpreter's signature evidence that he/she had provided assistance to a patient whose primary language was not in English.

The proposed rules would also require the signature of the person who obtains the patient's consent, for example, a social worker in a family planning clinic or a physician's assistant. This person often plays a critical role in explaining sterilization to prospective patients, and the proposed rules would require him/her, by signing the consent form, to certify that he/she communicated the information necessary for a patient to give informed consent. The proposed rules

would allow the attending physican to obtain the patient's consent.

A person obtaining the patient's consent must attest to whether, to the best of his/her knowledge and belief, the patient in fact gave his/her informed consent to be sterilized. The person obtaining consent must also certify as to the patient's *appearance* of mental competence. It is not the intention of the proposed rules to place upon people obtaining consent the duty of conducting an independent inquiry into the mental competence of prospective patients seeking sterilization. Neither, however, is it the intention of the proposed rules to permit those obtaining consent to ignore clear evidence of a patient's mental incapacity.

Where a person obtaining the patient's consent is unable to make a required certification, under one version of the proposed rules the sterilization may not go forward. Under an alternative, where the sole issue is the patient's mental competence, the sterilization may go forward only if the requirements in section 205.35–5 (50.205), relating to sterilizations of mental incompetents, have been followed.

The proposed rules do not require an auditor/witness to be present or to sign the consent form. The Department believes that while a patient should be able to have another person present during counseling and consent sessions, respect for the patient's privacy dictates that the presence of a witness not be mandated.

Certification obligations would also be imposed upon physicians performing sterilizations, for physicians have a nondelegable responsibility to ensure that they perform sterilizations only upon patients who have given their informed consent. Consequently, physicians would be required to certify that, immediately prior to the performance of the sterilization, they orally communicated the information necessary for a patient to give informed consent and to certify further that the patient in fact gave informed consent. As with people obtaining patients' consent, physicians would be required to certify as to the patient's *appearance* of mental competence. The phyisican also would be required to certify that to the best of his/her knowledge and belief the required waiting period passed before the sterilization was performed. Ordinarily this last requirement would be satisfied by the physician noting that the sterilization was to be performed more than 30 days after the date appearing next to the patient's signature on the consent form. The required waiting period is discussed elsewhere in this Notice.

In cases where the sterilization is performed upon a person whom a court determined had given informed consent, the physician would be required to certify that he/she received a copy of the court's order prior to the sterilization. Among other purposes, this provision is designed to protect physicians from liability for performing unauthorized sterilizations.

Text of proposed rule:

(c) *Following State and local procedures.* In addition to the consent procedures required by this part, any requirement of State or local law, except one of spousal consent, must be followed.

This provision embodies the policy of the proposed rules not to supplant more stringent State and local requirements. Less stringent State and local requirements will of course be complied with through compliance with the proposed rules. Spousal consent requirements are excepted because of their almost certain unconstitutionality in light of *Planned Parenthood of Central Missouri* v. *Danforth*, 428 U.S. 52 (1976).

The Department is not certain about the extent to which existing State and local laws with respect to sterilization have the effect of denying access to sterilizations to those who would otherwise be eligible for them under these rules. Comments are solicited on the question as to the extent to which final rules should supplant State and local requirements.

§ 205.35–4 *Sterilization of a mentally competent individual aged 21 or older.*

Text of proposed rule:

Federal financial participation is available in expenditures for a sterilization of a mentally competent individual only when the following requirements have been met:

(a) The individual has voluntarily given his/her informed consent in accordance with all the procedures prescribed in section 205.-35–3.

(b) At least 30 days have passed between the date of informed consent and the date of the sterilization.

(c) The individual is at least 21 years old.

and

§ 50.204 *Sterilization of a mental competent individual aged 21 or older.*

Text of proposed rule:

Programs or projects to which this subpart applies shall perform or arrange for the performance of a sterilization of a mental competent individual only when the following requirements have been met:

(a) The individual has voluntarily given his/her informed consent in accordance with the procedures prescribed in section 50.203.

(b) At least 30 days have passed between the date of informed consent and the date of the sterilization.

(c) The individual is at least 21 years old.

These provisions set out the basic requirements for the vast majority of sterilizations in which Federal financial participation would be available under the proposed rules. The individual must have given his/her informed consent; at least 30 days must have elapsed between the date of informed consent and the date of the sterilization; and the patent must be at least 21 years old.

The requirements for informed consent have already been discussed in this Notice.

The 30-day Waiting Period. The Department is aware that there is substantial controversy over the length of time that should be required between rendition of informed consent and the sterilization operation. Some may argue that any "consent" obtained while a woman is hospitalized for childbirth or an abortion is necessarily involuntary. It may be asserted, in addition, that under any circumstances a hospital environment may be alien and frightening to patients and is therefore inherently coercive. The Department believes that any waiting period should be sufficient to remove the patient from the extreme emotional stress often associated with the latter stages of pregnancy as well as labor and delivery. Regardless of where informed consent is given, any waiting period also must be of sufficient duration to permit reflection and discussion with family and friends concerning this irreversible surgical procedure.

On the other hand, too long a waiting period might impose substantial inconvenience and additional expense if it is of sufficient duration as to require two hospitalizations. It may also be asserted that many women are reluctant to seek medical care and will not seek to be sterilized unless they can both choose and obtain sterilization incident to childbirth.

The Department has weighed these competing considerations, and its current thinking is that 30 days is the minimum period for necessary consultation and reflection. A waiting period of this duration, while sufficient to ensure that a decision to be sterilized is not made and effectuated during hospitalization for abortion or childbirth, will not necessarily result in multiple hospitalizations, since informed consent for sterilization can be obtained during pre-natal care or otherwise well in advance of delivery.

The Department has also considered proposing different waiting periods keyed to the type of sterilization and the place where it is to be performed, with different waiting periods for outpatient facilities and hospitals. Similarly, proposed rules could conceivably allow for waiver of the waiting period in exceptional circumstances, for example where a sterilization is arranged for over 30 days in advance of anticipated delivery date but there is a premature delivery. These alternatives may be in theory quite sound, but the Department is skeptical about their enforceability and concerned about the possibilities for abuse.

The Department does not consider a waiting period of less than 30 days as *necessarily* coercive; similarly, it understands that the failure of the proposed rules to provide for waivers or to differentiate between sterilization procedures and the environments in which they may be performed might result in individual cases of inconvenience and hardship. These factors are more than counterbalanced, however, in the Department's current view, by the need to ensure adequate time for reflection and consultation in an environment free from coercion. The Department is reluctant to introduce different standards based on factual circumstances that are not readily identifiable and verifiable on

a sample, audit basis. Consequently, differential waiting periods and waivers of waiting periods have been considered and rejected.

As with other issues with respect to sterilizations, reasonable people may hold strongly conflicting views. The Department therefore solicits the comments of interested parties on the issue of the waiting period, particularly with respect to the following questions:

1. What are the purposes of a waiting period?

2. What length of time is sufficient to accomplish those purposes?

3. What are the detriments of a lengthy waiting period?

4. What are the advantages or disadvantages of including waiting periods of varying duration depending on the type of sterilization procedure and the facility where performed (clinic or hospital)?

5. What are the advantages or disadvantages of permitting waivers of the waiting period in exceptional circumstances?

6. Can rules including waiting periods of varying duration be enforced, or would the result primarily be more instances of of abuse?

The Minimum Age of 21. As discussed above, the statutes themselves present an inevitable tension between two competing interests: assuring maximum availability of family planning services and at the same time assuring that those services are offered on a purely voluntary basis, free of coercion or pressure. To achieve a balanced accommodation between these two purposes, the regulations establish a Federal standard of voluntariness.

The United States Court of Appeals for the District of Columbia Circuit in its September 13, 1977 decision in *Relf* v. *Weinberger* recognized the Secretary's authority to set a uniform Federal standard:

> Where federal funds are authorized by Congress to be expended for sterilizations which are voluntary in nature, the question of what constitutes voluntariness in this context would appear to be one of federal law. In formulating standards for this purpose, it is surely true that state legal requirements cannot be controlling by their own force. A federal standard may still of course, to the extent the federal agency devising the standard finds wise or helpful, take note of state law and utilize available state legal mechanisms in designing and effectuating the federal standard. But how a federal statute is to be implemented remains a matter as to which federal law is supreme, and the agency charged by Congress with implementation is not bound to shape its concept of voluntariness to the contours of state law. *See generally* Planned Parenthood of Central Missouri v. Danforth, 428 U.S. 52 (1976); Wyatt v. Aderholt, 368 F. Supp. 1383, 1384 (M.D. Ala. 1974). *Relf* v. *Weinberger*, No. 74–1797 (D.C. Cir. September 13, 1977), slip. op. at 10 n.3.

Similar conclusions were reached recently by two Federal District Courts in decisions upholding the moratorium on Federal funding of sterilizations for those under 21 years old. *See Peck* v. *Califano*, U.S.D.C. D. Utah, Civil Action No. C 76–229 (June 30, 1977), and *Voe* v. *Califano*, U.S.D.C. Conn., Civil Action No. N–77–195 (July 14, 1977).

Given the Department's authority to establish uniform standards of voluntariness, three questions are raised with respect to age. First, should determinations of capacity with respect to age be made on a State-by-State or case-by-case basis, or should generally applicable standards be set? Second, if a minimum age is set, what should it be? Third, should Federal financial participation ever be available in sterilizations of people below the minimum age?

With respect to the first question, determinations of legal capacity to give informed consent made solely under State law would produce the anomalous result of the Department withholding funds for the sterilization of a 20-year-old in one State, while funding sterilizations of younger people in others. According conclusive effect to State law would also necessitate the extremely difficult determination of the age of consent for purposes of sterilization under varying State laws, some of which confer the status associated with the age of majority upon so-called emancipated minors or upon minors who have contracted a legal marriage, others of which confer competence for different purposes at a variety of ages. Moreover, it would be costly and perhaps impractical for the Department to mandate case-by-case inquiries into the maturity and judgment of prospective patients. Consequently, the Department believes that it has no alternative but to engage in line-drawing and set a single uniform standard, recognizing the inevitability that gross distinctions do not always adequately reflect differences of maturity and judgment.

A single standard necessarily divides persons who seek sterilizations into two groups: those over the the minimum age, for whom funds are made available; and those below it, for whom funds are withheld. This age classification is not, however, unconstitutional. The District Courts in *Voe* and *Peck*, discussed above, sustained against constitutional challenge the Department's current bar on funding sterilizations for individuals who are under age 21 or mentally incompetent. In doing so the courts relied heavily upon the Supreme Court's recent decision in *Maher* v. *Roe*, 45 U.S.L.W. 4787 (U.S. June 20, 1977), which held in essence that since the Constitution does not mandate the funding of medical care, governmental limitations on provision of such care must be upheld if they bear a rational relationship to a permissible legislative purpose. Thus, as in *Maher*, the proposed rules are not subject to the holding of *Roe* v. *Wade*, 410 U.S. 113 (1973), that the Constitution forbids the government to prevent or penalize the exercise of the right to procreative privacy. The age limitation does not interfere with an individual's decision whether to bear or beget a child, but merely withholds Federal funding of one particular means of effectuating the decision not to bear or beget a child.

Assuming the validity of a uniform minimum age, the second question, as to what is the appropriate minimum age, is one as to which reasonable people may have strongly disparate views. There is general agreement that at some age an individual is so immature and his/her judgment so uninformed that it is reasonable to presume that he/she is incapable of giving informed consent, and that therefore his/her assent to be sterilized cannot be said to be "voluntary" within the meaning of the family planning statutes. Moreover, minors have in the past been subject to sterilization abuse, although there may be some disagreement as to how widespread these abuses have been.

But beyond these general principles, there remains strong disagreement on the question as to where the line should be drawn. The Department is aware of the competing considerations: if the minimum is too high people needing sterilizations who might be able to give their informed consent will not be able to get them; but if the minimum age is too low, people without sufficient maturity or judgment to resist coercion may be forced into sterilizations they do not want. Resolving these tensions has proven to be quite difficult and vexing. Much of the evidence of hardship due to unavailability of sterilizations and hardship due to sterilization abuse is extremely compelling. But it is also only anecdotal. In the absence of substantial and systematic evidence as to where the balance of hardship lies, the Department is proposing 21 as the minimum age, recognizing the imperfection of any age chosen, in the belief that there is reason to be concerned whether people under that age generally have the judgment, experience and maturity to make voluntary decisions to be sterilized.

The third question is whether the proposed rules should provide for sterilization of people below the minimum age under extraordinary circumstances, and if so, what should those circumstances be? Although recognizing that severe hardships can befall a person under 21 who cannot use other forms of birth control if sterilization is unavailable, the Department is proposing that Federally-funded sterilizations not be available, under any circumstances, to people under 21.

There is serious question, given the presumption of lack of capacity on the part of a person under 21 to consent to be sterilized, whether the Department has the legal authority to fund any sterilizations of people below that age, since the family planning statutes require that the receipt of sterilization services be "voluntary." The issue is not free from doubt, since the doctrine of substituted consent, in which parents or guardians are empowered to make decisions on behalf of those incapable of doing so themselves, has been occasionally accepted with respect to other critical decisions. Equally important is that any exception would be difficult to monitor and could create substantial possibilities of abuse. Without evidence

of widespread compelling need, and without reason to believe that substantial incidents of abuse would not occur, the Department is reluctant to participate financially in the sterilization of people under 21.

The Department is eager to receive comments on the question of minimum age. It would be helpful if the comments could address themselves to the following issues, among others:

1. What is the evidence of sterilization abuse of people under 21 (or 18)?

2. Is there evidence that substantial numbers of people under 21 (or 18) have been denied necessary sterilization services under the current moratorium?

3. What form does sterilization abuse of people under 21 (or 18) take?

4. What are the circumstances under which it might be appropriate to fund sterilizations of people below the minimum age specified in the proposed rules? How could such exceptions be monitored to avoid abuse?

205.35–5 *Sterilization of a Mentally Incompetent Individual Aged 21 or Older; Sterilization of an Institutionalized Individual Aged 21 or Older*

Text of proposed rule:

(a) Federal financial participation is unavailable in expenditures for a sterilization of a person who has been declared mentally incompetent by a Federal, State, or local court, or who is in fact mentally incompetent under Federal or State law.

(b) Federal financial participation is unavailable in expenditures for a sterilization of any individual institutionalized in a correctional, or mental or other facility *unless*:

(1) The individual has voluntarily given his/her informed consent in accordance with all the procedures prescribed in section 205.35–3;

(2) At least 30 days have elapsed between the date of informed consent and the date of the sterilization;

(3) The individual is at least 21 years old;

(4) The sterilization review committee has certified to a court, after a hearing at which counsel representing the patient has presented the evidence for and against such a certification, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure as set forth in section 205. 35–3(a), and that the patient has voluntarily consented to be sterilized; and

(5) The court has found, after a hearing at which counsel for the patient has presented the evidence for and against such a finding, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure as set forth in section 205.35–3(a), and that the patient has voluntarily consented to be sterilized.

or

(a) Federal financial participation is unavailable in expenditures for a sterilization of a mentally incompetent individual, or any individual institutionalized in a correctional, mental or other facility *unless:*

(1) The individual has voluntarily given his/her informed consent in accordance with all the procedures prescribed in section 205.35–3;

(2) At least 30 days have elapsed between the date of informed consent and the date of the sterilization;

(3) The individual is at least 21 years old;

(4) The sterilization review committee has certified to a court, after a hearing at which counsel representing the patient has presented the evidence for and against such a certification, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure as set forth in section 205.35–3(a), and that the patient has voluntarily consented to be sterilized; and

(5) The court has found, after a hearing at which counsel for the patient has presented the evidence for and against such a finding, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure as set forth in section 205.35–3(a), and that the patient has voluntarily consented to be sterilized.

(b) Federal financial participation is unavailable in expenditures for the sterilization of a mentally incompetent individual who does not understand the nature and consequences of the proposed sterilization procedure as set forth in section 205.35–3(a).

and

§ 50.205 *Sterilization of a mentally incompetent individual aged 21 or older; sterilization of an institutionalized individual aged 21 or older*

Text of proposed rule:

(a) Programs or projects to which this subpart applies shall not perform or arrange for the performance of a sterilization of any person declared mentally incompetent by a State, Federal or local court, or who is in fact mentally incompetent under Federal or State law.

(b) Programs or projects to which this subpart applies shall not perform or arrange for the performance of a sterilization of any individual institutionalized in a correctional, mental or other facility unless:

(1) The individual has voluntarily given his/her informed consent in accordance with the procedure prescribed in section 50.203;

(2) At least 30 days have elapsed between the date of informed consent and the date of the sterilization;

(3) The individual is at least 21 years old;

(4) The sterilization review committee has certified to a court, after a hearing at which counsel representing the patient has presented the evidence for and against such a certification, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure as set forth in section 50.203(a), and that the patient has voluntarily consented to be sterilized; and

(5) The court has found, after a hearing at which counsel for the patient has presented the evidence for and against such a certification, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure, as set forth in section 50.203(a), and that the patient has voluntarily consented to be sterilized.

or

(a) Programs or projects to which this subpart applies shall not perform or arrange for the performance of a sterilization of a mentally incompetent individual or any individual institutionalized in a correctional, mental or other facility *unless:*

(1) The individual has voluntarily given his/her informed consent in accordance with the procedures prescribed in section 50.203;

(2) At least 30 days have elapsed between the date of informed consent and the date of the sterilization;

(3) The individual is at least 21 years old;

(4) The sterilization review committee has certified to a court, after a hearing at which counsel representing the patient has presented the evidence for and against such a certification, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure as set forth in section 50.203(a), and that the patient has voluntarily consented to be sterilized; and

(5) The court has found, after a hearing at which counsel for the patient has presented the evidence for and against such a finding, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure, as set forth in section 50.203(a), and that the patient has voluntarily consented to be sterilized.

(b) Programs or projects to which this subpart applies shall not perform or arrange for the performance of a sterilization of a mentally incompetent individual who does not understand the nature and consequences of the proposed sterilization procedure as set forth in section 50.203(a).

These provisions embody two alternative responses to the issue of suitability of funding sterilization for two groups of people particularly vulnerable to sterilization abuse—mentally incompetent people and people in mental, correctional or other institutions.

Mental Incompetents. Two alternative formulations are proposed with respect to people who are mentally incompetent under Federal or State law. Under the first version, Federal funds would not be available for the sterilization of any person declared incompetent by a Federal, State, or local court, or incompetent in fact under Federal or local law. This is the Department's current policy, embodied in the moratorium in effect since 1973, on the funding of sterilization of mental incompetents.

The advantages of the moratorium have been its relative simplicity, consequent ease of application and its apparent prevention of substantial sterilization abuse of mentally incompetent people. Further, the Department has not been made aware of significant hardships traceable to the moratorium.

The current moratorium, however, has some serious disadvantages. It is possible that the moratorium results in substantial unnecessary suffering by denying access to sterilizations by people who want them and who—regardless of label imposed upon them by a finding of incompetence—are fully capable of understanding the nature and consequences of and voluntarily consenting to a sterilization. Indeed people may be adjudicated incompetent for limited purposes only, such as the conduct of financial affairs, and yet are fully capable of rendering informed and voluntary consent to be sterilized. In addition, continuing the absolute bar to the funding for sterilization of persons incompetent in fact but not so adjudicated leaves the physician

in an impossible dilemma and without any avenues of redress. Being uncertain as to the patient's competence, and without access to a review committee and court hearing, the physician will decline to sterilize the patient. It may be that the moratorium thereby has the unintended effect of denying sterilizations to people who would not be adjudicated incompetent but whom physicians are reluctant to sterilize because of possible liability.

The Department stresses that it does not have adequate data on the numbers of mentally incompetent people who desire and are capable of consenting to sterilizations. Should comments uncover evidence of substantial desire for sterilizations among the mentally incompetent capable of consent, a system of safeguards would need to be constructed to avoid creating a serious potential for sterilization abuse. The second alternative proposed in these rules is intended to construct such a system.

The Department seeks to avoid any coerced sterilizations of the mentally incompetent. Because mental incompetents are presumptively incapable of informed consent, the procedures under this alternative are directed to the end of assuring that assent to sterilization is indeed voluntary and informed. The Department intends to re-evaluate this section in light of the comments received to determine whether these—or any procedures will be adequate to forestall coerced sterilizations.

As with respect to setting minimum ages, the Department, in interpreting the Federal statutory standard of voluntariness, has the legal authority to administer a single, uniform standard of mental competence. See *Relf* v. *Mathews*, supra.

The fact that a patient has been adjudicated incompetent under State law would not settle the issue of Federal law as to whether the patient had voluntarily consented to be sterilized. If the Department decides to fund sterilization of mentally incompetent patients it would do so only if the patient "understands the nature and consequences of the proposed sterilization procedure as set forth in section 205.35–3(a)" and had given informed consent in accordance with the proposed rules. This standard by necessity calls for case-by-case determination.

Under this alternative regulation, persons adjudicated incompetent or incompetent in fact would be eligible for Federally funded sterilizations if they are capable of rendering informed and voluntary consent to be sterilized. Thus, for example, a patient as to whom a physician had any serious question as to his/her mental competence could be sterilized in accordance with the procedures mandated by this subsection.

Mental incompetents seeking to be sterilized would first give their informed consent to a proposed sterilization in the manner prescribed in section 205.35–3 [50.203] As with all other sterilizations—and for the same reasons—no federally funded sterilization could go forward before the expiration of 30 days after informed consent had been given, and no federally funded sterilization could be performed on a patient less than 21 years old.

Following the initial steps, the proposed sterilization would be presented to the sterilization review committee described earlier in this Notice. As previously indicated, the Department currently intends to leave the method of convening and the procedures for operating sterilization review committees to the States, programs, or projects. Existing procedures under State law may also be adequate to satisfy the review committee requirement. The rules do, however, require the presence of a physician, (other than the one proposing to perform the sterilization) lawyer, social worker and patient advocate.

The sole inquiry for the sterilization review committee would be whether the patient had the capacity to give and had in fact given his/her informed consent; it would not be empowered to consider the wisdom of the patient's choice. If informed consent had indeed been given, the committee would not be empowered to override the patient's choice on the basis of his/her "best interests." The committee would likewise not be empowered under these rules to consider whether sterilization would be in the "best interest" of one who could not understand the nature and consequences of the proposed sterilization.

The patient, as the proponent of the sterilization, would be required to demonstrate to the review committee that all the requirements for informed consent had been met, that he/she understood the nature and consequences of the proposed sterilization, and voluntarily consented to be sterilized. This inquiry subdivides into two parts: The question of patient's capacity to understand and appreciate the information given to him/her as part of the consent process, and the question whether the patient had in fact voluntarily given informed consent in the manner prescribed by these rules. The proposed rules specify the "nature and consequences" that the patient must understand; they are those delineated by section 205.35–3(a) as the minimum information the patient must receive if his/her consent can be said to be "informed."

The Department believes that, in addition to the patient advocate, legal counsel is necessary to protect the patient's rights. Since the inquiry is by definition into the patient's capacity, however, and circumstances will vary, it is difficult to predict whether the attorney would be acting in the best interests of his/her client in arguing for or against the proposed sterilization. Because of this unpredictability the Department believes that counsel would be most helpful to the patient and the review committee by marshalling and presenting the evidence both for and against the proposed findings.

If a sterilization review committee does not make the findings that would be required under the proposed rules, the sterilization could not be federally funded. Where the committee makes the required findings, the matter would then be presented to a court for its de novo consideration.

The proposed rules envision a rather limited role for courts to which petitions from review committees would be presented. The sole issue before the court would be whether the patient had the capacity to and did give informed consent to be sterilized. The proposed rules could not and would not requrie or empower courts to order federally funded sterilizations, so there is no reason for State courts to fear liability for ordering sterilizations. *Cf. Spartman* v. *McFarlin*, 522 F.2d 172 (7th Cir.), cert. granted, ____ U.S. ____ (1977).

A related issue is whether State courts would in fact assert jurisdiction over petitions from sterilization review committees. The Department, of course, has no power to create jurisdiction in State courts, and State courts may not exercise jurisdiction they do not have. However, since determinations of incompetence and commitment to institutions are often made by courts, it is believed that State courts have jurisdiction over the incompetent and institutionalized individuals to empower inquiry into the presence of informed consent for a sterilization.

Proceedings before courts reviewing petitions from sterilization review committees would be the same as those earlier described with respect to review committees. Thus, the proponent of the sterilization would bear the burden of proof, and the patient and the court would be assisted by counsel presenting the evidence for and against the required findings.

As with other strelization issues, the Department understands that there may be divergent views on the proper treatment of mental incompetents. Comments are therefore solicited, particularly with respect to the following issues:

1. Should the Department fund sterilizations of people who are mentally incompetent under State law? Under what circumstances?

2. Should the class of those requiring special protection be more broadly defined to include those, who although not incompetent, are mentally impaired? How would this group be described?

3. What have been the effects of the current moratorium upon people who would be eligible for sterilization under this section of the proposed rules?

4. What reason is there to believe that funding sterilizations of mental incompetents under any circumstances would result in sterilization abuse?

5. What reason is there to believe that the procedures required by this subsection of the proposed rules will be adequate to prevent coerced sterilizations or sterilizations of those unable to give informed consent? Would other procedures, such as resort to the American Arbitration Association, be more effective?

The mentally incompetent without the capacity to give informed consent. Under

either proposed version of the rules with respect to the funding of sterilization of the mentally incompetent, no funds would be available for sterilization of people who lack the mental capacity to give informed consent. This is the Department's current position on this issue. For purposes of these rules, people who cannot understand the nature and consequences of a proposed sterilization—that is, the minimum information set out in section 205.35–3(a) that must be understood for consent to be deemed "informed"—are considered to lack the mental capacity to consent to a sterilization. There are classes of people so profoundly retarded as to be unable to utilize temporary forms of contraception and for whom the bearing or begetting of a child may bring only confusion, fear, or indifference. The profoundly retarded may be totally incapable of caring responsibly for their children, many of whom may be profoundly retarded themselves. Instead, the burden may be shifted to parents, guardians or other custodians, perhaps raising burdens to intolerable limits and increasing the pressures for institutionalization of people who might be otherwise better served in non-custodial environments. In short, there is a class of people whose continued fertility may be against their best interests and that of society.

There are, however, compelling countervailing considerations. Although the issue is not free from doubt, there is serious question whether the Department has the legal authority to fund sterilizations for people who lack the mental capacity themselves to satisfy the statutory standard of voluntariness. Even assuming the validity of the doctrine of substituted consent in this context, the statutes give no guidance as to the circumstances under which a guardian could request sterilization in the patient's name. Without explicit congressional guidance in this sensitive and troubling area, the Department is reluctant to conjecture as to the circumstances under which Congress intended the Department to fund sterilizations of those without the mental capacity to give their informed consent.

In addition, there is reason to fear that any exception for sterilization of the profoundly retarded would create myrid possibilities for sterilization abuse. The Department wishes to avoid wholesale sterilization of mental incompetents for the convenience of their guardians and custodians, and fears that any exception to a ban on Federal financial participation in the sterilization of the profoundly retarded would prove extremely difficult to police. Finally, as previously discussed, there have been few reports of hardships occasioned by the present moratorium on payment for sterilization of mental incompetents.

These issues are deeply troubling, and the Department welcomes the comments of interested parties. Comments may be directed to the following issues, among others:

1. What is the Department's legal authority to fund sterilizations of people who lack the mental capacity to give informed consent?

2. Has the present moratorium on federally funded sterilizations of mental incompetents produced severe hardships? Of what nature?

3. If the Department were to fund sterilizations of the profoundly retarded, under what circumstances should it do so?

4. Would funding sterilizations of the profoundly retarded under exceptional circumstances inevitably lead to substantial sterilization abuse?

People in institutions. Under both proposed versions of this part of the rules, special procedural protections would be required for the sterilization of people in mental, correctional or other institutions. Although the Department is uncertain as to the number of institutionalized people seeking sterilizations, is is imperative that this group, no matter how small, be accorded special protections to counteract the enhanced opportunities for coercion inherent in a custodial environment.

The procedures proposed are the same as those proposed for mental incompetents, and they are directed towards the same goal—determining whether the patient has in fact given informed consent to a proposed sterilization. The Department believes that these procedures, described earlier in this Notice, are generally properly tailored to protect people in institutions.

One possible exception concerns the role of counsel for the institutionalized patient at committee and court proceedings. Since, unlike the situation with respect to mental incompetents, the inquiry would not be focused primarily on the issue of the patient's mental capacity, there is little reason to fear that an attorney supporting his client's request for a sterilization will not be acting for his client. But there may be some benefit, as a check upon abuse, in having an attorney present evidence against a finding that the patient in fact consented to be sterilized. For this reason, the Department has proposed that counsel for the institutionalized patient at committee and court proceedings present evidence for and against the requisite findings.

The Department solicits comments on the proper treatment of proposed sterilizations of people in institutions, including comments directed at the following issues:

1. What is the evidence of sterilization abuse of people in institutions?

2. Are identical procedures necessary or appropriate to protect the interests of mentally incompetent people and people in institutions?

3. What should be the role of counsel, if any, at committee and court proceedings?

§ 205.35–6 *Sterilization of a mentally competent or incompetent individual under the age of 21.*

Text of proposed rule:

Federal financial participation is unavailable in expenditures in the sterilization of individuals under 21 years old.

and

§ 50.206 *Sterilization of a mentally competent or incompetent individual under the age of 21.*

Text of proposed rule:

Programs or projects to which this subpart applies shall not perform or arrange for the performance of sterilizations of individuals under 21 years old.

These sections state the absolute rule, for the reasons discussed earlier in this Notice, that Federal financial participation would be unavailable in the sterilization of individuals under 21 years old.

§ 205.35–7 *Sterilization by hysterectomy.*

Text of proposed rule.

Federal financial assistance for family planning purposes is unavailable for participation in any hysterectomy performed for the purpose of rendering an individual permanently incapable of reproducing, unless [exception, with appropriate safeguards, to be added if comments describe circumstances in which sterilization by hysterectomy is generally accepted as the appropriate method].

and

§ 50.207 *Sterilization by hysterectomy.*

Programs or projects to which this subpart applies shall not perform or arrange for the performance of any hysterectomy for the purpose of rendering an individual permanently incapable of reproducing, unless [exception, with appropriate safeguards, to be added if comments describe circumstances in which sterilization by hysterectomy is generally accepted as the appropriate method].

The statutes under which the proposed rules are being issued authorize the expenditure of Federal funds for "family planning" services. In enacting these statutes, Congress clearly imposed upon the Department the responsibility to determine what services fall within the statutory authorization. For example, section 1001(a) of the Public Health Service Act, 42 U.S.C. 300(a), authorizes the Secretary to arrange for the provision only of "acceptable and effective" family planning methods. The Department believes that it has no less of a responsibility to fund only "acceptable and effective" family planning methods under its other programs; indeed, section 1903(a)(5) of the Social Security Act, 42 U.S.C. 1396b(a)(5), imposes this same duty upon the Department in the Medicaid program by providing for a special rate for Federal matching of State family planning expenditures.

There is virtual unanimity within the medical profession that hysterectomy, in the adsence of other clinical indications, is not an appropriate or even acceptable

means of sterilization. It is widely accepted that hysterectomy is a much more dangerous form of female sterilization than the various types of tubal ligations. One study, for example, concluded that "the complication rate of simple vaginal hysterectomy was 10 to 20 times higher than the complication rate of tubal sterilization procedures." L. Hibbard, Sexual Sterilization by Elective Hysterectomy, 112 Am. J. Obstet. Gynecol. 311, 317 (1972). It is believed that a comparison of mortality rates would be similarly striking.

Hysterectomies are also many times more expensive than other female sterilization procedures. A tubal ligation can be performed usually within a one-day hospital stay, and in some cases on an outpatient basis. In contrast, hysterectomy is a more drastic surgical procedure, often requiring hospitalization for as much as 5 to 7 days.

Because of these considerations, hysterectomy is virtually universally decried when used for sterilization purposes alone. The American College of Obstetricians and Gynecologists, for example, takes the position that whenever a hysterectomy is performed solely for sterilization purposes, the case automatically should be referred to a physician's committee for peer review. *See* ACOG, Model Screening Criteria, 18 (1977). Other authorities have concluded that hysterectomy is not a valid sterilization technique. *See, e.g.*, Dyck, F. Murphy & J. Murphy et al. Effect of Surveillance on the Number of Hysterectomies in the Province of Saskatchewan, 296 N.E.J. Med. 1326, 1328 (1977); Testimony of Kenneth J. Ryan, M.D., Chairman, Department of Obstetrics and Gynecology, Harvard University School of Medicine, in Hearings on Important Cost and Quality Issues of Health Care Before the Subcommittee on Oversight and Investigations of the House Committee on Interstate and Foreign Commerce, 95th Cong., 1st Sess. at 350 (1977).

On the basis of these authorities, and in the belief that they represent the overwhelming preponderance of opinion in the medical profession, the Department is proposing not to fund sterilizations by hysterectomy. In spite of this apparent unanimity, however, the proposed rules have been written so as to provide for Federal financial participation in hysterectomies for family planning purposes under exceptional circumstances, of which the Department is presently unaware, in which sterilization by hysterectomy would be medically appropriate, should any such circumstances be described in public comments received by the Department. If such an exception is added to this provision, the Department will have to consider possible safeguards to protect against abuse. Such safeguards might include additional documentation requirements or a required consultation with an additional physician. In any event, sterilizations by hysterectomy for which there might be non-family planning justifications could still be Federally funded if they meet the criteria of other provisions authorizing funding for medical assistance.

The Department solicits comments on the appropriateness of sterilizations by hysterectomy, including comments directed at the following issues:

1. Are there any circumstances under which performing a hysterectomy for sterilization purposes is generally accepted as appropriate?

2. Should any other mechanism, for example requiring additional documentation or second physician consultations, be utilized to deal with the question of sterilization hysterectomies?

Text of proposed rule:

(b) Federal financial participation is available in a hysterectomy the purpose of which is other than to render the patient permanently incapable of reproducing, provided that:

(1) The individual who secures the usual authorization from the patient or her representative, if any, to perform the hysterectomy has informed the patient and her representative, if any, orally and in writing, that the hysterectomy will render the patient permanently incapable of reproducing; and

(2) The patient or her representative, if any, has signed a written acknowledgment of receipt of the foregoing information.

and

(b) Programs or projects to which this subpart applies may perform or arrange for the performance of a hysterectomy the purpose of which is other than to render the patient permanently incapable of reproducing, provided that:

(1) The individual who secures the usual authorization from the patient or her representative, if any, to perform the hysterectomy has informed the patient and her representative, if any, orally and in writing, that the hysterectomy will render the patient permanently incapable of reproducing; and

(2) The patient or her representative, if any, has signed a written acknowledgment of receipt of the foregoing information.

Even though hysterectomy is not acknowledged as an acceptable family planning technique, it undeniably always has the effect of rendering a patient permanently incapable of reproducing. The Department wishes to ensure that patients fully understand the family planning consequences of hysterectomies.

To accomplish this end, the proposed rules require that whenever a Federally-funded hysterectomy is performed, the person securing the patient's authorization for the surgery (or, where applicable, the authorization of the patient's representative) inform the patient and her representative that the hysterectomy will render the patient permanently incapable of reproducing. To ensure compliance with this provision, the proposed rules further require the patient or her representative to acknowledge, in writing, receipt of the information that the hysterectomy will render the patient permanently incapable of reproducing.

It should be noted that this provision imposes no requirements as to the circumstances under which authorization for a hysterectomy must be obtained or the people from whom it must be obtained. The Department at present does not have reason to believe that authorization for hysterectomies, like all other purely medical procedures, is not routinely and properly obtained. The proposed rules, therefore, would require the provision and acknowledgment of receipt of the requisite information only on the same basis and under the same circumstances as upon which authorization is already being obtained.

Comments are solicited with respect to this provision, particularly with respect to the following questions:

1. Is the proposed rule adequate to ensure that patients are apprised of the inevitable consequences of hysterectomies?

2. Are existing procedures adequate to ensure that patients are apprised of the inevitable consequences of hysterectomies?

§ 205.35–8 *State Agency Requirements.*

Text of proposed rule:

(a) A State plan under Title I, IV–A, X, XIV, XVI, XIX, or XX of the Social Security Act must provide, with respect to sterilization procedures or hysterectomies for which payment is made under the plan, (1) that all requirements of this section be met; and (2) that the State will provide legal counsel for the patient at all review committee and court proceedings described in this section.

(b) The State Agency shall maintain sufficient records and documentation to assure compliance with these regulations, and must retain such data for at least 3 years.

(c) The State Agency shall submit other reports as required and when requested by the Secretary.

and

§ 50.208 *Program or project requirements.*

Text of proposed rule:

(a) A program or project must, with respect to any sterilization procedure or hysterectomy it performs or arranges, (1) meet all requirements of this subpart; and (2) provide legal counsel for the patient at all review committee and court proceedings described in this subpart.

(b) The program or project shall maintain sufficient records and documentation to assure compliance with these regulations, and must retain such data for at least 3 years.

(c) The program or project shall submit other reports as required and when requested by the Secretary.

The proposed rules provide that a State plan under title I, IV–A, X, XIV, XVI, XIX, or XX of the Social Security Act, with respect to sterilization procedures or hysterectomies for which payment is made under the plan, and a program or project, with respect to sterilization procedures or hysterectomies supported by the Public Health Service, must provide (1) that all requirements of this section be met; and (2) that the State, program, or project will provide legal counsel for the patient at all sterilization review committee and court proceedings described in this section. The State Agency, or program or project, must maintain sufficient records and documentation to assure compliance with these regulations, and must retain such data for at least 3 years. The appro-

priate State Agency, program, or project must submit other reports as required and when requested by the Secretary.

§ 205.35–9 *Federal financial participation.*

Text of proposed rule:

(a) Federal financial participation is not available in expenditures for sterilization procedures unless a facsimile of the consent form appended to this section or another form approved by the Secretary is used for purposes of this section.

(b) Federal financial participation under title XIX of the Social Security Act is unavailable in any sterilization or hysterectomy for which the State Agency has paid without first having received documentation showing that the requirements of this section have been met. Documentation includes consent forms, review committee certifications, court orders, and acknowledgements of receipt of hysterectomy information.

(c) Federal financial participation is available in expenditures for the review committee and legal counsel where required by this section.

and

§ 50.209 *Use of Federal financial assistance.*

(a) Federal financial assistance administered by the Public Health Service may not be used for expenditures for sterilization procedures unless the consent form appended to this subpart or another form approved by the Secretary is used for purposes of this section.

(b) A program or project shall not use Federal financial assistance for any sterilization or hysterectomy without first receiving documentation showing that the requirements of this subpart have been met. Documentation includes consent forms, review committee certifications, court orders, and acknowledgements of receipts of hysterectomy information.

(c) Federal financial assistance administered by the Public Health Service may be used for the expenditures for the revivew committee and legal counsel where required by this section.

The proposed rules provide that Federal financial participation would not be available in expenditures for sterilization procedures unless the consent form contained in the appendix to the regulations or another form approved by the Secretary is used for purposes of this section. To facilitate enforcement, the appropriate State Agency, program, or project may not pay for any sterilization procedure or hysterectomy without first receiving documentation showing that the requirements of these rules have been met. Documentation includes consent forms, sterilization review committee certifications, court orders, and acknowledgements of receipt of the information that a hysterectomy will render the patient permanently incapable of reproducing. The proposed rules also provide that Federal financial participation is available in expenditures for the sterilization review committee and legal counsel where required by the regulations.

INVITATION TO COMMENT

Interested persons are invited to submit written comments, suggestions or objections concerning the proposed regulations to, for the Public Health Service, Marilyn L. Martin, Room 722H (Hubert H. Humphrey Building), 200 Independence Avenue SW., Washington, D.C. 20201 and, for the Health Care Financing Administration, Administrator, HCFA, P.O. Box 2366, Washington, D.C. 20013, on or before March 13, 1977. All comments received in timely response to this Notice will be considered and will be available for public inspection at the following offices during regular business hours.

Public Health Service, Room 722H (Hubert H. Humphrey Building), 200 Independence Avenue, SW., Washington, D.C. 20201.

Health Care Financing Administration, Room 5225, Switzer Building, 330 C Street, SW., Washington, D.C. 20201.

It is proposed to make these rules effective upon republication in the FEDERAL REGISTER.

NOTE.—The Department of Health, Education, and Welfare has determined that this document does not contain a major proposal requiring preparation of an Inflation Impact Statement under Executive Order 11821 and OMB Circular A–107.

It is therefore proposed to amend 42 CFR Part 50 Subpart B, and 45 CFR, Chapter II, Part 205 as set forth below.

Dated: November 30, 1977.

JULIUS B. RICHMOND,
Assistant Secretary for Health.

ROBERT A. DERZON,
Administrator, Health Care Financing Administration.

NOVEMBER 30, 1977.

Approved: December 1, 1977.

JOSEPH A. CALIFANO, Jr.,
Secretary.

1. Section 205.35, Part 205, Chapter II, Title 45 of the Code of Federal Regulations is revised to read as set forth below:

§ 205.35–1 Applicability.

This section applies to programs administered under Titles I, IV–A, X, XIV, XVI, XIX, and XX of the Social Security Act.

§ 205.35–2 Definitions.

(a) "Sterilization" means any medical procedure or operation for the purpose of rendering an individual permanently incapable of reproducing.

(b) "Informed consent" (to a sterilization procedure) means a written authorization to be sterilized given by the person to be sterilized and given voluntarily and with an understanding of the nature and consequences of the procedure to be performed.

(c) "Consent form" means a written document which states the requirements for informed consent as set forth in Section 205.35–3.

(d) "A mentally incompetent individual" means a person who has been declared mentally incompetent by a Federal, State, or local court, or who is in fact mentally incompetent under Federal or State law.

(e) "A sterilization review committee" means a committee designated by the State Agency to review, approve, or deny applications for sterilization as required by this section. The committee must include a physician (other than the one proposing to perform the sterilization), attorney, social worker, and patient advocate.

(f) "Hysterectomy" means a medical procedure or operation for the purpose of removng the uterus.

§ 205.35–3 Consent procedures.

Informed consent does not exist unless a consent form is completed voluntarily and in accordance with all the requirements of this paragraph.

(a) *Preparing to obtain informed consent.* An individual who obtains informed consent for a sterilization procedure must provide orally *all* of the following information or advice to the individual who is to be sterilized:

(1) Advice that the individual is free to withhold or withdraw his/her consent to the procedure at any time prior to the sterilization without affecting his/her right to future care or treatment, and without loss or withdrawal of any Federally-funded program benefits to which the individual might be otherwise entitled;

(2) A description of available alternative methods of family planning and birth control;

(3) A full description of the benefits or advantages he/she may expect to gain as a result of the sterilization;

(4) Advice that the sterilization procedure is considered to be irreversible;

(5) A thorough explanation of the specific sterilization procedure to be performed;

(6) A full description of the discomforts and risks which may accompany and follow the performing of the procedure, including an explanation of the type and possible effects of any anesthetic to be used;

(7) Advice that the sterilization will not be performed for at least 30 days; and

(8) An opportunty to ask and have answered any questions he/she may have concerning the sterilization procedure.

(b) *Filling out the consent form.*—(1) *Language of the consent form.* The consent form should be in the primary language of the patient. If the consent form is not in the primary language of the patient, an interpreter must be made available to assist the individual.

(2) *Provisions for the handicapped.* Suitable arrangements must be made to ensure that consent information is effectively communicated to blind, deaf, and other handicapped patients.

(3) *Signatures on the consent form.* The consent form must be signed and dated by:

(i) The patient; and

(ii) The interpreter, if one is provided; and

(iii) The individual who obtains the consent of the patient; and

(iv) The physician who will perform the sterilization procedure.

(4) *Required certifications.* (i) The person securing the patient's consent must certify by signing the consent form that, before the patient signed the consent form, he/she advised the patient

that no Federal benefits may be withdrawn because of the patient's decision not to be sterilized, that he/she explained orally the requirements for informed consent as set forth on the consent form, and that the patient, to the best of his/her knowledge and belief, appeared mentally competent and knowingly and voluntarily consented to be sterilized.

(ii) The physician performing the sterilization must certify by signing the consent form that, immediately prior to the performance of the sterilization, he/she advised the patient that no Federal benefits may be withdrawn because of the patient's decision not to be sterilized, that he/she explained orally the elements of informed consent as set forth on the consent form, and that the patient, to the best of his/her knowledge and belief, appeared mentally competent and knowingly and voluntarily consented to be sterilized. The physician will further certify that, to the best of his/her knowledge and belief, at least 30 days passed between the date upon which the patient signed the consent form and the date upon which the sterilization was performed.

(iii) The physician performing the sterilization must, in cases where court orders are required by this section, certify, by signing the consent form, that he/she was provided with a copy of the court order prior to the performance of the sterilization.

(c) *Following State and local procedures.* In addition to the consent procedures required by this part, any requirement of State and local law, except one of spousal consent, must be followed.

§ 205.35–4 Sterilization of a mentally competent individual aged 21 or older.

Federal financial participation is available in expenditures for a sterilization of a mentally competent individual only when the following requirements have been met:

(a) The individual has voluntarily given his/her informed consent in accordance with all the procedures prescribed in § 205.35–3.

(b) At least 30 days have passed between the date of informed consent and the date of the sterilization.

(c) The individual is at least 21 years old.

§ 205.35–5 Sterilization of a mentally incompetent individual aged 21 or older; sterilization of an institutionalized individual aged 21 or older.

(a) Programs or projects to which this subpart applies shall not perform or arrange for the performance of a sterilization of any person declared mentally incompetent by a State, Federal or local court, or who is in fact mentally incompetent under Federal or State law.

(b) Programs or projects to which this subpart applies shall not perform or arrange for the performance of a sterilization of any individual institutionalized in a correctional, mental or other facility unless:

(1) The individual has voluntarily given his/her informed consent in accordance with the procedures prescribed in § 50.203;

(2) At least 30 days have elapsed between the date of informed consent and the date of the sterilization;

(3) The individual is at least 21 years old;

(4) The sterilization review committee has certified to a court, after a hearing at which counsel representing the patient has presented the evidence for and against such a certification, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure as set forth in section 50.203(a), and that the patient has voluntarily consented to be sterilized; and

(5) The court has found, after a hearing at which counsel for the patient has presented the evidence for and against such a finding, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure, as set forth in section 50.203(a), and that the patient has voluntarily consented to be sterilized.

or

(a) Federal financial participation is unavailable in expenditures for a sterilization of a mentally incompetent individual, or any individual institutionalized in a correctional, mental or other facility unless:

(1) The individual has voluntarily given his/her informed consent in accordance with all the procedures prescribed in § 205.35–3;

(2) At least 30 days have elapsed between the date of informed consent and the date of the sterilization;

(3) The individual is at least 21 years old;

(4) The sterilization review committee has certified to a court, after a hearing at which counsel representing the patient has presented the evidence for and against such a certification, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure as set forth in section 205.35(a), and that the patient has voluntarily consented to be sterilized; and

(5) The court has found, after a hearing at which counsel for the patient has presented the evidence for and against such a finding, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure as set forth in section 205.35–3(a), and that the patient has voluntarily consented to be sterilized.

(b) Federal financial participation is unavailable in expenditures for the sterilization of a mentally incompetent individual who does not understand the nature and consequences of the proposed sterilization procedure as set forth in § 205.35–3(a).

§ 205.35–6 Sterilization of a mentally competent or incompetent individual under the age of 21.

Federal financial participation is unavailable in expenditures in the sterilization of individuals under 21 years old.

§ 205.35–7 Sterilization by hysterectomy.

(a) Federal financial assistance for family planning purposes is unavailable in any hysterectomy performed for the purpose of rendering an individual permanently incapable of reproducing, unless [exception, with appropriate safeguards, to be added if comments describe circumstances in which sterilization by hysterectomy is generally accepted as the appropriate method].

(b) Federal financial participation is available in a hysterectomy the purpose of which is other than to render the patient permanently incapable of reproducing, provided that:

(1) The individual who secures the usual authorization from the patient or her representative, if any, to perform the hysterectomy has informed the patient and her representative, if any, orally and in writing, that the hysterectomy will render the patient permanently incapable of reproducing; and

(2) The patient or her representative, if any, has signed a written acknowledgement of receipt of the foregoing information.

§ 205.35–8 State Agency requirements.

(a) A State plan under Title I, IV–A, X, XIV, XVI, XIX, or XX of the Social Security Act must provide, with respect to sterilization procedures or hysterectomies for which payment is made under the plan, (1) that all requirements of this section be met; and (2) that the State will provide legal counsel for the patient at all review committee and court proceedings described in this section.

(b) The State Agency shall maintain sufficient records and documentation to assure compliance with these regulations, and must retain such data for at least 3 years.

(c) The State Agency shall submit other reports as required and when requested by the Secretary.

§ 205.35–9 Federal financial participation.

(a) Federal financial participation is not available in expenditures for sterilization procedures unless a facsimile of the consent form appended to this section or another form approved by the Secretary is used for purposes of this section.

(b) Federal financial participation under title XIX of the Social Security Act is unavailable in any sterilization or hysterectomy for which the State Agency has paid without first having received documentation showing that the requirements of this section have been met. Documentation includes consent forms, review committee certifications, court orders, and acknowledge-

ments of receipt of hysterectomy information.

(c) Federal financial participation is available in expenditures for the review committee and legal counsel where required by this section.

2. Sections 50.201–204, Subpart B, Part 50, Chapter I, Title 42 of the Code of Federal Regulations are revised to read as set forth below:

§ 50.201 Applicability.

The provisions of this subpart are applicable to programs or projects for health services which are supported in whole or in part by Federal financial assistance, whether by grant or contract, administered by the Public Health Service.

§ 50.202 Definitions.

As used in this subpart:

(a) "Sterilization" means any medical procedure or operation for the purpose of rendering an individual permanently incapable of reproducing.

(b) "Informed consent" to a sterilization procedure means a written authorization to be sterilized given by the person to be sterilized and given voluntarily and with an understanding of the nature and consequences of the procedure to be performed.

(c) "Consent form" means a written document which states the requirements for informed consent as set forth in § 50.203.

(d) "A mentally incompetent individual" means a person who has been declared mentally incompetent by a Federal, State, or local court, or who is in fact mentally incompetent under Federal or State law.

(e) "A sterilization review committee" means a committee designated by the program or project to review, approve, or deny applications for sterilization as required by this section. The committee must include a physician (other than the one proposing to perform the sterilization), attorney, social worker, and patient advocate.

(f) "Hysterectomy" means a medical procedure or operation for the purpose of removing the uterus.

(g) The "Public Health Service" means the Health Services Administration, Health Resources Administration, National Institutes of Health, Center for Disease Control, Alcohol, Drug Abuse and Mental Health Administration and all of their constituent agencies.

(h) The "Secretary" means the Secretary of Health, Education, and Welfare and any other officer or employee of the Department of Health, Education, and Welfare to whom the authority involved has been delegated.

§ 50.203 Consent procedures.

Informed consent does not exist unless a consent form is completed voluntarily and in accordance with all the requirements of this paragraph.

(a) *Preparing to obtain informed consent.* An individual who obtains informed consent for a sterilization procedure must provide orally *all* of the following information or advice to the individual who is to be sterilized.

(1) Advice that the individual is free to withhold or withdraw his/her consent to the procedure at any time prior to the sterilization without affecting his/her right to future care or treatment, and without loss or withdrawal of any Federally-funded program benefits to which the individual might be otherwise entitled;

(2) A description of available alternative methods of family planning and birth control;

(3) A full description of the benefits or advantages he/she may expect to gain as a result of the sterilization;

(4) Advice that the sterilization procedure is considered to be irreversible;

(5) A thorough explanation of the specific sterilization procedure to be performed;

(6) A full description of the discomforts and risks which may accompany and follow the performing of the procedure, including an explanation of the type and possible effects of any anesthetic to be used;

(7) Advice that the sterilization will not be performed for a least 30 days; and

(8) An opportunity to ask and have answered any questions he/she may have concerning the sterilization procedure.

(b) *Filling out the consent form.* (1) *Language of the consent form.* The consent form should be in the primary language of the patient. If the consent form is not in the primary language of the patient, an interpreter must be made available to assist the individual.

(2) *Provisions for the handicapped.* Suitable arrangement must be made to ensure that consent information is effectively communicated to blind, deaf and other handicapped patients.

(3) *Signatures on the consent form.* The consent form must be signed and dated by:

(i) The patient; and

(ii) The interpreter, if one is provided; and

(iii) The individual who obtains the consent of the patient; and

(iv) The physician who will perform the sterilization procedure.

(4) *Required certification.* (i) The person securing the patient's consent must certify by signing the consent form that, before the patient signed the consent form, he/she advised the patient that no Federal benefits may be withdrawn because of the patient's decision not to be sterilized, that he/she explained orally the requirements for informed consent as set forth on the consent form, and that the patient, to the best of his/her knowledge and belief, appeared mentally competent and knowingly and voluntarily consented to be sterilized.

(ii) The physician performing the sterilization must certify by signing the consent form that, immediately prior to the performance of the sterilization, he/she advised the patient that no Federal benefits may be withdrawn because of the patient's decision not to be sterilized, that he/she explained orally the requirements for informed consent as set forth on the consent form, and that the patient, to the best of his/her knowledge and belief, appeared mentally competent and knowingly and voluntarily consented to be sterilized. The physician will further certify that, to the best of his/her knowledge and belief, at least 30 days have passed between the date upon which the patient signed the consent form, and the date upon which the sterilization was performed.

(iii) The physician performing the sterilization must, in cases where court orders are required by this section, certify, by signing the consent form, that he/she was provided with a copy of the court order prior to the performance of the sterilization.

(c) *Following State and local procedures.* In addition to the consent procedures required by this part, any requirement of State and local law, except one of spousal consent, must be followed.

§ 50.204 Sterilization of a mentally competent individual aged 21 or older.

Programs or projects to which this subpart applies shall perform or arrange for the performance of sterilization of a mentally competent individual only when the following requirements have been met:

(a) The individual has voluntarily given his/her informed consent in accordance with all the procedures prescribed in section 50.203.

(b) At least 30 days have passed between the date of informed consent and the date of the sterilization.

(c) The individual is at least 21 years old.

§ 50.205 Sterilization of a mentally incompetent individual aged 21 or older; sterilization of an institutionalized individual aged 21 or older.

(a) Programs or projects to which this subpart applies shall not perform or arrange for the performance of a sterilization of any person declared mentally incompetent by a State, Federal or local court, or who is in fact mentally incompetent under Federal or State law.

(b) Programs or projects to which this subpart applies shall not perform or arrange for the performance of a sterilization of any individual institutionalized in a correctional, mental or other facility *unless*:

(1) The individual has voluntarily given his/her informed consent in accordance with the procedures prescribed in § 50.203;

(2) At least 30 days have elapsed between the date of informed consent and the date of the sterilization;

(3) The individual is at least 21 years old;

(4) The sterilization review committee has certified to a court, after a hearing at which counsel representing the patient has presented the evidence for and against such a certification, that

all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure as set forth in § 50.203(a), and that the patient has voluntarily consented to be sterilized; and

(5) The court has found, after a hearing at which counsel for the patient has presented the evidence for and against such a finding, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure, as set forth in § 50.203 (a), and that the patient has voluntarily consented to be sterilized.

or

(a) Programs or projects to which this subpart applies shall not perform or arrange for the performance of a sterilization of a mentally incompetent individual, or any individual institutionalized in a correctional, mental or other facility *unless*:

(1) The individual has voluntarily given his/her informed consent in accordance with the procedures prescribed in § 50.203;

(2) At least 30 days have elapsed between the date of informed consent and the date of sterilization;

(3) The individual is at least 21 years;

(4) The sterilization review committee has certified to a court, after a hearing at which counsel representing the patient has presented the evidence for and against such a certification, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure as set forth in § 50.203(a), and that the patient has voluntarily consented to be sterilized; and

(5) The court has found, after a hearing at which counsel for the patient has presented the evidence for and against such a finding, that all of the requirements for sterilization have been met, that the patient understands the nature and consequences of the proposed sterilization procedure as set forth in § 50.203 (a), and that the patient has voluntarily consented to be sterilized.

(b) Programs or projects to which this subpart applies shall not perform or arrange for the performance of a sterilization of a mentally incompetent individual who does not understand the nature and consequences of the proposed sterilization procedure as set forth in § 50.203 (a).

§ 50.206 Sterilization of a mentally competent or incompetent individual under the age of 21.

Programs or projects to which this subpart applies shall not perform or arrange for the performance of sterilizations of individuals under 21 years old.

§ 50.207 Sterilization by hysterectomy.

(a) Programs or projects to which this subpart applies shall not perform or arrange for the performance of any hysterectomy for the purpose of rendering an individual permanently incapable of reproducing, unless [exception with appropriate safeguards, to be added if comments describe circumstances in which sterilization by hysterectomy is generally accepted as the appropriate method].

(b) Programs or projects to which this subpart applies may perform or arrange for the performance of a hysterectomy the purpose of which is other than to render the patient permanently incapable of reproducing, provided that:

(1) The individual who secures the usual authorization from the patient or her representative, if any, to perform the hysterectomy has informed the patient and her representative, if any, orally and in writing, that the hysterectomy will render the patient permanently incapable of reproducing; and

(2) The patient or her representative, if any, has signed a written acknowledgment of receipt of the foregoing information.

§ 50.208 Program or project requirements.

(a) A program or project must, with respect to any sterilization procedure or hysterectomy it performs or arranges, (1) meet all requirements of this subpart; and (2) provide legal counsel for the patient at all review committee and court proceedings described in this subpart.

(b) The program or project shall maintain sufficient records and documentation to assure compliance with these regulations, and must retain such data for at least 3 years.

(c) The program or project shall submit other reports as required and when requested by the Secretary.

§ 50.209 Use of Federal financial assistance.

(a) Federal financial assistance administered by the Public Health Service may not be used for expenditures for sterilization procedures unless the consent form appended to this section or another form approved by the Secretary is used for purposes of this section.

(b) A program or project shall not use Federal financial assistance for any sterilization or hysterectomy without first receiving documentation showing that the requirements of this subpart have been met. Documentation includes consent forms, review committee certifications, court orders, and acknowledgments of receipt of hysterectomy information.

(c) Federal financial assistance administered by the Public Health Service may be used for the expenditures for the review committee and legal counsel where required by this section.

APPENDIX: REQUIRED CONSENT FORM

NOTICES Your decision at any time not to be sterilized will not result in the withdrawal or withholding of any benefits provided by programs or projects receiving Federal funds.

CONSENT TO STERILIZATION

I have asked for and received information about sterilization from _____
(doctor or clinic)

When I first asked for the information, I was told that the decision to be sterilized is completely up to me. I was told that I could decide not to be sterilized. If I decide not to be sterilized, my decision will not affect my right to future care or treatment and I will not lose any help or benefits from programs receiving Federal funds such as A.F.D.C. or Medicaid that I am now getting or for which I may become eligible.

I understand that the sterilization must be considered permanent and not reversible. I have decided that I do not want to become pregnant, bear children or father children.

I was told about those temporary methods of birth control that are available and could be provided to me which will allow me to bear or father a child in the future. I have rejected these alternatives and freely chosen to be sterilized.

I understand that I will be sterilized by an operation known as a _____. The discomforts, risks and benefits associated with the operation have been explained to me. All my questions have been answered to my satisfaction.

I understand that the operation will not be done until at least thirty days after I sign this form. I understand that I can change my mind at any time and that my decision at any time not to be sterilized will not result in the withholding of any benefits or medical services provided by Federally funded programs.

I am _____ years old. I was born on ____ day _____ _____ month year

I, _____, hereby consent of my own free will to be sterilized by _____ _____ by a method called _____ _____.

I also consent to the release of this form and other medical records about the operation to:

Representatives of the Department of Health, Education, and Welfare or

Employees of programs or projects funded by that Department but only for purposes of research or for determining if Federal laws were observed.

You are requested to supply the following information, but it is not required:

_____

Race and ethnicity designation (please check)

Black (not of Hispanic origin) _____

Hispanic _____

Asian or Pacific Islander _____

American Indian or Alaska native _____

White (not of Hispanic origin) _____

_____ _____ _____/ ___/_____

Patient's Signature Date: Month Day Year

Where the consent form is not in the primary language of the patient:

I have read the consent form to_____ _____ in _____ language and explained its contents to him/her. To the best of my knowledge and belief he/she understood this explanation.

_____

Interpreter Date

Before _____ signed this consent form, I explaned to him/her the nature of the sterilization operation _____, the fact that it is intended to be a final and irreversible procedure and the discomforts, risks and benefits associated with it.
name of individual

I counseled the patient that alternative methods of birth control are available which are temporary. I explained that sterilization is different because it is permanent.

I informed the patient that his/her consent can be withdrawn at any time and that he/she will not lose any health services or any benefits provided by Federal funds.

To the best of my knowledge and belief the patient is at least 21 years old and appears mentally competent. He/She knowingly and voluntarily requested to be sterilized and appears to understand the nature and consequenee of the procedure.

Signature of person obtaining consent Date

Facility

Address

PHYSICIAN'S STATEMENT

Immediately before I performed a sterilization operation upon _____

Name of patient

I explained to him/her the nature of the sterilization operation _____, the fact that it is intended to be a final and irreversible procedure and the discomforts, risks and benefits associated with it.

I counseled the patient that alternative methods of birth control are available which are temporary. I explained that sterilization is different because it is permanent.

I informed the patient that his/her consent can be withdrawn at any time and that he/she will not lose any health services or benefits provided by Federal funds.

To the best of my knowledge and belief at least thirty days have passed since the patient consented to the sterilization.

To the best of my knowledge and belief the patient is at least 21 years old and appears mentally competent. He/She knowingly and voluntarily requested to be sterilized and appeared to understand the nature and consequences of the procedure.

Physician

Date

Alternative final paragraph for use where court order is required:

To the best of my knowledge and belief the patient is at least 21 years old. He/She knowingly and voluntarily requested to be sterilized and appears to understand the nature and consequences of the procedure. I have been provided with a copy of the attached court order.

Physician

Date

[FR Doc.77-35424 Filed 12-12-77;8:45 am]

[4110-35]

Public Health Service

[42 CFR Part 50]

[45 CFR Part 205]

PROPOSED RESTRICTIONS APPLICABLE TO STERILIZATIONS FUNDED BY THE DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

CROSS REFERENCE: For a document proposing rules on restrictions applicable to sterilizations funded by the Department of Health, Education, and Welfare, See FR Document 35424 under Health Care Financing Administration in Part III of this issue.

federal register

TUESDAY, DECEMBER 13, 1977
PART IV

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

■

SELECTED GENERAL INDUSTRY SAFETY AND HEALTH STANDARDS

Proposed Revocation

[4510-26]

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

[29 CFR Part 1910]

[Docket No. S-250]

SELECTED GENERAL INDUSTRY SAFETY AND HEALTH STANDARDS

Proposed Revocation

AGENCY: Occupational Safety and Health Administration, Department of Labor.

ACTION: Proposed revocation of standards.

SUMMARY: The Occupational Safety and Health Administration (OSHA) proposes to revoke selected standards or portions of standards presently contained in 29 CFR Part 1910, OSHA general industry safety and health standards. The provisions proposed for revocation are those which generally have no direct or immediate relation to employee safety or health.

DATE: Written comments, objections and requests for a hearing must be postmarked by March 3, 1978.

ADDRESS: Submit written comments, objections, and requests to OSHA Docket Office, Docket No. S-250, Room S-6212, U.S. Department of Labor, 3rd Street and Constitution Avenue NW., Washington, D.C. 20210.

FOR FURTHER INFORMATION CONTACT:

John Proctor, Office of Safety Standards, OSHA, 3rd Street and Constitution Avenue NW., Room N3463, Washington, D.C., 20210, telephone 202-523-7216.

SUPPLEMENTARY INFORMATION: Under section 6(a) of the Occupational Safety and Health Act of 1970 (the Act) (84 Stat. 1593, 29 U.S.C. 655) OSHA was directed to adopt existing national consensus standards and established Federal standards in order to ensure that the Nation's employees be guaranteed at least a minimum level of occupational safety and health protection as soon as possible after the effective date of the Act. The usual procedural requirements for public comments and a public hearing were suspended under section 6(a).

Following this Congressional direction, OSHA published its initial occupational safety and health standards on May 29, 1971, as part of 29 CFR Part 1910 (36 FR 10466). These standards were derived primarily from national consensus standards developed by the American National Standards Institute (ANSI) and the National Fire Protection Association (NFPA). In addition, OSHA adopted as established Federal standards those standards previously issued under the Walsh-Healey Act (41 U.S.C. 35), the Construction Safety Act (40 U.S.C. 333), and the Longshoremen's and Harbor Workers' Compensation Act, as amended (33 U.S.C. 941).

Since adopting these standards, OSHA has received extensive comments from many affected parties concerning the effectiveness, relevance, and applicability of these standards. In addition, Congressional committees, in the exercise of their oversight authority, have recommended that OSHA review its standards and revise those which are unclear or irrelevant to employee safety and health. Furthermore, six years of enforcement experience have revealed difficulties with the specific requirements in some of these standards. Petitions for change or revocation of certain standards, and the decisions of the Occupational Safety and Health Review Commission and the Courts have also underscored the need for a review of OSHA's body of regulations. Finally, in the appropriations bill for fiscal year 1977 Congress directed OSHA to eliminate "so-called 'nuisance standards' or standards which do not deal with workplace conditions that are clearly hazardous to the health or safety or workers or are more properly under the jurisdiction of State Departments of Public Health."

Both the Secretary of Labor and the Assistant Secretary for Occupational Safety and Health have indicated their commitment to undertake this thorough review of the agency's regulatory policy and to redirect its enforcement efforts towards more significant safety and health hazards. To initially implement this commitment, OSHA proposes to revoke, as expeditiously as possible under the Act, those regulations which most clearly have no direct or immediate relationship to the safety or health of employees. Thus, the agency is proposing this revocation as an initial step in the continuing effort to set standards that effectively achieve the goals and purposes of the Occupational Safety and Health Act. This initial action is part of a larger initiative to reexamine the agency's present regulations, including a comprehensive reevaluation and revision of 29 CFR Part 1910 safety standards (See, 41 FR 17100). This reevaluation currently involves Subpart D, "Walking-Working Surfaces" (41 FR 17102); Subpart H, § 1910.111, "Storage and Handling of Anhydrous Ammonia" (41 FR 17227); Subpart L, "Fire Protection" (41 FR 17255); and Subpart O, "Machines and Machine Guarding" (42 FR 1742). The proposal for the comprehensive revision of Subpart D is being prepared. Similar proposals on Subparts L and O, and § 1910.111, are under development.

This proposal for revocation is limited to certain selected general industry safety and health standards which appear in 29 CFR Part 1910. A principal factor in selecting these provisions for revocation was that there be no diminution or sacrifice of the safety or health of affected workers. The proposal includes only those provisions where the desired modification could be accomplished through the simple deletion of one or more phrases, sentences, or paragraphs from a particular standard. Review continues for other provisions of OSHA standards which may also have no direct or immediate effect on employee safety and health. These additional revocations may be proposed in a separate FEDERAL REGISTER notice or may become part of the more comprehensive revisions being developed for the subparts mentioned above. Also, future proposed revocations may cover those standards specifically applicable only to the maritime industry (29 CFR Parts 1915-1918), the construction industry (29 CFR Part 1926) or agriculure (29 CFR Part 1928). However, interested persons in all industries should thoroughly review this proposal and submit comments, since many of the Part 1910 provisions proposed for revocation may also apply to maritime, construction or agricultural operations.

RATIONALE AND CRITERIA FOR STANDARDS COVERED IN PROPOSED REVOCATION

Several criteria were used to identify standards for revocation. In general, the provisions selected were among those which are:

1. Obsolete or inconsequential.
2. Concerned with comfort or convenience.
3. Directed toward public safety or property protection.
4. Subject to enforcement by other regulatory agencies.
5. Contingent on manufacturers' approval or recommendations.
6. Encumbered by unnecessary detail.
7. Adequately covered by other general standards.

In many cases, more than one criterion applied to a specific provision. These criteria are discussed briefly below.

Some provisions have clearly become obsolete due to technological change or the expiration of a time period set forth within the standard itself. Therefore the revocation of these provisions would not jeopardize employee safety at the workplace in any manner. Another group of standards consists of those provisions which are inconsequential because they do not impose substantive requirements or contain useful information regarding the interpretation or application of other provisions (Criterion No. 1).

Also proposed for revocation are provisions and standards which are directed primarily to the comfort and convenience of employees rather than to health and safety hazards. Although the objectives of these standards may be beneficial, they are not appropriate for enforcement as mandatory requirements under the Occupational Safety and Health Act (Criterion No. 2).

The Act defines occupational safety and health standards as standards which provide for "safe and healthful employment and places of employment." Section 3(8). Some of the OSHA standards are explicitly directed toward property protection or the safety of the general public. Certain national consensus standards developed by ANSI or NFPA are included in this category. This proposed revocation includes provisions and standards which explicitly and exclusive-

ly affect the general public or property. However, where standards directly result in protecting employee safety or health in addition to public safety and property, these standards have been retained (Criterion No. 3).

Under section 4(b)(1) of the Act, the jurisdiction of this agency over specific working conditions is pre-empted whenever other Federal agencies "exercise statutory authority to prescribe or enforce standards or regulations affecting occupational safety and health." Therefore, standards have been proposed for revocation if another Federal agency has exercised its statutory authority consistent with section 4(b)(1). Section 4(b)(3), which reflects the Act's intent to avoid unnecessary duplication of governmental effort, also supports the revocation of this category of provisions (Criterion No. 4.)

Another group of OSHA standards proposed for revocation specifically requires employers to obtain the written approval of manufacturers for modifications of equipment. In addition, provisions may require the employer to follow the manufacturer's instructions or recommendations for this equipment. Standards of this type have been proposed for revocation based on the following factors: (1) the standard contains few or no guidelines for the manufacturers' approvals or recommendations; (2) the manufacturers' approvals or recommendations may be motivated by concerns only remotely related to employee safety; and (3) the standard gives full discretion to the manufacturer, making it difficult for OSHA to effectively challenge the appropriateness of the manufacturers' recommendations in an enforcement proceeding (Criterion No. 5).

Numerous provisions and standards proposed for revocation contain very detailed design or construction requirements. Generally, OSHA considers these highly detailed provisions to be valid and useful guidelines which should be followed whenever possible. However, these details should not be mandated for all situations. The revocation of these provisions will permit employers greater flexibility in selecting the specific methods to abate these workplace hazards, including the development of new technology. Moreover, other generally applicable provisions in 29 CFR Part 1910 will provide adequate protection without jeopardizing employee safety or health (Criteria No. 6 and No. 7). In selecting the standards under these criteria, consideration was given to the nature of the operation, the type of hazard involved, and the adequacy of coverage under other general standards.

Interim Enforcement Policy

This proposal begins the rulemaking proceedings necessary to revoke these standards under section 6(b) of the Act. Since these standards generally have no direct or immediate relationship to employee safety or health, an interim enforcement policy will be implemented under section 9(a) of the Act (29 U.S.C. 658(a)) until these proceedings have been completed. Section 9(a) authorizes the Secretary to issue de minimis notices instead of a citation whenever a violation of a standard has "* * * no direct or immediate relationship to safety or health." Under this interim enforcement policy, violations of the provisions contained in this proposed revocation will be treated as de minimis except in those rare instances where, as a result of conditions at the worksite, the violations directly or immediately relate to employee safety or health. De minimis violations will be simply brought to the employer's attention and no citation or proposed penalties will be issued. In addition, all active or pending enforcement cases involving these provisions will be reviewed and reduced to de minimis where there is no direct or immediate relation to employee safety or health. Program Directives Nos. 200–67 and 200–68, available at all OSHA Regional and Area Offices, describe the specific procedures implementing this de minimis enforcement policy.

Proposal Format

This notice includes: first, a sequential listing of paragraphs or sections which contain material proposed for revocation; and second, a complete reprinting of 29 CFR Part 1910 in which each provision proposed for revocation has been enclosed in brackets and marked by a heavy vertical bar printed to the left of the text. Only the material enclosed in brackets is being proposed for revocation. It is hoped, however, that inclusion of the complete text of Part 1910 will facilitate public comment by allowing the affected provisions to be seen in their present context and compared with other sections. In addition to this notice, a list of provisions proposed for revocation annotated to reflect the criterion or criteria by which that decision was made is available upon request from OSHA's Docket Office (Room S–6212, Department of Labor, 3rd Street and Constitution Avenue NW., Washington, D.C. 20210), and a reprint of the text of Part 1910 has been prepared which indicates which of the several criteria numbered as above, apply to each provision proposed for revocation. This document is available for inspection and copying at the OSHA Docket Office.

Economic Impact

In accordance with Executive Order 11821 (39 FR 41501, November 29, 1974), Executive Order 11949 (42 FR 1017, January 5, 1977) and OMB Circular No. A–107 (January 28, 1975), OSHA has assessed the potential economic impact of this proposal. Based on the six economic thresholds, OSHA has concluded that the subject matter of this proposal is not a "major" action which would necessitate further economic impact evaluation or the preparation of an Economic Impact Statement, and so certifies.

Evaluation of the economic impact of the final revocations will be based on the entire record of the rulemaking proceeding, including all oral and written comments made part of the record.

Public Participation

Interested persons are invited to submit written data, views and arguments on the specific provisions and issues raised in this proposed revocation. These comments must be postmarked no later than March 3, 1978, and submitted to OSHA Docket Office, Docket No. S–250, Room S6212, U.S. Department of Labor, 3rd Street and Constitution Avenue NW., Washington, D.C. 20210, where they will be available for public inspection and copying. Written submissions must clearly identify the standards or portions of standards which are addressed and the position taken with respect to each issue.

Interested parties may, in addition to submitting written comments, file objections to the proposal and request an informal hearing on the objections. Objections and requests for an informal hearing, addressed as above, must be postmarked no later than March 3, 1978, and must comply with the following conditions:

1. The objection must include the name and address of the objector;

2. The objections must specify with particularity the provisions of the proposed revocation to which objection is taken, and must state the grounds therefor;

3. Each objection must be separately stated and numbered; and

4. The objections must be accompanied by a detailed summary of the evidence proposed to be adduced at the requested hearing.

In addition to comments and objections concerning the proposed revocations contained herein, OSHA is interested in receiving comments on other provisions in 29 CFR Part 1910 which could also be proposed for revocation under the criteria set forth above. If warranted, OSHA may publish a list of additional provisions in a separate proposal for revocation.

Accordingly, pursuant to section 6(b) of the Act, 29 U.S.C. 655, Secretary of Labor's Order No. 8–76 (41 FR 25059), and 29 CFR Part 1911, it is proposed to amend 29 CFR Part 1910 by deleting the the provisions which are enclosed within brackets in the reprint below.

This document was prepared under the direction of Eula Bingham, Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, 3rd Street and Constitution Avenue NW., Washington, D.C. 20210.

Signed at Washington, D.C. this 5th day of December, 1977.

Eula Bingham,
Assistant Secretary of Labor.

1. The following paragraphs in 29 CFR Part 1910 contains material proposed for revocation:

STANDARD PROVISION
SUBPART D
Walking-Working Surfaces
1910.22
General Requirements
.22(d)(1)
.22(d)(2)
1910.23
Guarding Floor and Wall
Openings and Holes
.23(e)(3)
.23(e)(3)(v)(d)
1910.24
Fixed Industrial Stairs
.24(k)
1910.25
Portable Wood Ladders
.25(b)(1)(i)
.25(b)(1)(ii)
.25(b)(2)(i)
.25(b)(2)(ii)
.25(b)(2)(iii)
.25(b)(2)(iv)
.25(b)(2)(v)
.25(b)(3)(i)
.25(b)(3)(ii)
.25(b)(3)(iii)
.25(b)(4)
.25(b)(4)(i)
.25(b)(4)(ii)
.25(b)(5)
.25(c)(1)(i)
.25(c)(1)(ii)
.25(c)(1)(iii)

STANDARD PROVISION
.25(c)(1)(iii)(a)
.25(c)(1)(iii)(b)
.25(c)(1)(iii)(c)
.25(c)(1)(iii)(d)
.25(c)(2)(i)(a)
.25(c)(2)(i)(d)
.25(c)(2)(i)(e)
.25(c)(2)(i)(g)
.25(c)(2)(i)(h)
.25(c)(2)(i)(i)
.25(c)(2)(ii)(a)(1)
.25(c)(2)(ii)(a)(2)
.25(c)(2)(ii)(b)
.25(c)(2)(ii)(c)(1)
.25(c)(2)(ii)(c)(2)
Table D-2
Table D-3
.25(c)(2)(ii)(d)
.25(c)(2)(iii)(a)(1)
.25(c)(2)(iii)(a)(2)
.25(c)(2)(iii)(b)
.25(c)(2)(iii)(c)(1)(i)
.25(c)(2)(iii)(c)(1)(ii)
.25(c)(2)(iii)(c)(2)
.25(c)(2)(iii)(c)(3)
.25(c)(2)(iv)(a)
.25(c)(2)(iv)(b)
.25(c)(2)(iv)(c)
.25(c)(2)(iv)(c)(1)
.25(c)(2)(iv)(c)(2)
.25(c)(3)
.25(c)(3)(i)(a)
.25(c)(3)(i)(b)
.25(c)(3)(i)(c)
.25(c)(3)(i)(d)
.25(c)(3)(i)(e)
.25(c)(3)(i)(f)

STANDARD PROVISION
.25(c)(3)(i)(g)
.25(c)(3)(i)(h)
.25(c)(3)(i)(i)
.25(c)(3)(i)(j)
.25(c)(3)(ii)(b)
.25(c)(3)(ii)(c)
.25(c)(3)(ii)(d)
.25(c)(3)(iii)(b)
.25(c)(3)(iii)(c)
.25(c)(3)(iii)(d)
.25(c)(3)(iii)(e)
.25(c)(3)(iii)(f)
.25(c)(3)(iii)(g)(1)
.25(c)(3)(iii)(g)(2)
.25(c)(3)(iv)(b)
.25(c)(3)(iv)(c)
.25(c)(3)(iv)(c)(1)
.25(c)(3)(iv)(c)(2)
.25(c)(3)(iv)(c)(3)
.25(c)(3)(iv)(c)(4)
Table D-4
.25(c)(3)(v)(b)
.25(c)(3)(v)(c)
.25(c)(3)(v)(d)
.25(c)(3)(v)(e)
.25(c)(3)(v)(f)
.25(c)(3)(v)(g)
.25(c)(4)
.25(c)(4)(i)
.25(c)(4)(i)(a)
.25(c)(4)(i)(b)
.25(c)(4)(i)(c)
.25(c)(4)(i)(d)
.25(c)(4)(i)(e)
.25(c)(4)(i)(f)
.25(c)(4)(ii)(b)
.25(c)(4)(ii)(b)(1)

STANDARD PROVISION
.25(c)(4)(ii)(b)(2)
.25(c)(4)(iii)(b)
.25(c)(4)(iii)(c)
.25(c)(4)(iii)(d)
.25(c)(5)(ii)
.25(c)(5)(iii)
.25(c)(5)(iv)
.25(c)(5)(v)
.25(c)(5)(vi)(a)
.25(c)(5)(vi)(b)
.25(c)(5)(vi)(c)
.25(c)(5)(vi)(d)
.25(c)(5)(vii)(a)
.25(c)(5)(vii)(b)
.25(c)(5)(vii)(c)
.25(c)(5)(vii)(d)
.25(c)(5)(vii)(e)
.25(c)(5)(vii)(f)
.25(d)(1)(v)
.25(d)(1)(vi)
.25(d)(1)(vii)
.25(d)(1)(viii)
.25(d)(1)(ix)
.25(d)(2)(xxi)
Table D-5
1910.26
Portable Metal Ladders
.26(a)(1)(i)
.26(a)(1)(ii)
.26(a)(1)(iv)
.26(a)(1)(vi)
.26(a)(2)(v)(a)
.26(a)(2)(v)(b)
.26(a)(3)(i)
.26(a)(3)(ii)
.26(a)(3)(iv)

STANDARD PROVISION
.26(a)(3)(v)
.26(a)(3)(vi)
.26(a)(3)(viii)
.26(a)(4)(ii)
.26(a)(4)(iii)
.26(a)(4)(iv)
.26(a)(4)(v)
.26(a)(5)(ii)
.26(a)(5)(iii)
.26(a)(5)(iv)
.26(a)(5)(v)
.26(a)(5)(vi)
.26(b)(1)
.26(b)(2)(i)
.26(b)(2)(ii)
.26(b)(2)(iii)
.26(b)(2)(iv)
.26(b)(2)(v)
.26(b)(2)(vi)
.26(b)(2)(vii)
.26(b)(3)(i)(a)
.26(b)(3)(i)(b)
.26(b)(3)(ii)
Table D-6
.26(c)(2)(i)
.26(c)(2)(ii)
.26(c)(2)(iii)
1910.28
Safety Requirements for
Scaffolding
.28(i)(2)
.28(i)(9)
.28(v)

STANDARD PROVISION
1910.29
Manually Propelled Mobile
Ladder Stands and
Scaffolds (towers)
.29(a)(2)(iii)
SUBPART E
Means of Egress
1910.36
General Requirements
.36(b)(8)
SUBPART F
Powered Platforms, Man-
lifts and Vehicle-Mounted
Work Platforms
1910.66
Power Platforms for
Exterior Building Main-
tenance
.66(c)(20)(ii)
.66(c)(21)(i)
.66(c)(21)(i)(a)
.66(c)(21)(i)(b)
.66(c)(21)(i)(c)
.66(c)(21)(i)(d)
.66(c)(21)(i)(e)
.66(c)(21)(i)(f)
.66(c)(21)(i)(g)
.66(c)(21)(i)(h)
.66(c)(21)(ii)
.66(c)(21)(iii)

STANDARD PROVISION
1910.68
Manlifts
.68(b)(8)(vi)
.68(c)(7)(i)(a)
.68(c)(7)(iii)
.68(e)(3)
SUBPART G
Occupational Health and
Environmental Control
1910.94
Ventilation
.94(c)(5)(i)(b)
.94(c)(5)(iii)
1910.96
Ionizing radiation
.96(b)(5)
.96(e)(1)(ii)
.96(l)(1)(iii)
.96(l)(1)(iv)
.96(l)(2)(ii)
.96(l)(2)(iii)
.96(o)(2)
.96(r)(1)
.96(r)(2)
.96(r)(3)(i)
.96(r)(3)(ii)
.96(r)(4)(i)
.96(r)(4)(ii)

STANDARD PROVISION
SUBPART H
Hazardous Materials
1910.103
Hydrogen
Table H-2
.103(c)(1)(ii)
Table H-4
1910.104
Oxygen
.104(b)(3)(xiv)
.104(b)(3)(xv)
.104(b)(3)(xvi)
.104(b)(3)(xvii)
.104(b)(3)(xviii)
1910.106
Flammable and combus-
tible liquids
.106(b)(1)(i)(e)
.106(b)(1)(ii)(a)
.106(b)(2)(i)(a)
Table H-5
Table H-6
Table H-7
.106(b)(2)(i)(b)
.106(b)(2)(i)(c)
.106(b)(2)(i)(d)
Table H-8
.106(b)(2)(i)(e)
Table H-9
.106(b)(2)(i)(f)
.106(b)(2)(iii)
.106(b)(2)(vi)(b)
.106(b)(2)(vii)(a)

STANDARD PROVISION
.106(b)(2)(vii)(b)
.106(b)(2)(vii)(b)(1)
.106(b)(2)(vii)(b)(2)
.106(b)(2)(vii)(b)(3)
.106(b)(2)(vii)(c)
.106(b)(2)(vii)(c)(1)
.106(b)(2)(vii)(c)(2)
.106(b)(2)(vii)(c)(3)
.106(b)(2)(vii)(c)(4)
.106(b)(2)(vii)(c)(5)
.106(b)(2)(vii)(c)(6)
.106(b)(2)(vii)(c)(7)
.106(b)(2)(vii)(c)(7)(i)
.106(b)(2)(vii)(c)(7)(ii)
.106(b)(2)(vii)(c)(7)(iii)
.106(b)(2)(vii)(c)(7)(iv)
.106(b)(2)(viii)(a)
.106(b)(2)(viii)(b)
.106(b)(2)(viii)(c)
.106(b)(2)(viii)(d)
.106(b)(2)(viii)(e)
.106(b)(2)(viii)(f)
.106(b)(5)(vi)(e)
.106(d)(2)(iii)(b)
.106(d)(5)(iv)(a)
.106(d)(5)(iv)(b)
.106(d)(5)(iv)(c)
.106(d)(5)(iv)(d)
Table H-14
Table H-15
.106(d)(5)(vi)(a)
.106(d)(6)(i)
Table H-16
.106(d)(6)(ii)
.106(d)(6)(ii)(a)

STANDARD PROVISION
.106(d)(6)(ii)(b)
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2. The following is a reprinting of 29 CFR Part 1910 in which each provision proposed for revocation has been enclosed in brackets and marked by a heavy vertical bar printed to the left of the text:

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Subpart A—General

§ 1910.1 Purpose and scope.

(a) Section 6(a) of the Williams-Steiger Occupational Safety and Health Act of 1970 (84 Stat. 1593) provides that "without regard to chapter 5 of title 5, United States Code, or to the other subsections of this section, the Secretary shall, as soon as practicable during the period beginning with the effective date of this Act and ending 2 years after such date, by rule promulgate as an occupational safety or health standard any national consensus standard, and any established Federal standard, unless he determines that the promulgation of such a standard would not result in improved safety or health for specifically designated employees." The legislative purpose of this provision is to establish, as rapidly as possible and without regard to the rule-making provisions of the Administrative Procedure Act, standards with which industries are generally familiar, and on whose adoption interested and affected persons have already had an opportunity to express their views. Such standards are either (1) national consensus standards on whose adoption affected persons have reached substantial agreement, or (2) Federal standards already established by Federal statutes or regulations.

(b) This part carries out the directive to the Secretary of Labor under section 6(a) of the Act. It contains occupational safety and health standards which have been found to be national consensus standards or established Federal standards.

§ 1910.2 Definitions.

As used in this part, unless the context clearly requires otherwise:

(a) "Act" means the Williams-Steiger Occupational Safety and Health Act of 1970 (84 Stat. 1590).

(b) "Assistant Secretary of Labor" means the Assistant Secretary of Labor for Occupational Safety and Health;

(c) "Employer" means a person engaged in a business affecting commerce who has employees, but does not include the United States or any State or political subdivision of a State;

(d) "Employee" means an employee of an employer who is employed in a business of his employer which affects commerce;

(e) "Commerce" means trade, traffic, commerce, transportation, or communication among the several States, or between a State and any place outside thereof, or within the District of Columbia, or a possession of the United States (other than the Trust Territory of the Pacific Islands), or between points in the same State but through a point outside thereof;

(f) "Standard" means a standard which requires conditions, or the adoption or use of one or more practices, means, methods, operations, or processes, reasonably necessary or appropriate to provide safe or healthful employment and places of employment;

(g) "National consensus standard" means any standard or modification thereof which (1) has been adopted and promulgated by a nationally recognized standards-producing organization under procedures whereby it can be determined by the Secretary of Labor or by the Assistant Secretary of Labor that persons interested and affected by the scope or provisions of the standard have reached substantial agreement on its adoption, (2) was formulated in a manner which afforded an opportunity for diverse views to be considered, and (3) has been designated as such a standard by the Secretary or the Assistant Secretary, after consultation with other appropriate Federal agencies; and

(h) "Established Federal standard" means any operative standard established by any agency of the United States and in effect on April 28, 1971, or contained in any Act of Congress in force on the date of enactment of the Williams-Steiger Occupational Safety and Health Act.

§ 1910.3 Petitions for the issuance, amendment, or repeal of a standard.

(a) Any interested person may petition in writing the Assistant Secretary of Labor to promulgate, modify, or revoke a standard. The petition should set forth the terms or the substance of the rule desired, the effects thereof if promulgated, and the reasons therefor.

(b) (1) The relevant legislative history of the Act indicates congressional

recognition of the American National Standards Institute and the National Fire Protection Association as the major sources of national consensus standards. National consensus standards adopted on May 29, 1971, pursuant to section 6(a) of the Act are from those two sources. However, any organization which deems itself a producer of national consensus standards, within the meaning of section 3(9) of the Act, is invited to submit in writing to the Assistant Secretary of Labor at any time prior to February 1, 1973, all relevant information which may enable the Assistant Secretary to determine whether any of its standards satisfy the requirements of the definition of "national consensus standard" in section 3(9) of the Act.

(2) Within a reasonable time after the receipt of a submission pursuant to subparagraph (1) of this paragraph, the Assistant Secretary of Labor shall publish or cause to be published in the FEDERAL REGISTER a notice of such submission, and shall afford interested persons a reasonable opportunity to present written data, views, or arguments with regard to the question whether any standards of the organization making the submission are national consensus standards.

§ 1910.4 Amendments to this part.

(a) The Assistant Secretary of Labor shall have all of the authority of the Secretary of Labor under §§ 3(9) and 6(a) of the Act.

(b) The Assistant Secretary of Labor may at any time before April 28, 1973, on his own motion or upon the written petition of any person, by rule promulgate as a standard any national consensus standard and any established Federal standard, pursuant to and in accordance with section 6(a) of the Act, and, in addition, may modify or revoke any standard in this Part 1910. In the event of conflict among any such standards, the Assistant Secretary of Labor shall take the action necessary to eliminate the conflict, including the revocation or modification of a standard in this part, so as to assure the greatest protection of the safety or health of the affected employees.

§ 1910.5 Applicability of standards.

(a) Except as provided in paragraph (b) of this section, the standards contained in this part shall apply with respect to employments performed in a workplace in a State, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, Guam, Trust Territory of the Pacific Islands, Wake Island, Outer Continental Shelf lands defined in the Outer Continental Shelf Lands Act, Johnston Island, and the Canal Zone.

(b) None of the standards in this part shall apply to working conditions of employees with respect to which Federal agencies other than the Department of Labor, or State agencies acting under section 274 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2021), exercise statutory authority to prescribe or enforce standards or regulations affecting occupational safety or health.

(c) (1) If a particular standard is specifically applicable to a condition, practice, means, method, operation, or process, it shall prevail over any different general standard which might otherwise be applicable to the same condition, practice, means, method, operation, or process. For example, § 1501.23(c)(3) of this title prescribes personal protective equipment for certain ship repairmen working in specified areas. Such a standard shall apply, and shall not be deemed modified nor superseded by any different general standard whose provisions might otherwise be applicable, to the ship repairmen working in the areas specified in § 1915.23(c)(3).

(2) On the other hand, any standard shall apply according to its terms to any employment and place of employment in any industry, even though particular standards are also prescribed for the industry, as in Subpart B or Subpart R of this part, to the extent that none of such particular standards applies. To illustrate, the general standard regarding noise exposure in § 1910.95 applies to employments and places of employment in pulp, paper, and paperboard mills covered by § 1910.261.

(d) In the event a standard protects on its face a class of persons larger than employees, the standard shall be applicable under this part only to employees and their employment and places of employment.

APPENDIX

Appendix A: Examples of Conditions Which May Restrict or Limit Exposure to Hyperbaric Conditions.

Subpart Z—Toxic and Hazardous Substances

1910.1000 Air Contaminants.
1910.1001 Asbestos.
1910.1002 Coal tar pitch volatiles; interpretation of term.
1910.1003 4-Nitrobiphenyl.
1910.1004 alpha-Naphthylamine.
1910.1005 [Reserved]
1910.1006 Methyl chloromethyl ether.
1910.1007 3,3'—Dichlorobenzidine (and its salts).
1910.1008 bis-Chloromethyl ether.
1910.1009 beta-Naphthylamine.
1910.1010 Benzidine.
1910.1011 4-Aminodiphenyl.
1910.1012 Ethyleneimine.
1910.1013 beta-Propiolactone.
1910.1014 2-Acetylaminofluorene.
1910.1015 4-Dimethylaminoazobenzene.
1910.1016 N-Nitrosodimethylamine.
1910.1017 Vinyl chloride.
1910.1029 Coke Oven Emissions
1910.1499 Source of Standards
1910.1500 Standards Organizations

AUTHORITY: The provisions of this Part 1910 issued under secs. 6(a), 8(g), 84 Stat. 1593, 1598; 29 U.S.C. 655, 657, unless otherwise noted.

SOURCE: 39 FR 23502, June 27, 1974, unless otherwise noted.

(e) [Reserved]

(f) An employer who is in compliance with any standard in this part shall be deemed to be in compliance with the requirement of section 5(a)(1) of the Act, but only to the extent of the condition, practice, means, method, operation, or process covered by the standard.

§ 1910.6 Incorporation by reference.

(a) The standards of agencies of the U.S. Government and organizations which are not agencies of the U.S. Government which are legally incorporated by reference in this part, have the same force and effect as other standards in this part.

(b) Copies of the standards which are incorporated by reference may be examined at the national office of the Occupational Safety and Health Administration, U.S. Department of Labor, Washington, D.C. 20210, or at any of its regional offices. Copies of such private standards may be obtained from the issuing organizations. Their names and addresses are listed in the pertinent subparts of this part.

(c) Any changes in the standards incorporated by reference in this part and an official historic file of such changes are available for inspection at the national office of the Occupational Safety and Health Administration, U.S. Department of Labor, Washington, D.C. 20210.

Subpart B—Adoption and Extension of Established Federal Standards

§ 1910.11 Scope and purpose.

(a) The provisions of this Subpart B adopt and extend the applicability of, established Federal standards in effect on April 28, 1971, with respect to every employer, employee, and employment covered by the Act.

(b) It bears emphasis that only standards (i.e., substantive rules) relating to safety or health are adopted by any incorporations by reference of standards prescribed elsewhere in this chapter or this title. Other materials contained in the referenced parties are not adopted. Illustrations of the types of materials which are not adopted are these. The incorporations by reference of Parts 1915, 1916, 1917, 1918 in §§ 1910.13, 1910.14, 1910.15, and 1910.16 are not intended to include the discussion in those parts of the coverage of the Longshoremen's and Harbor Workers' Compensation Act or the penalty provisions of the Act. Similarly, the incorporation by reference of Part 1926 in § 1910.12 is not intended to include references to interpretative rules having relevance to the application of the Construction Safety Act but having no relevance to the application to the Occupational Safety and Health Act.

(Sec. 8(g), 84 Stat. 1600, 29 U.S.C. 657)

§ 1910.12 Construction work.

(a) *Standards.* The standards prescribed in Part 1926 of this chapter are adopted as occupational safety and health standards under section 6 of the Act and shall apply, according to the provisions thereof, to every employment and place of employment of every employee engaged in construction work. Each employer shall protect the employment and places of employment of each of his employees engaged in construction work by complying with the appropriate standards prescribed in this paragraph.

(b) *Definition.* For purposes of this section, "construction work" means work for construction, alteration, and/or repair, including painting and decorating. See discussion of these terms in § 1926.13 of this title.

(c) *Construction Safety Act distinguished.* This section adopts as occupational safety and health standards under section 6 of the Act the standards which are prescribed in Part 1926 of this chapter. Thus, the standards (substantive rules) published in Subpart C and the following subparts of Part 1926 of this chapter are applied. This section does not incorporate Subparts A and B of Part 1926 of this chapter. Subparts A and B have pertinence only to the application of section 107 of the Contract Work Hours and Safety Standards Act (the Construction Safety Act). For example, the interpretation of the term "subcontractor" in paragraph (e) of § 1926.13 of this chapter is significant in discerning the coverage of the Construction Safety Act and duties thereunder. However, the term "subcontractor" has no significance in the application of the Act, which was enacted under the Commerce Clause and which establishes duties for "employers" which are not dependent for their application upon any contractual relationship with the Federal Government or upon any form of Federal financial assistance.

(d) For the purposes of this part, to the extent that it may not already be included in paragraph (b) of this section, "construction work" includes the erection of new electric transmission and distribution lines and equipment, and the alteration, conversion, and improvement of the existing transmission and distribution lines and equipment.

(Sec. 107, 83 Stat. 96, 40 U.S.C. 333)

§ 1910.13 Ship repairing.

(a) *Adoption and extension of established safety and health standards for ship repairing.* The standards prescribed by Part 1501 of this title and in effect on April 28, 1971, are adopted as occupational safety or health standards under section 6(a) of the Act and shall apply, according to the provisions thereof, to every employment and place of employment of every employee engaged in ship repair or a related employment. Each employer shall protect the employment and places of employment of each of his employees engaged in ship repair or a related employment, by complying with the appropriate standards prescribed by this paragraph.

(b) *Definitions.* For purposes of this section:

(1) "Ship repair means any repair of a vessel, including, but not restricted to, alterations, conversions, installations, cleaning, painting, and maintenance work;

(2) "Related employment" means any employment performed as an incident to, or in conjunction with, ship repair work, including, but not restricted to, inspection, testing, and employment as a watchman; and

(3) "Vessel" includes every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water, including special purpose floating structures not primarily designed for, or used as a means of, transportation on water.

§ 1910.14 Shipbuilding.

(a) *Adoption and extension of established safety and health standards for shipbuilding.* The standards prescribed by Part 1502 of this title and in effect on April 28, 1971, are adopted as occupational safety or health standards under section 6(a) of the Act and shall apply, according to the provisions thereof, to every employment and place of employment of every employee engaged in shipbuilding or a related employment. Each employer shall protect the employment and places of employment of each of his employees engaged in shipbuilding or a related employment, by complying with the appropriate standards prescribed by this paragraph.

(b) *Definitions.* For purposes of this section:

(1) "Shipbuilding" means the construction of a vessel, including the installation of machinery and equipment;

(2) "Related employment" means any employment performed as an incident to, or in conjunction with, shipbuilding work, including, but not restricted to, inspection, testing trials, and employment as a watchman; and

(3) "Vessel" includes every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water, including special purpose floating structures not primarily designed for, or used as a means of, transportation on water.

§ 1910.15 Shipbreaking.

(a) *Adoption and extension of established safety and health standards for shipbreaking.* The standards prescribed by Part 1503 of this title and in effect on April 28, 1971, are adopted as occupational safety or health standards under section 6(a) of the Act and shall apply, according to the provisions thereof, to every employment and place of employment of every employee engaged in shipbreaking or a related employment. Each employer shall protect the employment and places of employment of each of his employees engaged in shipbreaking or a related employment, by complying with the appropriate standards prescribed by this paragraph.

(b) *Definitions.* For purposes of this section:

(1) "Shipbreaking" means any breaking down of a vessel's structure for the purpose of scrapping the vessel, including the removal of gear, equipment or any component part of a vessel;

(2) "Related employment" means any employment performed as an incident to, or in conjunction with, shipbreaking work, including, but not restricted to, inspection, survey, and employment as a watchman; and

(3) "Vessel" includes every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water, including special purpose floating structures not primarily designed for, or used as a means of, transportation on water.

§ 1910.16 Longshoring.

(a) *Adoption and extension of established safety and health standards for longshoring.* The standards prescribed by Part 1504 of this title and in effect on April 28, 1971, are adopted as occupational safety or health standards under section 6(a) of the Act and shall apply, according to the provisions thereof, to every employment and place of employment of every employee engaged in longshoring operations or a related employment. Each employer shall protect the employment and places of employment of each of his employees engaged in a longshoring operation or a related employment, by complying with the appropriate standards prescribed by this paragraph.

(b) *Definitions.* For purposes of this section:

(1) "Longshoring operation" means the loading, unloading, moving, or handling of, cargo, ship's stores, gear, etc., into, in, on, or out of any vessel;

(2) "Related employment" means any employment performed as an incident to or in conjunction with, longshoring operations including, but not restricted to, securing cargo, rigging, and employment as a porter, checker, or watchman; and

(3) "Vessel" includes every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water, including special purpose floating structures not primarily designed for, or used as a means of, transportation on water.

§ 1910.17 Effective dates.

(a) Except as provided in paragraphs (b) and (c) of this section, the standards prescribed in this Subpart B shall be effective on August 27, 1971.

(b) (1) To the extent that the standards prescribed in § 1910.12 apply to light residential construction or to other construction work, as defined in § 1910.12(b), which is not subject to the construction safety standards published in Part 1926 of this title, their application is delayed until September 27, 1971.

(2) For the purpose of subparagraph (1) of this paragraph, "light residential construction" is limited to the construction of homes and apartments which do not exceed three stories in height, and which have no elevator.

(c) Except as provided in paragraph (b) of this section, whenever any employment or place of employment is, or becomes, subject to any safety and health standard prescribed in Part 1915, 1916, 1917, 1918, or 1926 of this title on a date before August 27, 1971, by virtue of the Construction Safety Act or the Longshoremen's and Harbor Workers' Compensation Act, that occupational safety and health standard as incorporated by reference in this subpart shall also become effective under the Williams-Steiger Occupational Safety and Health Act of 1970 on that date.

§ 1910.18 Changes in established Federal standards.

Whenever an occupational safety and health standard adopted and incorporated by reference in this Subpart B is changed pursuant to section 6(b) of the Act and the statute under which the standard was originally promulgated, and in accordance with Part 1911 of this chapter, the standard shall be deemed changed for purposes of that statute and this Subpart B, and shall apply under this Subpart B. For the purposes of this section, a change in a standard includes any amendment, addition, or repeal, in whole or in part, of any standard.

§ 1910.19 Special provisions for air contaminants.

(a) *Asbestos dust.* Section 1910.1001 shall apply to the exposure of every employee to asbestos dust in every employment and place of employment covered by § 1910.12, § 1910.13, § 1910.14, § 1910.15, or § 1910.16, in lieu of any different standard on exposure to asbestos dust which would otherwise be applicable by virtue of any of those sections.

(b) *Vinyl chloride.* Section 1910.1017 shall apply to the exposure of every employee to vinyl chloride in every employment and place of employment covered by § 1910.12, § 1910.13, § 1910.14, § 1910.15, or § 1910.16, in lieu of any different standard on exposure to vinyl chloride which would otherwise be applicable by virtue of any of those sections.

[39 FR 23502, June 27, 1974, as amended at 40 FR 23073, May 28, 1975]

Subpart C—[Reserved]

Subpart D—Walking-Working Surfaces

§ 1910.21 Definitions.

(a) As used in § 1910.23, unless the context requires otherwise, floor and wall opening, railing and toe board terms shall have the meanings ascribed in this paragraph.

(1) *Floor hole.* An opening measuring less than 12 inches but more than 1 inch in its least dimension, in any floor, platform, pavement, or yard, through which materials but not persons may fall; such as a belt hole, pipe opening, or slot opening.

(2) *Floor opening.* An opening measuring 12 inches or more in its least dimension, in any floor, platform, pavement, or yard through which persons may fall; such as a hatchway, stair or ladder opening, pit, or large manhole. Floor openings occupied by elevators, dumb waiters, conveyors, machinery, or containers are excluded from this subpart.

(3) *Handrail.* A single bar or pipe supported on brackets from a wall or partition, as on a stairway or ramp, to furnish persons with a handhold in case of tripping.

(4) *Platform.* A working space for persons, elevated above the surrounding floor or ground; such as a balcony or platform for the operation of machinery and equipment.

(5) *Runway.* A passageway for persons, elevated above the surrounding floor or ground level, such as a footwalk along shafting or a walkway between buildings.

(6) *Standard railing.* A vertical barrier erected along exposed edges of a floor opening, wall opening, ramp, platform, or runway to prevent falls of persons.

(7) *Standard strength and construction.* Any construction of railings, covers, or other guards that meets the requirements of § 1910.23.

(8) *Stair railing.* A vertical barrier erected along exposed sides of a stairway to prevent falls of persons.

(9) *Toeboard.* A vertical barrier at floor level erected along exposed edges of a floor opening, wall opening, platform, runway, or ramp to prevent falls of materials.

(10) *Wall hole.* An opening less than 30 inches but more than 1 inch high, of unrestricted width, in any wall or partition; such as a ventilation hole or drainage scupper.

(11) *Wall opening.* An opening at least 30 inches high and 18 inches wide, in any wall or partition, through which persons may fall; such as a yard-arm doorway or chute opening.

(b) As used in § 1910.24, unless the context requires otherwise, fixed industrial stair terms shall have the meaning ascribed in this paragraph.

(1) *Handrail.* A single bar or pipe supported on brackets from a wall or partition to provide a continuous handhold for persons using a stair.

(2) *Nose, nosing.* That portion of a tread projecting beyond the face of the riser immediately below.

(3) *Open riser.* The air space between the treads of stairways without upright members (risers).

(4) *Platform.* An extended step or landing breaking a continuous run of stairs.

(5) *Railing.* A vertical barrier erected along exposed sides of stairways and platforms to prevent falls of persons. The top member of railing usually serves as a handrail.

(6) *Rise.* The vertical distance from the top of a tread to the top of the next higher tread.

(7) *Riser.* The upright member of a step situated at the back of a lower tread and near the leading edge of the next higher tread.

(8) *Stairs, stairway.* A series of steps leading from one level or floor to another, or leading to platforms, pits, boiler rooms, crossovers, or around machinery, tanks, and other equipment that are used more or less continuously or routinely by employees, or only occasionally by specific individuals. A series of steps and landings having three or more risers constitutes stairs or stairway.

(9) *Tread.* The horizontal member of a step.

(10) *Tread run.* The horizontal distance from the leading edge of a tread to the leading edge of an adjacent tread.

(11) *Tread width.* The horizontal distance from front to back of tread including nosing when used.

(c) As used in § 1910.25, unless the context requires otherwise, portable wood ladders terms shall have the meanings ascribed in this paragraph.

(1) *Ladders.* A ladder is an appliance usually consisting of two side rails joined at regular intervals by crosspieces called steps, rungs, or cleats, on which a person may step in ascending or descending.

(2) *Stepladder.* A stepladder is a self-supporting portable ladder, nonadjustable in length, having flat steps and a hinged back. Its size is designated by the overall length of the ladder measured along the front edge of the side rails.

(3) *Single ladder.* A single ladder is a non-self-supporting portable ladder, nonadjustable in length, consisting of but one section. Its size is designated by the overall length of the side rail.

(4) *Extension ladder.* An extension ladder is a non-self-supporting portable ladder adjustable in length. It consists of two or more sections traveling in guides or brackets so arranged as to permit length adjustment. Its size is designated by the sum of the lengths of the sections measured along the side rails.

(5) *Sectional ladder.* A sectional ladder is a non-self-supporting portable ladder, nonadjustable in length, consisting of two or more sections of ladder so constructed that the sections may be combined to function as a single ladder. Its size is designated by the overall length of the assembled sections.

(6) *Trestle ladder.* A trestle ladder is a self-supporting portable ladder, nonadjustable in length, consisting of two sections hinged at the top to form equal angles with the base. The size is designated by the length of the side rails measured along the front edge.

(7) *Extension trestle ladder.* An extension trestle ladder is a self-supporting portable ladder, adjustable in length, consisting of a trestle ladder base and a vertically adjustable single ladder, with suitable means for locking the ladders together. The size is designated by the length of the trestle ladder base.

(8) *Special-purpose ladder.* A special-purpose ladder is a portable ladder which represents either a modification or a combination of design or construction features in one of the general-purpose types of ladders previously defined, in order to adapt the ladder to special or specific uses.

(9) *Trolley ladder.* A trolley ladder is a semifixed ladder, nonadjustable in length, supported by attachments to an overhead track, the plane of the ladder being at right angles to the plane of motion.

(10) *Side-rolling ladder.* A side-rolling ladder is a semifixed ladder, nonadjustable in length, supported by attachments to a guide rail, which is generally fastened to shelving, the plane of the ladder being also its plane of motion.

(11) *Wood characteristics.* Wood characteristics are distinguishing features which by their extent and number determine the quality of a piece of wood.

(12) *Wood irregularities.* Wood irregularities are natural characteristics in or on wood that may lower its durability, strength, or utility.

(13) *Cross grain.* Cross grain (slope of grain) is a deviation of the fiber direction from a line parallel to the sides of the piece.

(14) *Knot.* A knot is a branch or limb imbedded in the tree and cut through in the process of lumber manufacture, classified according to size, quality, and occurrence. The size of the knot is determined as the average diameter on the surface of the piece.

(15) *Pitch and bark pockets.* A pitch pocket is an opening extending parallel to the annual growth rings containing, or that has contained, pitch, either solid or liquid. A bark pocket is an opening between annual growth rings that contains bark.

(16) *Shake.* A shake is a separation along the grain, most of which occurs between the rings of annual growth.

(17) *Check.* A check is a lengthwise separation of the wood, most of which occurs across the rings of annual growth.

(18) *Wane.* Wane is bark, or the lack of wood from any cause, on the corner of a piece.

(19) *Decay.* Decay is disintegration of wood substance due to action of wood-destroying fungi. It is also known as dote and rot.

(20) *Compression failure.* A compression failure is a deformation (buckling) of the fibers due to excessive compression along the grain.

(21) *Compression wood.* Compression wood is an aberrant (abnormal) and highly variable type of wood structure occurring in softwood species. The wood commonly has density somewhat higher than does normal wood, but somewhat lower stiffness and tensile strength for its weight in addition to high longitudinal shrinkage.

(22) *Low density.* Low-density wood is that which is exceptionally light in weight and usually deficient in strength properties for the species.

(d) As used in § 1910.26, unless the context requires otherwise, portable metal ladder terms shall have the meanings ascribed in this paragraph.

(1) *Ladder.* A ladder is an appliance usually consisting of two side rails joined at regular intervals by crosspieces called steps, rungs, or cleats, on which a person may step in ascending or descending.

(2) *Step ladder.* A step ladder is a self-supporting portable ladder, nonadjustable in length, having flat steps and a hinged back. Its size is designated by the overall length of the ladder measured along the front edge of the side rails.

(3) *Single ladder.* A single ladder is a non-self-supporting portable ladder, nonadjustable in length, consisting of but one section. Its size is designated by the overall length of the side rail.

(4) *Extension ladder.* An extension ladder is a non-self-supporting portable ladder adjustable in length. It consists of two or more sections traveling in guides or brackets so arranged as to permit length adjustment. Its size is designated by the sum of the lengths of the sections measured along the side rails.

(5) *Platform ladder.* A self-supporting ladder of fixed size with a platform provided at the working level. The size is determined by the distance along the front rail from the platform to the base of the ladder.

(6) *Sectional ladder.* A sectional ladder is a non-self-supporting portable ladder, non-adjustable in length, consisting of two or more sections so constructed that the sections may be combined to function as a single ladder. Its size is designated by the overall length of the assembled sections.

(7) *Trestle ladder.* A trestle ladder is a self-supporting portable ladder, nonadjustable in length, consisting of two sections, hinged at the top to form equal angles with the base. The size is designated by the length of the side rails measured along the front edge.

(8) *Extension trestle ladder.* An extension trestle ladder is a self-supporting portable ladder, adjustable in length, consisting of a trestle ladder base and a vertically adjustable single ladder, with suitable means for locking the ladders together. The size is designated by the length of the trestle ladder base.

(9) *Special-purpose ladder.* A special-purpose ladder is a portable ladder which represents either a modification or a combination of design or construction features in one of the general-purpose types of ladders previously defined, in order to adapt the ladder to special or specific uses.

(e) As used in § 1910.27, unless the context requires otherwise, fixed ladder terms shall have the meanings ascribed in this paragraph.

(1) *Ladder.* A ladder is an appliance usually consisting of two side rails joined at regular intervals by crosspieces called steps, rungs, or cleats, on which a person may step in ascending or descending.

(2) *Fixed ladder.* A fixed ladder is a ladder permanently attached to a structure, building, or equipment.

(3) *Individual-rung ladder.* An individual-rung ladder is a fixed ladder each rung of which is individually attached to a structure, building, or equipment.

(4) *Rail ladder.* A rail ladder is a fixed ladder consisting of side rails joined at regular intervals by rungs or cleats and fastened in full length or in sections to a building, structure, or equipment.

(5) *Railings.* A railing is any one or a combination of those railings constructed in accordance with § 1910.23. A standard railing is a vertical barrier erected along exposed edges of floor openings, wall openings, ramps, platforms, and runways to prevent falls of persons.

(6) *Pitch.* Pitch is the included angle between the horizontal and the ladder, measured on the opposite side of the ladder from the climbing side.

(7) *Fastenings.* A fastening is a device to attach a ladder to a structure, building, or equipment.

(8) *Rungs.* Rungs are ladder crosspieces of circular or oval cross-section on which a person may step in ascending or descending.

(9) *Cleats.* Cleats are ladder crosspieces of rectangular cross-section placed on edge on which a person may step in ascending or descending.

(10) *Steps.* Steps are the flat crosspieces of a ladder on which a person may step in ascending or descending.

(11) *Cage.* A cage is a guard that may be referred to as a cage or basket guard which is an enclosure that is fastened to the side rails of the fixed ladder or to the structure to encircle the climbing space of the ladder for the safety of the person who must climb the ladder.

(12) *Well.* A well is a permanent complete enclosure around a fixed ladder, which is attached to the walls of the well. Proper clearances for a well will give the person who must climb the ladder the same protection as a cage.

(13) *Ladder safety device.* A ladder safety device is any device, other than a cage or well, designed to eliminate or reduce the possibility of accidental falls and which may incorporate such features as life belts, friction brakes, and sliding attachments.

(14) *Grab bars.* Grab bars are individual handholds placed adjacent to or as an extension above ladders for the purpose of providing access beyond the limits of the ladder.

(15) *Through ladder.* A through ladder is one from which a man getting off at the top must step through the ladder in order to reach the landing.

(16) *Side-step ladder.* A side-step ladder is one from which a man getting off at the top must step sideways from the ladder in order to reach the landing.

(f) As used in § 1910.28, unless the context requires otherwise, scaffolding terms shall have the meaning ascribed in this paragraph.

(1) *Bearer.* A horizontal member of a scaffold upon which the platform rests and which may be supported by ledgers.

(2) *Boatswain's chair.* A seat supported by slings attached to a suspended rope, designed to accommodate one workman in a sitting position.

(3) *Brace.* A tie that holds one scaffold member in a fixed position with respect to another member.

(4) *Bricklayers' square scaffold.* A scaffold composed of framed wood squares which support a platform limited to light and medium duty.

(5) *Carpenters' bracket scaffold.* A scaffold consisting of wood or metal brackets supporting a platform.

(6) *Coupler.* A device for locking together the component parts of a tubular metal scaffold. The material used for the couplers shall be of a structural type, such as a drop-forged steel, malleable iron, or structural grade aluminum. The use of gray cast iron is prohibited.

(7) *Crawling board or chicken ladder.* A plank with cleats spaced and secured at equal intervals, for use by a worker on roofs, not designed to carry any material.

(8) *Double pole or independent pole scaffold.* A scaffold supported from the base by a double row of uprights, independent of support from the walls and constructed of uprights, ledgers, horizontal platform bearers, and diagonal bracing.

(9) *Float or ship scaffold.* A scaffold hung from overhead supports by means of ropes and consisting of a substantial platform having diagonal bracing underneath, resting upon and securely fastened to two parallel plank bearers at right angles to the span.

(10) *Guardrail.* A rail secured to uprights and erected along the exposed sides and ends of platforms.

(11) *Heavy duty scaffold.* A scaffold designed and constructed to carry a working load not to exceed 75 pounds per square foot.

(12) *Horse scaffold.* A scaffold for light or medium duty, composed of horses supporting a work platform.

(13) *Interior hung scaffold.* A scaffold suspended from the ceiling or roof structure.

(14) *Ladder jack scaffold.* A light duty scaffold supported by brackets attached to ladders.

(15) *Ledger (stringer).* A horizontal scaffold member which extends from post to post and which supports the putlogs or bearer forming a tie between the posts

(16) *Light duty scaffold.* A scaffold designed and constructed to carry a working load not to exceed 25 pounds per square foot.

(17) *Manually propelled mobile scaffold.* A portable rolling scaffold supported by casters.

(18) *Masons' adjustable multiple-point suspension scaffold.* A scaffold having a continuous platform supported by bearers suspended by wire rope from overhead supports, so arranged and operated as to permit the raising or lowering of the platform to desired working positions.

(19) *Maximum intended load.* The total of all loads including the working load, the weight of the scaffold, and such other loads as may be reasonably anticipated.

(20) *Medium duty scaffold.* A scaffold designed and constructed to carry a working load not to exceed 50 pounds per square foot.

(21) *Mid-rail.* A rail approximately midway between the guardrail and platform, used when required, and secured to the uprights erected along the exposed sides and ends of platforms.

(22) *Needle beam scaffold.* A light duty scaffold consisting of needle beams supporting a platform.

(23) *Outrigger scaffold.* A scaffold supported by outriggers or thrustouts projecting beyond the wall or face of the building or structure, the inboard ends of which are secured inside of such a building or structure.

(24) *Putlog.* A scaffold member upon which the platform rests.

(25) *Roofing bracket.* A bracket used in sloped roof construction, having provisions for fastening to the roof or supported by ropes fastened over the ridge and secured to some suitable object.

(26) *Runner.* The lengthwise horizontal bracing or bearing members or both.

(27) *Scaffold.* Any temporary elevated platform and its supporting structure used for supporting workmen or materials or both.

(28) *Single-point adjustable suspension scaffold.* A manually or power-operated unit designed for light duty use, supported by a single wire rope from an overhead support so arranged and operated as to permit the raising or lowering of the platform to desired working positions.

(29) *Single pole scaffold.* Platforms resting on putlogs or crossbeams, the outside ends of which are supported on ledgers secured to a single row of posts or uprights and the inner ends of which are supported on or in a wall.

(30) *Stone setters' adjustable multiple-point suspension scaffold.* A swinging-type scaffold having a platform supported by hangers suspended at four points so as to permit the raising or lowering of the platform to the desired working position by the use of hoisting machines.

(31) *Toeboard.* A barrier secured along the sides and ends of a platform, to guard against the falling of material.

(32) *Tube and coupler scaffold.* An assembly consisting of tubing which serves as posts, bearers, braces, ties, and runners, a base supporting the posts, and special couplers which serve to connect the uprights and to join the various members.

(33) *Tubular welded frame scaffold.* A sectional, panel, or frame metal scaffold substantially built up of prefabricated welded sections which consist of posts and horizontal bearer with intermediate members. Panels or frames shall be braced with diagonal or cross braces.

(34) *Two-point suspension scaffold (swinging scaffold).* A scaffold, the platform of which is supported by hangers (stirrups) at two points, suspended from overhead supports so as to permit the raising or lowering of the platform to the desired working position by tackle or hoisting machines.

(35) *Window jack scaffold.* A scaffold, the platform of which is supported by a bracket or jack which projects through a window opening.

(36) *Working load.* Load imposed by men, materials, and equipment.

(g) As used in § 1910.29, unless the context requires otherwise, manually propelled mobile ladder stand and scaffold (tower) terms shall have the meaning ascribed in this paragraph.

(1) *Bearer.* A horizontal member of a scaffold upon which the platform rests and which may be supported by ledgers.

(2) *Brace.* A tie that holds one scaffold member in a fixed position with respect to another member.

(3) *Climbing ladder.* A separate ladder with equally spaced rungs usually attached to the scaffold structure for climbing and descending.

(4) *Coupler.* A device for locking together the components of a tubular metal scaffold which shall be designed and used to safely support the maximum intended loads.

(5) *Design working load.* The maximum intended load, being the total of all loads including the weight of the men, materials, equipment, and platform.

(6) *Equivalent.* Alternative design or features, which will provide an equal degree or factor of safety.

(7) *Guardrail.* A barrier secured to uprights and erected along the exposed sides and ends of platforms to prevent falls of persons.

(8) *Handrail.* A rail connected to a ladder stand running parallel to the slope and/or top step.

(9) *Ladder stand.* A mobile fixed size self-supporting ladder consisting of a wide flat tread ladder in the form of stairs. The assembly may include handrails.

(10) *Ledger (stringer).* A horizontal scaffold member which extends from post to post and which supports the bearer forming a tie between the posts.

(11) *Mobile scaffold (tower).* A light, medium, or heavy duty scaffold mounted on casters or wheels.

(12) *Mobile.* "Manually propelled."

(13) *Mobile work platform.* Generally a fixed work level one frame high on casters or wheels, with bracing diagonally from platform to vertical frame.

(14) *Runner.* The lengthwise horizontal bracing and/or bearing members.

(15) *Scaffold.* Any temporary elevated platform and its necessary vertical, diagonal, and horizontal members used for supporting workmen and materials. (Also known as a scaffold tower.)

(16) *Toeboard.* A barrier at platform level erected along the exposed sides and ends of a scaffold platform to prevent falls of materials.

(17) *Tube and coupler scaffold.* An assembly consisting of tubing which serves as posts, bearers, braces, ties, and runners, a base supporting the posts, and uprights, and serves to join the various members, usually used in fixed locations.

(18) *Tubular welded frame scaffold.* A sectional, panel, or frame metal scaffold substantially built up of prefabricated welded sections, which consist of posts and bearers with intermediate connecting members and braced with diagonal or cross braces.

(19) *Tubular welded sectional folding scaffold.* A sectional, folding metal scaffold either of ladder frame or inside stairway design, substantially built of prefabricated welded sections, which consist of end frames, platform frame, inside inclined stairway frame and braces, or hinged connected diagonal and horizontal braces, capable of being folded into a flat package when the scaffold is not in use.

(20) *Work level.* The elevated platform, used for supporting workmen and their materials, comprising the necessary vertical, horizontal and diagonal braces, guardrails, and ladder for access to the work platform.

§ 1910.22 General requirements.

This section applies to all permanent places of employment, except where domestic, mining, or agricultural work only is performed. Measures for the control of toxic materials are considered to be outside the scope of this section.

(a) *Housekeeping.* (1) All places of employment, passageways, storerooms, and service rooms shall be kept clean and orderly and in a sanitary condition.

(2) The floor of every workroom shall be maintained in a clean and, so far as possible, a dry condition. Where wet processes are used, drainage shall be maintained, and false floors, platforms, mats, or other dry standing places should be provided where practicable.

(3) To facilitate cleaning, every floor, working place, and passageway shall be kept free from protruding nails, splinters, holes, or loose boards.

(b) *Aisles and passageways.* (1) Where mechanical handling equipment is used, sufficient safe clearances shall be allowed for aisles, at loading docks, through doorways and wherever turns or passage must be made. Aisles and passageways shall be kept clear and in good repairs, with no obstruction across or in aisles that could create a hazard.

(2) Permanent aisles and passageways shall be appropriately marked.

(c) *Covers and guardrails.* Covers and/or guardrails shall be provided to protect personnel from the hazards of open pits, tanks, vats, ditches, etc.

(d) *Floor loading protection.* (1) In every building or other structure, or part thereof, used for mercantile, business, industrial, or storage purposes, the loads approved by the building official shall be marked on plates of approved design which shall be supplied and securely affixed by the owner of the building, or his duly authorized agent, in a conspicuous place in each space to which they relate. Such plates shall not be removed or defaced but, if lost, removed, or defaced, shall be replaced by the owner or his agent.

(2) It shall be unlawful to place, or cause, or permit to be placed, on any floor or roof of a building or other structure a load greater than that for which such floor or roof is approved by the building official.

§ 1910.23 Guarding floor and wall openings and holes.

(a) *Protection for floor openings.* (1) Every stairway floor opening shall be guarded by a standard railing constructed in accordance with paragraph (e) of this section. The railing shall be provided on all exposed sides (except at entrance to stairway). For infrequently used stairways where traffic across the opening prevents the use of fixed standard railing (as when located in aisle spaces, etc.), the guard shall consist of a hinged floor opening cover of standard strength and construction and removable standard railings on all exposed sides (except at entrance to stairway).

(2) Every ladderway floor opening or platform shall be guarded by a standard railing with standard toeboard on all exposed sides (except at entrance to opening), with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening.

(3) Every hatchway and chute floor opening shall be guarded by one of the following:

(i) Hinged floor opening cover of standard strength and construction equipped with standard railings or permanently attached thereto so as to leave only one exposed side. When the opening is not in use, the cover shall be closed or the exposed side shall be guarded at both top and intermediate positions by removable standard railings.

(ii) A removable railing with toeboard on not more than two sides of the opening and fixed standard railings with toeboards on all other exposed sides. The removable railings shall be kept in place when the opening is not in use and should preferably be hinged or otherwise mounted so as to be conveniently replaceable.

Where operating conditions necessitate the feeding of material into any hatchway or chute opening, protection shall be provided to prevent a person from falling through the opening.

(4) Every skylight floor opening and hole shall be guarded by a standard skylight screen or a fixed standard railing on all exposed sides.

(5) Every pit and trapdoor floor opening, infrequently used, shall be guarded by a floor opening cover of standard strength and construction which should be hinged in place. While the cover is not in place, the pit or trap opening shall be constantly attended by someone or shall be protected on all exposed sides by removable standard railings.

(6) Every manhole floor opening shall be guarded by a standard manhole cover which need not be hinged in place. While the cover is not in place, the manhole opening shall be constantly attended by someone or shall be protected by removable standard railings.

(7) Every temporary floor opening shall have standard railings, or shall be constantly attended by someone.

(8) Every floor hole into which persons can accidentally walk shall be guarded by either:

(i) A standard railing with standard toeboard on all exposed sides, or

(ii) A floor hole cover of standard strength and construction that should be hinged in place. While the cover is not in place, the floor hole shall be constantly attended by someone or shall be protected by a removable standard railing.

(9) Every floor hole into which persons cannot accidentally walk (on account of fixed machinery, equipment, or walls) shall be protected by a cover that leaves no openings more than 1 inch wide. The cover shall be securely held in place to prevent tools or materials from falling through.

(10) Where doors or gates open directly on a stairway, a platform shall be provided, and the swing of the door shall not reduce the effective width to less than 20 inches.

(b) *Protection for wall openings and holes.* (1) Every wall opening from which there is a drop of more than 4 feet shall be guarded by one of the following:

(i) Rail, roller, picket fence, half door, or equivalent barrier.

The guard may be removable but should preferably be hinged or otherwise mounted so as to be conveniently replaceable. Where there is exposure below to falling materials, a removable toe board or the equivalent shall also be provided. When the opening is not in use for handling materials, the guard shall be kept in position regardless of a door on the opening. In addition, a grab handle shall be provided on each side of the opening

with its center approximately 4 feet above floor level and of standard strength and mounting.

(ii) Extension platform onto which materials can be hoisted for handling, and which shall have side rails or equivalent guards of standard specifications.

(2) Every chute wall opening from which there is a drop of more than 4 feet shall be guarded by one or more of the barriers specified in subparagraph (1) of this paragraph, or as required by the conditions.

(3) Every window wall opening at a stairway landing, floor, platform, or balcony, from which there is a drop of more than 4 feet, and where the bottom of the opening is less than 3 feet above the platform or landing, shall be guarded by standard slats, standard grill work (as specified in paragraph (e)(11) of this section), or standard railing.

Where the window opening is below the landing, or platform, a standard toe board shall be provided.

(4) Every temporary wall opening shall have adequate guards but these need not be of standard construction.

(5) Where there is a hazard of materials falling through a wall hole, and the lower edge of the near side of the hole is less than 4 inches above the floor, and the far side of the hole more than 5 feet above the next lower level, the hole shall be protected by a standard toeboard, or an enclosing screen either of solid construction, or as specified in paragraph (e)(11) of this section.

(c) *Protection of open-sided floors, platforms, and runways.* (1) Every open-sided floor or platform 4 feet or more above adjacent floor or ground level shall be guarded by a standard railing (or the equivalent as specified in paragraph (e)(3) of this section) on all open sides except where there is entrance to a ramp, stairway, or fixed ladder. The railing shall be provided with a toeboard wherever, beneath the open sides,

(i) Persons can pass,

(ii) There is moving machinery, or

(iii) There is equipment with which falling materials could create a hazard.

(2) Every runway shall be guarded by a standard railing (or the equivalent as specified in paragraph (e)(3) of this section) on all open sides 4 feet or more above floor or ground level. Wherever tools, machine parts, or materials are likely to be used on the runway, a toeboard shall also be provided on each exposed side.

Runways used exclusively for special purposes (such as oiling, shafting, or filling tank cars) may have the railing on one side omitted where operating conditions necessitate such omission, providing the falling hazard is minimized by using a runway of not less than 18 inches wide. Where persons entering upon runways become thereby exposed to machinery, electrical equipment, or other danger not a falling hazard, additional guarding than is here specified may be essential for protection.

(3) Regardless of height, open-sided floors, walkways, platforms, or runways above or adjacent to dangerous equipment, pickling or galvanizing tanks, degreasing units, and similar hazards shall be guarded with a standard railing and toe board.

(d) *Stairway railings and guards.* (1) Every flight of stairs having four or more risers shall be equipped with standard stair railings or standard handrails as specified in subdivisions (i) through (v) of this subparagraph, the width of the stair to be measured clear of all obstructions except handrails:

(i) On stairways less than 44 inches wide having both sides enclosed, at least one handrail, preferably on the right side descending.

(ii) On stairways less than 44 inches wide having one side open, at least one stair railing on open side.

(iii) On stairways less than 44 inches wide having both sides open, one stair railing on each side.

(iv) On stairways more than 44 inches wide but less than 88 inches wide, one handrail on each enclosed side and one stair railing on each open side.

(v) On stairways 88 or more inches wide, one handrail on each enclosed side, one stair railing on each open side, and one intermediate stair railing located approximately midway of the width.

(2) Winding stairs shall be equipped with a handrail offset to prevent walking on all portions of the treads having width less than 6 inches.

(e) *Railing, toe boards, and cover specifications.* (1) A standard railing shall consist of top rail, intermediate rail, and posts, and shall have a vertical height of 42 inches nominal from upper surface of top rail to floor, platform, runway, or ramp level. The top rail shall be smooth-surfaced throughout the length of the railing. The intermediate rail shall be approximately halfway between the top rail and the floor, platform, runway, or ramp. The ends of the rails shall not overhang the terminal posts except where such overhang does not constitute a projection hazard.

(2) A stair railing shall be of construction similar to a standard railing but the vertical height shall be not more than 34 inches nor less than 30 inches from upper surface of top rail to surface of tread in line with face of riser at forward edge of tread.

(3) Minimum requirements for standard railings under various types of construction are specified in the following subdivisions. Dimensions specified are based on the U.S. Department of Agriculture Wood Handbook, No. 72, 1955 (No. 1 [843] Southern Yellow Pine (Modulus of Rupture 7,400 p.s.i.)) for wood; ANSI G41.5–1970, American National Standard Specifications for Structural Steel, for structural steel; and ANSI B123.1–1970, American National Standard Specifications for Welded and Steamless Steel Pipe, for pipe.

(i) For wood railings, the posts shall be of at least 2-inch by 4-inch stock spaced not to exceed 6 feet; the top and intermediate rails shall be of at least 2-inch by 4-inch stock. If top rail is made of two right-angle pieces of 1-inch by 4-inch stock, posts may be spaced on 8-foot centers, with 2-inch by 4-inch intermediate rail.

(ii) For pipe railings, posts and top and intermediate railings shall be at least 1½ inches nominal diameter with posts spaced not more than 8 feet on centers.

(iii) For structural steel railings, posts and top and intermediate rails shall be of 2-inch by 2-inch by ⅜-inch angles or other metal shapes of equivalent bending strength with posts spaced not more than 8 feet on centers.

(iv) The anchoring of posts and framing of members for railings of all types shall be of such construction that the completed structure shall be capable of withstanding a load of at least 200 pounds applied in any direction at any point on the top rail.

(v) Other types, sizes, and arrangements of railing construction are acceptable provided they meet the following conditions:

(a) A smooth-surfaced top rail at a height above floor, platform, runway, or ramp level of 42 inches nominal;

(b) A strength to withstand at least the minimum requirement of 200 pounds top rail pressure;

(c) Protection between top rail and floor, platform, runway, ramp, or stair treads, equivalent at least to that afforded by a standard intermediate rail;

(d) Elimination of overhang of rail ends unless such overhang does not constitute a hazard; such as, baluster railings, scrollwork railings, paneled railings;

(4) A standard toeboard shall be 4 inches nominal in vertical height from its top edge to the level of the floor, platform, runway, or ramp. It shall be securely fastened in place and with not more than ¼-inch clearance above floor level. It may be made of any substantial material either solid or with openings not over 1 inch in greatest dimension.

Where material is piled to such height that a standard toeboard does not provide protection, paneling from floor to intermediate rail, or to top rail shall be provided.

(5) (i) A handrail shall consist of a lengthwise member mounted directly on a wall or partition by means of brackets attached to the lower side of the handrail so as to offer no obstruction to a smooth surface along the top and both sides of the handrail. The handrail shall be of rounded or other section that will furnish an adequate handhold for anyone grasping it to avoid falling. The ends of the handrail should be turned in to the supporting wall or otherwise arranged so as not to constitute a projection hazard.

(ii) The height of handrails shall be not more than 34 inches nor less than 30 inches from upper surface of handrail to surface of tread in line with face of riser or to surface of ramp.

(iii) The size of handrails shall be: When of hardwood, at least 2 inches in diameter; when of metal pipe, at least 1½ inches in diameter. The length of brackets shall be such as will give a clearance between handrail and wall or any projection thereon of at least 3 inches. The spacing of brackets shall not exceed 8 feet.

(iv) The mounting of handrails shall be such that the completed structure is capable of withstanding a load of at least 200 pounds applied in any direction at any point on the rail.

(6) All handrails and railings shall be provided with a clearance of not less than

3 inches between the handrail or railing and any other object.

(7) Floor opening covers may be of any material that meets the following strength requirements:

(i) Trench or conduit covers and their supports, when located in plant roadways, shall be designed to carry a truck rear-axle load of at least 20,000 pounds.

(ii) Manhole covers and their supports, when located in plant roadways, shall comply with local standard highway requirements if any; otherwise, they shall be designed to carry a truck rear-axle load of at least 20,000 pounds.

(iii) The construction of floor opening covers may be of any material that meets the strength requirements. Covers projecting not more than 1 inch above the floor level may be used providing all edges are chamfered to an angle with the horizontal of not over 30 degrees. All hinges, handles, bolts, or other parts shall set flush with the floor or cover surface.

(8) Skylight screens shall be of such construction and mounting that they are capable of withstanding a load of at least 200 pounds applied perpendicularly at any one area on the screen. They shall also be of such construction and mounting that under ordinary loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork with openings not more than 4 inches long or of slatwork with openings not more than 2 inches wide with length unrestricted.

(9) Wall opening barriers (rails, rollers, picket fences, and half doors) shall be of such construction and mounting that, when in place at the opening, the barrier is capable of withstanding a load of at least 200 pounds applied in any direction (except upward) at any point on the top rail or corresponding member.

(10) Wall opening grab handles shall be not less than 12 inches in length and shall be so mounted as to give 3 inches clearance from the side framing of the wall opening. The size, material, and anchoring of the grab handle shall be such that the completed structure is capable of withstanding a load of at least 200 pounds applied in any direction at any point of the handle.

(11) Wall opening screens shall be of such construction and mounting that they are capable of withstanding a load of at least 200 pounds applied horizontally at any point on the near side of the screen. They may be of solid construction, of grillwork with openings not more than 8 inches long, or of slatwork with openings not more than 4 inches wide with length unrestricted.

§ 1910.24 Fixed industrial stairs.

(a) *Application of requirements.* This section contains specifications for the safe design and construction of fixed general industrial stairs. This classification includes interior and exterior stairs around machinery, tanks, and other equipment, and stairs leading to or from floors, platforms, or pits. This section does not apply to stairs used for fire exit purposes, to construction operations to private residences, or to articulated stairs, such as may be installed on floating roof tanks or on dock facilities, the angle of which changes with the rise and fall of the base support.

(b) *Where fixed stairs are required.* Fixed stairs shall be provided for access from one structure level to another where operations necessitate regular travel between levels, and for access to operating platforms at any equipment which requires attention routinely during operations. Fixed stairs shall also be provided where access to elevations is daily or at each shift for such purposes as gauging, inspection, regular maintenance, etc., where such work may expose employees to acids, caustics, gases, or other harmful substances, or for which purposes the carrying of tools or equipment by hand is normally required. (It is not the intent of this section to preclude the use of fixed ladders for access to elevated tanks, towers, and similar structures, overhead traveling cranes, etc., where the use of fixed ladders is common practice.) Spiral stairways shall not be permitted except for special limited usage and secondary access situations where it is not practical to provide a conventional stairway. Winding stairways may be installed on tanks and similar round structures where the diameter of the structure is not less than five (5) feet.

(c) *Stair strength.* Fixed stairways shall be designed and constructed to carry a load of five times the normal live load anticipated but never of less strength than to carry safely a moving concentrated load of 1,000 pounds.

(d) *Stair width.* Fixed stairways shall have a minimum width of 22 inches.

(e) *Angle of stairway rise.* Fixed stairs shall be installed at angles to the horizontal of between 30° and 50°. Any uniform combination of rise/tread dimensions may be used that will result in a stairway at an angle to the horizontal within the permissible range. Table D-1 gives rise/tread dimensions which will produce a stairway within the permissible range, stating the angle to the horizontal produced by each combination. However, the rise/tread combinations are not limited to those given in Table D-1.

TABLE D-1

Angle to horizontal	Rise (in inches)	Tread run (in inches)
30°-35°	6½	11
35°-35°	6¾	10½
35°-41°	7	10½
35°-46°	7¾	10¼
35°-50°	7½	10
46°-25°	7¼	9½
46°-30°	8	9½
41°-44°	8¼	9¼
43°-22°	8½	9
43°-90°	8¾	8¾
46°-36°	9	8½
46°-16°	9¼	8¼
46°-54°	9½	8

(f) *Stair treads.* Each tread and the top landing of a stairway, where risers are used, should have a nose which extends one-half inch to 1 inch beyond the face of the lower riser. Noses should have an even leading edge. All treads shall be reasonably slip-resistant and the nosings shall be of nonslip finish. Welded bar grating treads without nosings are acceptable providing the leading edge can be readily identified by personnel descending the stairway and provided the tread is serrated or is of definite nonslip design. Rise height and tread width shall be uniform throughout any flight of stairs including any foundation structure used as one or more treads of the stairs.

(g) *Length of stairways.* Long flights of stairs, unbroken by landings or intermediate platforms, should be avoided. Consideration should be given to providing intermediate platforms where practical and where such stairways are in frequent use. Stairway platforms shall be no less than the width of a stairway and a minimum of 30 inches in length measured in the direction of travel.

(h) *Railings and handrails.* Standard railings shall be provided on the open sides of all exposed stairways and stair platforms. Handrails shall be provided on at least one side of closed stairways preferably on the right side descending. Stair railings and handrails shall be installed in accordance with the provisions of § 1910.23.

(i) *Vertical clearance.* Vertical clearance above any stair tread to an overhead obstruction shall be at least 7 feet measured from the leading edge of the tread.

(j) *Open risers.* Stairs having treads of less than 9-inch width should have open risers.

(k) *General.* Open grating type treads are desirable for outside stairs.

§ 1910.25 Portable wood ladders.

(a) *Application of requirements.* This section is intended to prescribe rules and establish minimum requirements for the construction, care, and use of the common types of portable wood ladders, in order to insure safety under normal conditions of usage. Other types of special ladders, fruitpicker's ladders, combination step and extension ladders, stockroom step ladders, aisle-way step ladders, shelf ladders, and library ladders are not specifically covered by this section.

(b) *Materials*—(1) *Requirements applicable to all wood parts.* (i) All wood parts shall be of the species specified in Table D-5, seasoned to a moisture content of not more than 15 percent; smoothly machined and dressed on all sides; free from sharp edges and splinters; sound and free by accepted visual inspection from shake, wane, compression failures, decay, or other irregularities except as hereinafter provided. Low-density wood shall not be used.

(ii) Black streaks in western hemlock shall not be considered an irregularity, except that chambers associated with black streaks, when present in the part, shall be limited as specified for pitch and bark pockets.

(2) *Permissible irregularities in side rails and back rails.* (i) The general slope of grain in side rails of minimum dimension shall not be steeper than 1 in 12, except that for ladders under 10 feet in length and having flat steps for treads, the general slope of grain shall not be steeper than 1 in 10. The slope of grain in areas of local grain deviation shall not be steeper than 1 in 12 or 1 in 10 as specified above when occurring on the edges or in the outer one-fourth of the width of the wide face. Local areas of grain deviation within the center half of the width of the wide face may con-

tain grain slope as steep as 1 in 8. Local deviations of grain associated with otherwise permissible irregularities are permitted.

(ii) Knots shall not appear in narrow faces of side rails. Knots, if tight and sound and less than one-half inch in diameter, are permitted on the wide face provided they are at least one-half inch back from either edge and not more frequent than 1 to any 3 feet of ladder length.

(iii) Pitch and bark pockets are permitted provided they are not more than one-eighth inch in width, or more than 3 inches in length, or more than one-half inch in depth, and then only if they are not more frequent than 1 to any 3 feet of ladder length.

(iv) Checks are permitted on side rails provided they are not more than 6 inches in length or more than one-half inch in depth.

(v) Occurrences of compression wood in relatively small amounts and positively identified by competent and conscientious visual inspection of side rails are permitted provided no single streak shall exceed one-half inch in width nor shall the aggregate of streaks exceed one-fourth of the face of the side rail. Borderline forms of compression wood not positively identified by competent and conscientious visual inspection are permitted. Ladder parts containing bow or crook which would interfere with the operation of the ladder shall not be used.

(3) *Permissible irregularities in flat steps, rungs, and cleats.* (i) The general slope of grain in flat steps of minimum dimension shall not be steeper than 1 in 12, except that for ladders under 10 feet in length the slope of grain shall not be steeper than 1 in 10. The slope of grain in areas of local deviation shall not be steeper than 1 in 12 or 1 in 10 as specified above. For all ladders, cross grain not steeper than 1 in 10 are permitted in lieu of 1 in 12, provided the size is increased to afford at least 15 percent greater calculated strength than for ladders built to minimum dimensions. Local deviations of grain associated with otherwise permissible irregularities are permitted.

(ii) The general slope of grain and that in areas of local deviations of grain shall not be steeper than 1 in 15 in rungs and cleats. For all ladders cross grain not steeper than 1 in 12 are permitted in lieu of 1 in 15, provided the size is increased to afford at least 15 percent greater calculated strength for ladders built to minimum dimensions. Local deviations of grain associated with otherwise permissible irregularities are permitted.

(iii) Knots over one-eighth inch in diameter shall not appear in rungs. Knots shall not appear in the narrow faces of flat steps and cleats. Knots appearing in the wide faces of flat steps and cleats shall not exceed a diameter of one-fourth inch.

(4) *Classification of species of wood.* Table D-5 gives a list of native woods, divided into four groups on the basis of mechanical properties considered from the standpoint of use for ladder construction.

(i) All minimum dimensions and specifications set forth hereinafter for side rails and flat steps are based on the species of wood listed in Group 3 in Table D-5 except where otherwise provided. The species of all other groups may be substituted for those of Group 3 when used in sizes that provide at least equivalent strength. (See Table D-5 for suggested methods of size adjustment.)

(ii) All minimum dimensions and specifications set forth hereinafter for rungs and cleats are based on the species of wood listed in Group 1 in Table D-5. Cleats may be made of species of any other group provided that the cross-sectional dimensions specified for Group 1 species are increased by the factors

FACTOR FOR INCREASE IN

Species group	Each dimension	Width only (thickness unchanged)
1	1.00	1.00
2	1.03	1.05
3	1.11	1.18
4	1.17	1.30

shown in this subdivision (based on the percentages of Table D-5) for the species group of which the cleats are to be made.

(5) *Metal parts.* All metal parts shall be made of aluminum, steel, wrought iron, malleable iron, or other material, adequate in strength for the purpose intended.

(c) *Construction requirements*—(1) *Basis of requirements.* (i) Dimensions specified hereinafter for wood ladders are the minimum dressed cross-sectional dimensions for the types of ladders herein designated, based on the species of woods specified in paragraph (b) (4) of this section, at a moisture content of 15 percent. The dimensions for side rails

are based on a mortise or gain as specified for the various types of ladders for step or rung attachments. Where the strength of the side rails or back legs is reduced by a greater mortise or gain than shown, or where it is desired to use a cross section for any wood part either dimension of which is less than that specified, the required dimensions may be found as indicated in subdivision (ii) of this subparagraph.

(ii) For the side rails of single extension and sectional ladders, the proposed section shall develop an actual stress per square inch not greater than 2,150 pounds for Group 1 woods, 2,000 pounds for Group 2 woods, 1,600 pounds for Group 3 woods, or 1,375 pounds for Group 4 woods when computed by the following formula applying to rectangular sections, with a maximum tolerance of 5 percent over these stresses:

$$S = \frac{3\,LD\,(P + W/16)}{2B\,(D^2 - d^2)} = \frac{1.5\,LD\,(25 + W/16)}{B\,(D^2 - 0.67)}$$

P = 25 pounds, which is the normal component on each rail of a load of 200 pounds at the center of the ladder, equally distributed between the rails, when the foot of the ladder is moved out of the perpendicular by one-quarter of its length.
S = Stress in extreme fiber in pounds per square inch.
W = Weight of ladder in pounds.
L = Maximum working length of ladder in inches.
B = Net thickness of each side rail in inches.
D = Depth of side rail in inches.
d = Diameter of hole board for rung (d^2 shall be taken as not less than 0.67).

(iii) Adjustment of sizes for wood parts of stepladders and other ladder types covered by this section may be made as follows:

(a) The dimensions specified in later sections for parts having rectangular cross sections generally represent only one of a number of possible combinations of thickness and width which could satisfy the requirements for strength and stiffness. Depending upon the material sizes available, manufacturing practices, and like factors, parts produced by a particular manufacturer may or may not agree exactly with the sizes given later. The following provisions provide means for determining equality of load-carrying capacity of parts of different sizes or of determining sizes needed to provide equality.

(b) Any changes in dimension s shall result in a change in the width-thickness ratio for side rails of back legs not greater than 25 percent from the ratio for a corresponding ladder as now covered in this section.

(c) Where both dimensions are different from those specified, the load-carrying capacity in bending of a part will be equal to or greater than that of a part of specified dimensions if the ratio P_e/P_i is not less than 1, where

$$\frac{P_e}{P_i} = \frac{B_e D_e^2}{B_i D_i^2}$$

and

B = Dimension of the part at right angles to the direction of load (width of a step, thickness of a side rail or back leg).
D = Dimension of the part parallel to the direction of load (thickness of a step, width of a side rail or back leg).
B_i, D_i = Dimensions as specified.
B_e, D_e = Dimensions of part being considered.

(d) The dimensions to be used in the computations are net dimensions. For example, in the case of a stepladder side rail, the dimension B is to be taken as the gross thickness of the rail minus the depth of the gain for the steps. Where there is a rung hole at the center of depth of a rail, a somewhat more accurate comparison may be made by the use of the formula

$$\frac{P_e}{P_i} = \frac{B_e D_e\,(D_e^2 - d^2)}{B_i D_i\,(D_i^2 - d^2)}$$

where the symbols have the same meanings as before and d is the diameter of the hole for the rung tenon. In most instances the difference in results calculated by this and by the earlier formula will be slight.

(2) *Portable stepladders.* Stepladders longer than 20 feet shall not be supplied. Stepladders as hereinafter specified shall be of three types:

Type I—Industrial stepladder, 3 to 20 feet for heavy duty, such as utilities, contractors, and industrial use.

Type II—Commercial stepladder, 3 to 12 feet for medium duty, such as painters, offices, and light industrial use.

Type III—Household stepladder, 3 to 6 feet for light duty, such as light household use.

(i) *General requirements.* (a) Slope is the inclination of side rails or back legs with respect to the vertical and is expressed as a deviation from the vertical

per unit length of the member. Stepladders shall be so constructed, that when in the open position, the slope of the front section shall not be less than 3½ inches and the slope of the back section not less than 2 inches, for each 12-inch length of side rail.

(b) A uniform step spacing shall be employed which shall be not more than 12 inches. Steps shall be parallel and level when the ladder is in position for use.

(c) The minimum width between side rails at the top, inside to inside, shall be not less than 11½ inches. From top to bottom, the side rails shall spread at least 1 inch for each foot of length of stepladder.

(d) When minimum thickness of side rails is used, steps shall be closely fitted into the grooves in the side rails one-eighth inch in depth with a tolerance of one thirty-second inch, and shall be firmly secured as hereinafter described; or they shall be closely fitted into metal brackets of an equivalent strength, which in turn shall be firmly secured to the side rails. The depth of groove herein provided may be increased in proportion to the thickness of side rails as provided in subdivisions (ii) (a), (iii) (a), and (iv) (a) of this subparagraph.

(e) All stepladders shall have a top with wood or metal brackets or fittings tightly secured to the top, side rails, and back legs, to allow free swinging of the back section without excessive play or wear at the joints.

(f) A metal spreader or locking device of sufficient size and strength to securely hold the front and back sections in open positions shall be a component of each stepladder. The spreader shall have all sharp points covered or removed to protect the user. For Type III ladder, the pail shelf and spreader may be combined in one unit (the so-called shelf-lock ladder).

(g) When measured along the front edge of the side rails, all stepladders shall measure within 3 inches of the specified length.

(h) Where bucket shelves are provided, they shall be constructed to support a load of 25 pounds and shall be so fastened that they can be folded up when the ladder is closed.

(i) All metal parts and fittings shall be securely attached by means of rivets, bolts, screws, or equivalent fasteners.

(ii) *Type I industrial stepladder.* (a) (1) The minimum dimensions of the parts of the Type I stepladder shall be as shown in Table D–2 when made of Group 2 or Group 3 woods.

(2) The minimum thickness of side rails provides for the cutting of a groove of one-eighth inch in depth with the tolerance indicated in subdivisions (i) (d) of this subparagraph, and shall be increased when grooves of greater depth are used.

(b) Steps shall be secured with at least two 6–d nails at each end, or the equivalent thereof. Each step shall be reinforced by a steel rod not less than 0.160 inch in diameter with standard commercial tolerances, which shall pass through metal washers of sufficient thickness and diameter on each end to prevent pressing—into the side rails, and a truss block which shall be fitted between the rod and the center of each step, or by a metal angle brace on each end firmly secured to the steps and side rails, or by construction of equivalent strength and construction is used, the bottom step safety. Where the rod reinforcement shall be provided further with a metal angle brace on each end which shall be securely attached to the bottom step and side rails. In addition, all steps 3⅝ inches wide and 27 inches or more in overall length and all steps 4¼ inches wide and 32 inches or more in overall length shall be provided with a metal angle brace at each end securely attached to the step and side rail.

(c) The back section shall be braced by one of the following methods:

(1) The back legs shall be braced with 1¼-inch diameter rungs of Group 1 woods (see Table D–5), or material of equivalent strength, having ⅞-inch diameter tenons or oval wood rungs, or rectangular wood rungs of equivalent strength, spaced not more than 12 inches apart. The back legs shall be bored with holes either extending through the legs or to within three-sixteenths inch of the outside face of the legs, the size of the hole to be such as to insure a tight fit for the rung. The shoulder of the rung shall be forced firmly against the leg, and the tenon secured in place with a nail, or the equivalent thereof, to prevent turning of the rungs. The back legs shall be braced by a metal angle brace on each side, securely fastened to the rung and the back legs, one rung to be braced for each 4 feet of length or fraction thereof, on ladder

Table D–2

DIMENSIONS FOR TYPE I STEP LADDER

	Length, 12 feet and less		Length, 14 and 16 feet		Length, 18 and 20 feet	
	Thickness (inch)	Depth (inches)	Thickness (inch)	Depth (inches)	Thickness (inch)	Depth (inches)
Side rails	¾	3½	¾	3½	1 1/16	3½
Back legs	¾	2¾	¾	2¾	1 1/16	2¾
Steps	¾	3½	¾	4¼	¾	4¼
Tops	¾	3½	¾	3½	¾	3½

Table D–3

DIMENSIONS FOR TYPE II STEP LADDER

	Length, 3 to 8 feet		Length, 10 feet		Length, 12 feet	
	Thickness (inch)	Depth (inches)	Thickness (inch)	Depth (inches)	Thickness (inch)	Depth (inches)
Side rails	¾	2½	¾	2½	¾	3
Back legs	¾	1¾	¾	1¾	¾	3
Steps	¾	3½	¾	3½	¾	3½
Tops	¾	3	¾	3	¾	3

(d) The back legs shall be reinforced by a rivet through the depth of the leg above the hinge point, by metal plates or collars at the hinge point, or by other means suitable for preventing splitting of the back leg from the hinge pin to the top.

(iii) *Type II commercial stepladder.* (a) (1) The minimum dimensions of the parts of the Type II stepladder shall be as given in Table D–3 when made of Group 2 or Group 3 woods.

(2) The minimum thickness of side rails provides for the cutting of a groove of one-eighth inch in depth with the tolerance indicated in subdivision (i) (d) of this subparagraph, and shall be increased when grooves of greater depth are used.

(b) Steps shall be secured with at least two 6–d nails at each end, or the equivalent thereof. Each step shall be reinforced by by a steel rod not less than 0.160 inch in diameter with standard commercial tolerances which shall pass through metal washers of sufficient thickness and diameter on each end to prevent pressing into the side rails, and a truss block shall be fitted between the truss rod and center of each step; or by a metal angle brace on each end firmly secured to the steps and side rails; or by construction of equivalent strength and safety. Where the rod reinforcement construction is used, the bottom step shall be provided further with a metal angle brace on each end which shall be securely

attached to the bottom step and side rails. In addition all steps 27 inches or more in overall length shall be provided with a metal angle brace at each end securely attached to the step and side rails.

(c) The back legs shall be braced by one of the three following methods:

(1) (i) With ⅞-inch diameter wood dowels of Group 1 woods (see Table D–5) or material of equivalent strength having not less than ⅞-inch tenons firmly secured in the back legs and spaced not more than 12 inches apart. The back legs shall be bored with holes either extending through the legs or to within three-sixteenths inch of the outside face of the legs, the size of the hole to be such as to insure a tight fit for the dowel. The shoulder of the dowel shall be forced firmly against the leg and the tenon secured in place with a nail, or the equivalent thereof, to prevent turning of the dowel.

(ii) A bar connecting two or more of the dowels shall be provided on all ladders of 6 feet or more. The cross-sectional dimensions of the bar shall be the same as the cross-sectional dimensions of the back legs, and the dowels shall pass through holes at the centerline of the bar. The bar shall be attached at the center of the length of the lower two dowels on a 6-foot ladder and shall extend upward one dowel for each 2 feet of added length.

(2) With wood dowels as set forth in this subdivision (iii) (c) (1), plus an inverted V bracing of ¾- by 1½-inch material through which the dowels extend, the length of the V to extend two-thirds of the way up the back.

(3) With horizontal bracing of Group 1, 2, 3, or 4 woods (see Table D–5) not less than ⅝ by 2 inches in cross-section, the ends of which shall fit into metal sockets of not less than 20-gauge (Manufacturing Standard), steel, or other material of equivalent strength or into mortises not less than one-eighth inch in depth in back legs. The bars shall be reinforced by steel rods not less than 0.160 inch in diameter with standard commercial tolerances which shall pass through the back legs, the bar, and, at each end, through metal washers of sufficient diameter and thickness to prevent pressing into the back legs. The spacing of such braces shall not exceed 3 feet, and there shall be one brace on 3- and 4-foot ladders, two braces on 5- and 6-foot ladders, three braces on 7- and 8-foot ladders, and four braces on 10- and 12-foot ladders. The bottom bar shall not be more than 18 inches from the bottom of the ladder, and, where only one bar is used, it shall be braced by a metal angle brace on each end securely attached to the bar and the back leg.

(iv) *Type III household stepladder.* (a) The minimum dimensions of the parts of the Type III stepladder shall be as follows when made of Group 2 or Group 3 woods:

	Length, 3 to 6 feet	
	Thickness (inch)	Depth (inches)
Side rails	¾	2½
Back legs	¾	1 1/16
Steps	¾	3
Tops	¾	3

The minimum thicknesses of side rails provide for the cutting of a groove one-eighth inch in depth with the tolerance indicated in subdivision (i) (d) of this subparagraph, and shall be increased when grooves of greater depth are used.

(b) Steps shall be secured with at least one 6–d nail at each end, or the equivalent thereof. Each step shall be reinforced by a steel rod not less than 0.160 inch in diameter with standard commercial tolerance which shall pass through metal washers of sufficient thickness and diameter to prevent pressing into the side rails, or by a metal brace at each end firmly secured to steps and side rails or by construction of equivalent strength and safety. Where the rod reinforcement construction is used, the bottom step shall be provided further with a metal angle brace on each end which shall be securely attached to the bottom step and side rail.

(c) Back legs shall be braced by one of the two following methods or by construction of equivalent strength and safety:

(1) By diagonal slats of groups 1, 2, 3, or 4 wood (see Table D–5) not less than ⅞ by 1¼ inches securely fastened to the back legs by nails, screws, or the equivalent thereof.

(2) With horizontal bracing of Groups 1, 2, 3, or 4 wood (see Table D–5) not less than ⅝ by 1⅝ inches in cross section, the ends of which shall fit into metal sockets of not less than 20-gauge (Manufacturing Standard) steel or other material of equivalent strength or into mortises not less than one-eighth inch in depth in back legs. The bars shall be reinforced by

4 feet or more in length, with braces required only on the bottom rung for ladders that are 4 feet or shorter. Where rungs are more than 28 inches in length between the back legs they shall be provided with center bearing consisting of a wood bar not less than ⅝ by 2 inches in cross-section securely nailed to each rung passing through it and long enough to include each rung longer than 28 inches.

(2) The back leg shall be braced with horizontal wood bars of Group 1, 2, or 3 woods in Table D–5 and not less than ¾ by 2½ inches in cross-section, spaced not more than 12 inches apart. The ends of the bars shall fit into metal sockets of not less than 20-gauge (Manufacturers Standard) steel, or other material of equivalent strength, or into mortises of not less than one-eighth inch (tolerance of ±one-thirty-second inch) in depth in the back legs. A steel rod not less than 0.160 inch in diameter with standard commercial tolerance shall pass through the back legs, the bar, and at each end through metal washers of sufficient diameter and thickness to prevent passing into the back legs. The back legs shall also be braced by a metal angle brace on each side, securely fastened to the bar and to the legs, one bar to be so braced for at least each 4 feet of length or fraction thereof, with braces required only on bottom bar for ladders that are 4 feet or shorter. Metal sockets when used shall be attached to the back legs by rivets or by means of a rod running through the socket or equivalent thereof.

(b) Steps shall be secured with at least two 6–d nails at each end, or the equivalent thereof. Each step shall be reinforced by by a steel rod not less than 0.160 inch in diameter with standard commercial tolerances which shall pass through metal washers of sufficient thickness and diameter on each end to prevent pressing into the side rails, and a truss block shall be fitted between the truss rod and center of each step; or by a metal angle brace on each end firmly secured to the steps and side rails; or by construction of equivalent strength and safety. Where the rod reinforcement construction is used, the bottom step shall be provided further with a metal angle brace on each end which shall be securely

steel rods not less than 0.160 inch in diameter with standard commercial tolerances which shall pass through the back leg, the bar, and at each end through metal washers of sufficient diameter and thickness to prevent pressing into each leg. The spacing of such bars shall not exceed 3 feet, and there shall be one brace on 3- and 4-foot ladders, two braces on 5- and 6-foot ladders. The bottom bar shall be not more than 18 inches from the bottom of the ladder.

(3) *Portable rung ladders.* Portable rung ladders as herein specified shall be of four types, as follows: single ladder; two-section extension ladder; sectional ladder; trestle and extension trestle ladder.

(i) *General requirements.* (a) The base or lower portion of a ladder may have either parallel sides or flared sides in accordance with commercial practice.

(b) Rungs shall be parallel, level, and uniformly spaced. The spacing shall be not more than 12 inches, except as hereinafter specified.

(c) All holes for wood rungs shall either extend through the side rails or be bored so as to give at least a thirteen-sixteenths-inch length of bearing to the rung tenon. In through-bored construction, the rungs shall extend at least flush with the outside rail surface. All holes shall be located on the center line of the wide face of the side rails and shall be of such size as to insure a tight fit for the rung. The shoulder of the rung shall be forced firmly against the side rails and the tenon secured in place with a nail or the equivalent thereof, for the sole purpose of preventing the turning of the rung and maintaining the rung position in the side rail.

(d) Round rungs shall be of Group 1 woods (see Table D–5), shall be not less than 1⅛ inches in diameter for lengths up to 36 inches between side rails and 1¼ inches in diameter for lengths over 36 up to and including 72 inches, and shall have not less than seven-eighths-inch-diameter tenons, or rungs of equivalent strength and bearing shall be provided. When rungs are 28 inches or more in length between side rails, they shall, in addition, be provided with center bearing.

(e) Oval rungs or rungs of any other cross section may be used provided they are secured by a nail at each end or the equivalent thereof, and have at least the same strength and bearing as round rungs of the same length.

(f) All metal parts and fittings shall be securely attached by means of rivets, bolts, screws, or equivalent fasteners.

(g) The construction and assembly of the movable parts shall be such that they shall operate freely and securely without binding or unnecessary play.

(h) When measured along the side rails, no rung ladder or section thereof shall be more than 4 inches shorter than the specified length.

(i) Nonslip bases shall be securely bolted, riveted, or attached by equivalent construction to the side rails.

(j) Hooks shall be securely bolted or riveted to the side rails or equivalent construction and shall be of such dimensions as to withstand the loads imposed upon them.

(ii) *Single ladder.* (a) Single ladders longer than 30 feet shall not be supplied.

(b) The minimum dimensions of the side rails of the single ladder shall be as follows when made of group 2 or group 3 woods:

Length of ladder (feet)	Thickness (inches)	Depth (inches)
Up to and including 16	1¼	2½
Over 16 up to and including 22	1¼	3½
Over 22 up to and including 30	1¼	3

(c) Smaller side rails will be acceptable in all ladders of this type when reinforced by a steel wire, rod, or strap running the length of the side rails and adequately secured thereto. Where such reinforcement is used, the reinforced rails shall be equivalent in strength to the side rails specified in this subdivision (ii) (b).

(d) The width between the side rails at the base, inside to inside, shall be at least 11½ inches for all ladders up to and including 10 feet. Such minimum widths shall be increased at least one-fourth inch for each additional 2 feet of length.

(iii) *Two-section ladder.* (a) Two-section extension ladders longer than 60 feet shall not be supplied. All ladders of this type shall consist of two sections, one to fit within the side rails of the other, and arranged in such a manner that the upper section can be raised and lowered.

(b) The minimum dimensions of the side rails of the two-section extension ladder shall be not less than specified in Table D–4 of this section.

(c) The minimum dimensions of side rails set forth in Table D–4 are based on the maximum working length, which is

the size of ladder less the minimum overlap, which shall be as follows:

Size of ladder (feet):	Overlap (feet)
Up to and including 28	3
Over 28 up to and including 48	4
Over 48 up to and including 60	5

(d) Smaller side rails will be acceptable in all ladders of this type when reinforced by a steel wire, rod, or strap running the length of the side rails and adequately secured thereto. Where such reinforcement is used, the reinforced rails shall be equivalent in strength to the side rails specified in Table D-4.

(e) The minimum distance between side rails of the bottom section, inside to inside, shall be 14½ inches on ladders up to and including 28 feet; 16 inches on all ladders over 28 feet up to and including 40 feet; 18 inches on all ladders over 40 feet.

(f) All locks and guide irons shall be of metal and shall be of such construction and strength as to develop the full strength of the side rails. All locks shall be positive in their action. The guide irons shall be securely attached and so placed as to prevent the upper section from tipping or falling out while raising, lowering, or in use.

(g) (1) Ladders of this type may be equipped with a rope and pulley, which shall be securely attached to the ladder in such manner as not to weaken either the rungs or the side rails. The pulley shall be not less than 1¼ inches in diameter.

(2) The rope used with the pulley shall be not less than five-sixteenths inch in diameter having a minimum breaking strength of 560 pounds, and shall be sufficient length for the purpose intended.

(iv) *Sectional ladder.* (a) Assembled combinations of sectional ladders longer than lengths specified in this subdivision shall not be used.

(b) The minimum dimensions of side rails shall be as follows for Group 2 or Group 3 woods:

Assembled length of ladder (feet)	Thickness (inches)	Depth (inches)
Up to and including 21	1⅛	2½
Over 21 up to and including 31	1⅛	3½

(c) Ladders of this type shall have either straight sides slightly converging toward the top of each section, or shall have flaring sides at the bottom of the first (or bottom) section, with the top section having converging side rails to a width that shall be not less than 4 inches. Except for the top section, the minimum width between side rails shall be 11 inches.

(*f*) Adjacent sections shall be jointed by means of a groove in the bottom end of each rail of the upper of the two sections setting firmly over extensions outside the side rails, of the topmost rung of the next lower section and, at the same time, a groove in the top end of each rail of the lower of the two sections setting firmly over the bottom rung, inside the side rails, of the section next above.

(*2*) The distance between the two rungs (top-most rung of one section, bottom rung of the section next above) mentioned in this subdivision (iv) (c) (*1*) shall not be less than 1 foot.

(*3*) The fit between rail grooves and rungs mentioned in this subdivision (iv) (c) (*1*) shall be such as to provide a good fit without binding or unnecessary play.

(*d*) The grooved ends of the sections shall be reinforced with a metal plate of not less than 18-gauge (Manufacturing Standard) material properly secured thereto, and a rivet adjacent to the groove, extending through the depth of the rail, or the equivalent thereof.

(v) *Trestle and extension trestle ladder.* (a) Trestle ladders, or extension sections or base sections of extension trestle

TABLE D-4—DIMENSIONS OF SIDE RAILS FOR TWO-SECTION LADDERS

Size of ladder, overall length (feet)	Rail		
	Thickness (inches)		Depth (inches)
For group 2 woods			
16	1⅛	×	3
20	1⅛	×	3½
24	1⅛	×	3½
28	1¼	×	3½
32	1¼	×	3½
36	1⅜	×	3½
40	1⅜	×	3½
44	1½	×	3½
48	1½	×	3½
For group 3 woods			
16	1⅛	×	3
20	1⅛	×	3½
24	1⅛	×	3½
28	1¼	×	3½
32	1¼	×	3½
36	1⅜	×	3½
40	1⅜	×	3½
44	1½	×	3½
48	1½	×	3½

ladders longer than 20 feet shall not be supplied.

(b) The minimum dimensions of the side rails of the trestle ladder, or the base sections of the extension trestle ladder, shall be as follows for Group 2 or Group 3 woods:

Size of ladder (feet)	Thickness (inches)	Depth (inches)
Up to and including 16	1⅛	2½
Over 16 up to and including 20	1½	3

The minimum dimensions of the side rails of the extension section of the extension trestle ladder, which shall have parallel sides, shall be as follows for Group 2 or Group 3 woods:

Size of ladder (feet)	Thickness (inches)	Depth (inches)
Up to and including 12	1⅛	2½
Over 12 up to and including 16	1⅛	2½
Over 16 up to and including 20	1½	2½

(c) Trestle ladders and base sections of extension trestle ladders shall be so spread that when in an open position the spread of the trestle at the bottom, inside to inside, shall be at least 5½ inches per foot of the length of the ladder.

(d) The width between the side rails at the base of the trestle ladder and base sections of the extension trestle ladder shall be at least 21 inches for all ladders and sections up to and including 6 feet. Longer lengths shall be increased at least 1 inch for each additional foot of length. The width between the side rails of the extension sections of the trestle ladder shall be not less than 12 inches.

(e) The tops of the side rails of the trestle ladder and of the base section of the extension trestle ladder shall be beveled, or equivalent construction, and shall be provided further with a metal hinge to prevent spreading.

(f) A metal spreader or locking device to hold the front and back sections in an open position, and to hold the extension section securely in the elevated position, shall be a component of all extension trestle ladders and all trestle ladders over 12 feet in length.

(g) Rungs shall be parallel and level. On the trestle ladder, or on the base sections of the extension trestle ladder, rungs shall be spaced not less than 8 inches or more than 18 inches apart; on the extension section of the extension trestle ladder, rungs shall be spaced not less than 6 inches or more than 12 inches apart.

(*4*) *Special-purpose ladders.* All special-purpose ladders shall comply with the appropriate requirements of subparagraphs (1), (2), and (3) of this paragraph, except as hereinafter modified in this subparagraph.

(i) *Platform stepladder.* A platform stepladder is a modification of a portable stepladder with a working platform provided near the top.

(a) Platform stepladders shall be made in accordance with the requirements of type I stepladders or in accordance with the requirements for type II stepladders.

(b) The slope of the back section shall be such that a vertical from the back edge of the platform will strike the floor at a distance measured toward the front section of not less than 3 inches from the base of the back section.

(c) The minimum width between side rails at the platform shall be not less than 15 inches.

(d) The back legs and side rails shall extend at least 24 inches above the platform and shall be connected with a top member to form a three-sided rail, or equivalent construction shall be provided.

(e) Platforms shall be so constructed as to be capable of supporting a load of 200 pounds placed at any point on the platform.

(f) A separate spreader may be omitted from platform ladders in which the height to the platform is 6 feet or less. If the spreader is omitted, the platform shall be so designed as to function as a spreader or locking device to hold the front and back sections securely in an open position, with the connection between side rails and back legs being through the metal parts of the platform. The wood parts of a combined wood and metal platform functioning as a spreader shall not be depended upon to contribute to the spreading or locking action.

(ii) *Painter's stepladder.* (a) Painter's stepladders longer than 12 feet shall not be supplied.

(b) Painter's stepladders shall be made in accordance with the requirements of type II stepladders except for the following:

(*1*) The top may be omitted.

(*2*) A rope spreader may be substituted for the metal spreader required in subparagraph (2) (i) (f) of this paragraph. The rope shall not be less than No. 6 sash cord or its equivalent.

(iii) *Mason's ladder.* A mason's ladder is a special type of single ladder intended for use in heavy construction work.

(a) Mason's ladders longer than 40 feet shall not be supplied.

(b) The minimum dimensions of the side rails when made of Group 2 or Group 3 woods and rungs (Group 1 woods) of the mason's ladder shall be as follows:

Length of ladder (feet)	Side rails		Diameter	
	Thickness (inches)	Depth (inches)	Rung (inches)	Tenon (inches)
Up to and including 22	1⅝	3½	1¾	1
Over 22 up to and including 40	1⅝	4½	1¾	1

(c) The width between the side rails at the bottom rung, inside to inside, shall be not less than 13 inches for all ladders up to and including 10 feet. Such minimum widths shall be increased by at least one-fourth inch for each additional 2 feet of length.

(d) Rungs shall be parallel and level and shall be spaced not less than 8 inches or more than 12 inches apart.

(*5*) *Trolley and side-rolling ladders*—(i) *Length.* Trolley ladders and side-rolling ladders longer than 20 feet should not be supplied.

(ii) *Dimensions.* The dimensions of the side rails shall not be less than the following for Group 2 or Group 3 woods:

Length of side rails (feet)	Thickness (inch)	Depth (inches)
Up to and including 10	25/32	3
Over 10 up to and including 20	25/32	3½

The minimum thicknesses of side rails provide for the cutting of a groove not over one-eighth inch in depth and shall be increased when grooves of greater depth are used. Flat steps shall have the following minimum dimensions for Group 2 or Group 3 woods:

Length of step (inches)	Thickness (inch)	Width (inches)
Up to and including 16	25/32	3
Over 16 up to and including 20	25/32	3½
Over 20 up to and including 24	25/32	3½
Over 24 up to and including 28	25/32	4

(iii) *Width.* The width between the side rails, inside to inside, shall be at least 12 inches.

(iv) *Step attachment.* Flat steps shall be inset in the side rails one-eighth inch and secured with at least two 6-d nails at each end or the equivalent thereof. They shall be reinforced with angle braces or a ⅜-inch steel rod.

(v) *Locking device.* Locking devices should be provided on all trolley ladders.

(vi) *Tracks.* (a) Tracks shall be wood, or metal (excluding cast iron), or a combination of these materials.

(b) Tracks for the top end of ladders shall be fastened securely and shall be so constructed that the wheels will not jump the track. Tracks shall be so designed as to provide for all probable loads to which they will be subjected.

(c) The supports shall be securely fastened by lag screws, machine, hook, or toggle bolts, or their equivalent.

(d) Track for side-rolling ladders shall be supported by metal or wood brackets securely screwed or bolted to shelving or other permanent structure at not over 3 feet.

(vii) *Wheel carriages.* (a) Wheel carriages shall be so designed as to provide for all loads to which they will be subjected. Two-point suspension should be used.

(b) The wheel carriage for the top end of the ladder shall be securely fastened to the top of the ladder with metal brackets bolted either to the side rails or to the top step. When bolted to the top step, this step shall be secured to the side rails with metal braces in addition to those otherwise provided. The wheel carriage shall be so designed that a loose or broken wheel will not allow the ladder to drop or become detached from the track.

(c) The wheel carriage for the bottom end of the ladder shall be securely fastened to the bottom of the ladder.

(d) The wheels at the upper end of the ladder shall have minimum wheel base of 8 inches.

(e) When wheels are used at the bottom of the ladder, there shall be at least one wheel supporting each side rail.

(f) Running gear for bottoms of both trolley and side-rolling ladders shall be so designed and constructed as to provide for any load to which they will be subjected.

(d) *Care and use of ladders*—(1) *Care.* To insure safety and serviceability the following precautions on the care of ladders shall be observed:

(i) Ladders shall be maintained in good condition at all times, the joint between the steps and side rails shall be tight, all hardware and fittings securely attached, and the movable parts shall operate freely without binding or undue play.

(ii) Metal bearings of locks, wheels, pulleys, etc., shall be frequently lubricated.

(iii) Frayed or badly worn rope shall be replaced.

(iv) Safety feet and other auxiliary equipment shall be kept in good condition to insure proper performance.

(v) Ladders should be stored in such a manner as to provide ease of access or inspection, and to prevent danger of accident when withdrawing a ladder for use.

(vi) Wood ladders, when not in use, should be stored at a location where they will not be exposed to the elements, but where there is good ventilation. They shall not be stored near radiators, stoves, steam pipes, or other places subjected to excessive heat or dampness.

(vii) Ladders stored in a horizontal position should be supported at a sufficient number of points to avoid sagging and permanent set.

(viii) Ladders carried on vehicles should be adequately supported to avoid sagging and securely fastened in position to minimize chafing and the effects of road shocks.

(ix) Ladders should be kept coated with a suitable protective material. The painting of ladders is satisfactory providing the ladders are carefully inspected prior to painting by competent and experienced inspectors acting for, and responsible to, the purchaser, and providing the ladders are not for resale.

(x) Ladders shall be inspected frequently and those which have developed defects shall be withdrawn from service for repair or destruction and tagged or marked as "Dangerous, Do Not Use."

(xi) Rungs should be kept free of grease and oil.

(*2*) *Use.* The following safety precautions shall be observed in connection with the use of ladders:

(i) Portable rung and cleat ladders shall, where possible, be used at such a pitch that the horizontal distance from the top support to the foot of the ladder is one-quarter of the working length of the ladder (the length along the ladder between the foot and the top support). The ladder shall be so placed as to prevent slipping, or it shall be lashed, or held in position. Ladders shall not be used in a horizontal position as platforms, runways, or scaffolds;

(ii) Ladders for which dimensions are specified should not be used by more than one man at a time nor with ladder jacks and scaffold planks where use by more than one man is anticipated. In such cases, specially designed ladders with larger dimensions of the parts should be procured;

(iii) Portable ladders shall be so placed that the side rails have a secure footing. The top rest for portable rung and cleat ladders shall be reasonably rigid and shall have ample strength to support the applied load;

(iv) Ladders shall not be placed in front of doors opening toward the ladder unless the door is blocked upon, locked, or guarded.

(v) Ladders shall not be placed on boxes, barrels, or other unstable bases to obtain additional height;

(vi) To support the top of the ladder at a window opening, a board should be attached across the back of the ladder, extending across the window and providing firm support against the building walls or window frames;

(vii) When ascending or descending, the user should face the ladder;

(viii) Ladders with broken or missing steps, rungs, or cleats, broken side rails, or other faulty equipment shall not be used; improvised repairs shall not be made.

(ix) Short ladders shall not be spliced together to provide long sections;

(x) Ladders made by fastening cleats across a single rail shall not be used;

(xi) Ladders shall not be used as guys, braces, or skids, or for other than their intended purposes;

(xii) Tops of the ordinary types of stepladders shall not be used as steps;

(xiii) On two-section extension ladders the minimum overlap for the two sections in use shall be as follows:

Size of ladder (feet):	Overlap (feet)
Up to and including 36	3
Over 36 up to and including 48	4
Over 48 up to and including 60	5

(xiv) Portable rung ladders with reinforced rails (see paragraphs (c) (3) (ii) (c) and (iii) (d) this section) shall be used only with the metal reinforcement on the under side. Ladders of this type

should be used with great care near electrical conductors, since the reinforcing itself is a good conductor;

(xv) No ladder should be used to gain access to a roof unless the top of the ladder shall extend at least 3 feet above the point of support, at eave, gutter, or roof line;

(xvi) Adjustment of extension ladders should only be made by the user when standing at the base of the ladder, so that the user may observe when the locks are properly engaged. Adjustment of extension ladders from the top of the ladder (or any level over the locking device) is a dangerous practice and should not be attempted. Adjustment should not be made while the user is standing on the ladder.

(xvii) Middle and top sections of sectional or window cleaner's ladders should not be used for bottom section unless the user equips them with safety shoes.

(xviii) Extension ladders should always be erected so that the upper section is resting on the bottom section.

(xix) The user should equip all portable rung ladders with nonslip bases when there is a hazard of slipping. Nonslip bases are not intended as a substitute for care in safely placing, lashing, or holding a ladder that is being used upon oily, metal, concrete, or slippery surfaces.

(xx) The bracing on the back legs of step ladders is designed solely for increasing stability and not for climbing.

(xxi) When service conditions warrant, hooks may be attached at or near the top of portable ladders to give added security.

TABLE D-5—CLASSIFICATION OF VARIOUS SPECIES OF WOOD ACCEPTABLE FOR USE IN LADDERS

The species are listed alphabetically within each group. The position of any species within a group therefore bears no relation to its strength or acceptability.

Where ladders are desired for use under conditions favorable to decay, it is recommended that the heartwood of decay-resistant species be used, or that the wood be given a treatment with a wood preservative. The species having the most durable heartwood are marked with an asterisk (*), and these should be preferred where resistance to decay is required.

GROUP 1

The allowable fiber stress in bending for the species listed herein when used for side rails shall not exceed 2,150 pounds per square inch. These species may be substituted for Group 3 woods on the following basis: The dimensions may be not more than 10 percent smaller for each cross-section dimension, or the thickness may remain unchanged, in which case the width may not be more than 18 percent smaller if used edgewise (as in a rail) or 25 percent smaller if used flatwise (as in a tread).

White ash	Fraxinus americana, pennsylvanica, quadrangulata
Beech	Fagus grandifolia
Birch	Betula lenta, alleghaniensis, nigra (2)
Rock elm	Ulmus thomasii
Hickory	Carya ovata, laciniosa, tomentosa, glabra
Locust*	Robinia pseudoacacia, Gleditsia triacanthos
Hard maple	Acer nigrum, saccharum
Red maple	Acer rubrum (3)
Red oak	Quercus velutina, marilandica, kelloggii, falcata var. pagodaefolia, laurifolia, ellipsoidalis, rubra, buttalii, palustris, coccinea, shumardii, falcata, laevis, phellos
White oak	Quercus arizonica, douglasii, macrocarpa, lobata, prinus, muehlenbergii, emoryi, gambelii, obtongifolia, virginiana, garryana, lyrata, stellata, michauxii, bicolor, alba
Pecan	Carya illinoensis, cordiformis, myristicaeformis (4), aquatica (4)
Persimmon	Diospyros virginiana

GROUP 2

The allowable fiber stress in bending for the species listed herein when used for side rails shall not exceed 2,000 pounds per square inch. These species may be substituted for Group 3 woods on the following basis: The dimensions may be not more than 7½ percent smaller for each cross-section dimension, or the thickness may remain unchanged, in which case the width may be not more than 11 percent smaller if used edgewise (as in a rail) or 20 percent smaller if used flatwise (as in a tread).

Douglas fir (coast region)	Pseudotsuga menziesii
Western larch	Larix occidentalis
Southern yellow pine	Pinus taeda, palustris echinata, elliotii, rigida, virginiana

GROUP 3

The allowable fiber stress in bending for the species listed herein when used for side rails shall not exceed 1,800 pounds per square inch.

Red alder	Alnus rubs, rhombifolia (2)
Oregon ash	Fraxinus latifolia
Pumpkin ash	Fraxinus profunda
Alaska cedar*	Chamaecyparis nootkatensis
Port Orford cedar.*	Chamaecyparis lawsoniana
Cucumber	Magnolia acuminata
Cypress*	Taxodium distichum
Soft elm	Ulmus americana, rubra
Douglas fir (Rocky Mountain type).	Pseudotsuga menziesii var. glauca
Noble fir	Abies procera
Gum	Liquidambar styraciflua
West coast hemlock.	Tsuga heterophylla
Magnolia	Magnolia grandiflora
Oregon maple	Acer macrophyllum
Norway pine	Pinus resinosa
Poplar	Liriodendron tulipifera
Redwood*	Sequoia sempervirens
Eastern spruce	Picea glauca, rubens
Sitka spruce	Picea sitchensis
Sycamore	Platanus occidentalis
Tamarack	Larix laricina
Tupelo	Nyssa aquatica, sylvatica

GROUP 4

The allowable fiber stress in bending for the species listed herein when used for side rails shall not exceed 1,375 pounds per square inch. These species may be substituted for Group 3 woods on the following basis: The dimensions shall be at least 5 percent greater for each cross-section dimension, or the thickness may remain unchanged, in which case the width shall be at least 7½ percent greater if used edgewise (as in a rail) or 15 percent greater if used flatwise (as in a tread).

Aspen	Populus tremuloides, grandidentata
Basswood	Tilia americana, heterophylla (2)
Buckeye	Aesculus octandra, glabra (2)
Butternut	Juglanscinerea
Incense cedar*	Libocedrus decurrens
Western red cedar.*	Thuja plicata
Cottonwood	Populus balsamifera, deltoides, sargentii, heterophylla
White fir	Abies concolor, grandis, amabilis, lasiocarpa, magnifica
Hackberry	Celtis occidentalis, laevigata (2)
Eastern hemlock	Tsuga canadensis
Holly	Ilex opaca
Soft maple	Acer saccharinum
Lodgepole pine	Pinus contorta
Idaho white pine	Pinus monticola
Northern white pine.	Pinus strobus
Ponderosa pine	Pinus ponderosa, pinus jeffreyi (Jeffrey pine)
Sugar pine	Pinus lambertiana
Engelmann spruce.	Picea engelmannii

NOTE 1: The common and scientific names of species used conform to the American Lumber Standards nomenclature and in most cases to U.S. Department of Agriculture Handbook No. 41, "Check List of Native and Naturalized Trees of the United States (including Alaska)," by Elbert L. Little. These publications can be obtained from the Superintendent of Documents, Washington, D.C. 20226.

NOTE 2: This species is commonly associated with others of the same genus under American Lumber Standards nomenclature, but no strength tests have been made on it at the Forest Products Laboratory.

NOTE 3: Included under soft maple in American Lumber Standards nomenclature.

NOTE 4: This species is not included under this common name in American Lumber Standards nomenclature, but strength data are available and it is accordingly included in this classification.

§ 1910.26 Portable metal ladders.

(a) *Requirements*—(1) *General.* Specific design and construction requirements are not part of this section because of the wide variety of metals and design possibilities. However, the design shall be such as to produce a ladder without structural defects or accident hazards such as sharp edges, burrs, etc. The metal selected shall be of sufficient strength to meet the test requirements, and shall be protected against corrosion unless inherently corrosion-resistant.

(i) Because of the varied conditions, and the wide variety of ladder uses, ladders may be designed with parallel side rails, with side rails varying uniformly in separation along the length (tapered), or with side rails flaring at the base to increase stability.

(ii) The design of the side rails shall be such as to insure a product which will conform to the requirements of this section.

(iii) The spacing of rungs or steps shall be on 12-inch centers.

(iv) Rungs or steps to side rail connections should be so constructed as to insure rigidity as well as strength.

(v) Rungs and steps shall be corrugated, knurled, dimpled, coated with skid-resistant material, or otherwise treated to minimize the possibility of slipping.

(vi) Hardware shall meet strength requirements of the ladder's component parts, and shall be of a material that is protected against corrosion unless inherently corrosion-resistant. Metals shall be so selected as to avoid excessive galvanic action.

(2) *General specifications — straight and extension ladders.* (i) The minimum width between side rails of a straight ladder or any section of an extension ladder shall be 12 inches.

(ii) The length of single ladders or individual sections of ladders shall not exceed 30 feet. Two-section ladders shall not exceed 48 feet in length and over two-section ladders shall not exceed 60 feet in length.

(iii) Based on the nominal length of the ladder, each section of a multisection ladder shall overlap the adjacent section by at least the number of feet stated in the following:

Nominal length of ladder (feet):	Overlap (feet)
Up to and including 36	3
Over 36, up to and including 48	4
Over 48, up to 60	5

(iv) Extension ladders shall be equipped with positive stops which will insure the overlap specified in the table above.

(v) (a) Extension ladders may be equipped with a rope and pulley which shall be securely attached to the ladder in such a manner as not to weaken either the rungs or the side rails. The pulley shall be not less than 1¼ inches in diameter.

(b) The rope used with the pulley shall be not less than five-sixteenths inch in diameter, having a minimum breaking strength of 560 pounds, and shall be of sufficient length for the purpose intended.

(3) *General specifications—step ladders.* (i) Step ladders shall be designed and constructed to give a minimum slope of 3½ inches per foot of length of the front section, and a minimum slope of 2 inches per foot of length of the back section, except that special ladders designed for straight-in-wall work shall maintain at least 1½-inch back slope per foot of length.

(ii) The minimum width between the side rails at the top step shall be 12 inches. The width spread of the side rails shall increase a minimum of 1 inch per foot of length. The width of the step or tread shall not be less than 3 inches.

(iii) The length of a stepladder is measured by the length of the front rail. To be classified as a standard length ladder, the measured length shall be within plus or minus one-half inch of the specified length. Stepladders shall not exceed 20 feet in length.

(iv) The pail shelf shall be designed to fold completely within the ladder.

(v) The back section may be designed with either rungs or cross bracing as long as it meets the general and testing requirements.

(vi) Steps shall be corrugated, knurled, dimpled, coated with skid-resistant materials, or otherwise treated to minimize the possibility of slipping.

(vii) The bottoms of the four rails are to be supplied with insulating nonslip material for the safety of the user.

(viii) A metal spreader or locking device of sufficient size and strength to securely hold the front and back sections in the open position shall be a component of each stepladder. The spreader shall have all sharp points or edges covered or removed to protect the user.

(4) *General specifications—trestles and extension trestle ladders.* (i) Trestle ladders or extension sections or base sections of extension trestle ladders shall be not more than 20 feet in length.

(ii) The minimum distance between side rails of the trestle or extension section at the narrowest point shall not be less than 12½ inches. The width spread shall not be less than 1 inch per foot of length of side rail.

(iii) Spread of base when section is open shall not be less than 5½ inches per foot of base section side rail.

(iv) The extension locking device shall be designed to withstand all load tests.

(v) A metal spreader or locking device of sufficient size and strength to securely hold the front and back sections in the open position shall be a component of each trestle ladder. The spreader shall have all sharp points or edges covered or removed to protect the user.

(5) *General specifications—platform ladders.* (i) The length of a platform ladder shall not exceed 20 feet. The length of a platform ladder shall be measured along the front rail from the floor to the platform.

(ii) Minimum width between side rails at platform level shall be 14 inches. Width spread shall not be less than 1 inch per foot of rise.

(iii) Slope of the front rail when unit is in open position shall not be less than 3½ inches per foot of rise, and the back section shall have a minimum slope of 1 inch per foot of rise.

(iv) The platform shall be at least 20 inches from the top of the ladder, and shall have an area of not less than 200 square inches nor more than 400 square inches.

(v) The back legs and side rails of a platform ladder shall extend at least 20 inches above the platform and shall be connected with the top member to form a three-sided top guard rail, or equivalent construction shall be provided.

(vi) Spreaders shall be provided where the hinging apparatus is not designed to lock the unit open.

(b) *Testing.* (1) *General.* The following tests are intended to insure uniform testing methods for metal ladders.

(2) *Straight and extension ladders.* (i) Ladder inclined strength is measured by placing the ladder unit in a flat, horizontal position, supported 6 inches from the ends of the side rails. When testing extensions, the unit is opened to the required overlap. A load of 200 pounds is applied equally to the side rails at the center of the unit by means of a beam. The ladder must withstand this test with no permanent deformation or other visible weakening of the structure. This test is based on a 200-pound man using the ladder, set at 75½° to the ground. With the man on the center rung, the component of his 200-pound weight at right angles to the ladder will be 50 pounds. Applying the load factor of 4, the test weight becomes 200 pounds.

(ii) Test unit need only be of sufficient length for test purposes and is to consist of the base and fly sections of an extension ladder with all the hardware or fittings attached. The ladder unit is placed in a vertical position and a downward load of 775 pounds equally distributed on the ends of the side rails of the upper portion of the test unit. The unit shall withstand this test with no permanent deformation or other visible weakening of the structure.

(iii) A test unit of at least three rungs is to be used from the maximum width portion of the ladder. A load of 800 pounds shall be applied to a 3½-inch wide block resting on the center of the widest rung. A rung of 14 inches or less in length shall withstand this test with no permanent deformation or other visible weakening of the structure. A rung of more than 14 inches in length may have a permanent deflection of not more than one-eighth inch provided the rung cross section is not deformed and there is no other visible weakening of the structure.

(iv) With at least a three-rung test unit set in a vertical position, a load of 800 pounds shall be applied to a 3½-inch wide block resting on the center rung as near to the side rail as possible. On removing the load, the unit must show no indication of failure in the fasteners attaching the rungs to the side rail.

(v) The rung shall be so secured to the side rail that a torque load of 360 inch-pounds applied to the rung at a side rail shall cause no visible relative motion between the rung and the side rail.

(vi) With the ladder extended to its maximum working length, and resting horizontally on level supports located 8 inches from each end of the ladder, a weight of 50 pounds shall be suspended from one of the side rails midway between supports.

The deflection of the loaded rail, and the difference in deflection between the loaded and unloaded rails shall not exceed the values in Table D-6.

(vii) Deflections in Table D-6 are to be determined by measuring, at the midpoint between supports, the distance from the outside edges of both rails to the floor or other reference surface both before and after the test load of 50 pounds is applied to one rail of the ladder. The test is to be repeated loading the other rail of the ladder. The angle (a) between the loaded and unloaded rails and the horizontal is to be calculated from the trigonometric equation:

$$\text{Sine } a = \frac{\text{Difference in deflection}}{\text{Ladder width}}$$

(3) *Step, trestle, extension trestle, and platform ladders.* (i) (a) Load test of the entire ladder is made with the ladder in an open position, and an 800-pound load applied to the center of the top. Resistance to side rail bending is tested by placing an 800-pound load on the center of the middle step. The strength of the step section is tested by applying an 800-pound load to a 3½-inch-wide block resting on the center of the longest or bottom step. The pail shelf shall be so constructed as to support a distributed load of 50 pounds.

(b) In each test case, the unit must withstand the load without failure or permanent deformation.

(ii) Set ladder in open position on a level floor. Place a 200-pound distrib-

uted load on the top step. The ladder is then subjected to a horizontal pulling load, applied at the top step, of 12-pound force to the side; 58-pound force to the front; 33-pound force to the back. In each test, all side rails must remain on the floor.

TABLE D-6—TABLE OF DEFLECTIONS

Length of ladder in feet	Maximum deflection of loaded rail in inches	Maximum difference in deflection between loaded and unloaded rails in degrees from horizontal
20	3.0	3.8
24	3.8	4.7
28	4.8	5.4
32	5.8	5.7
36	6.4	6.1
40	7.2	6.5
44	8.0	6.5
48	8.8	6.8

(c) *Care and maintenance of ladders*—(1) *General.* To get maximum serviceability, safety, and to eliminate unnecessary damage of equipment, good safe practices in the use and care of ladder equipment must be employed by the users.

The following rules and regulations are essential to the life of the equipment and the safety of the user.

(2) *Care of ladders.* (i) Ladders, like any tool, must be handled with care and not subject to unnecessary dropping, jarring, or misuse. They are designed for a specific purpose or use; therefore, any variation from this use constitutes a mishandling of the equipment.

(ii) Ladders should be stored on racks designed to protect the ladder when not in use. The racks should have sufficient supporting points to prevent any possibility of excessive sagging.

(iii) Ladders transported on vehicles must be properly supported. Supporting points should be of a softer material, such as hardwood or rubber-covered iron pipe, to minimize the chafing and effects of road shock. Tying the ladder to each support point will greatly reduce damage due to road shock.

(iv) Ladders must be maintained in good usable condition at all times. Hardware fittings and accessories should be checked frequently and kept in good working condition.

(v) Ropes or cables should be inspected frequently and replaced if defective.

(vi) Complete ladder inspection should be periodical. If a ladder is involved in any of the following, immediate inspection is necessary:

(a) If ladders tip over, inspect ladder for side rails dents or bends, or excessively dented rungs; check all rung-to-side-rail connections; check hardware connections; check rivets for shear.

(b) If ladders are exposed to excessive heat as in the case of fire, the ladder should be inspected visually for damage and tested for deflection and strength characteristics. In doubtful cases, refer to manufacturer.

(c) If ladders are to be subjected to certain acids or alkali solutions, a protective coating such as asphalt and varnish should be applied to the equipment.

(d) If ladders are exposed to oil and grease, equipment should be cleaned of oil, grease, or slippery materials. This can easily be done with a solvent or steam cleaning.

(vii) Ladders having defects are to be marked and taken out of service until repaired by either maintenance department or the manufacturer.

(3) *Use of ladders.* (i) Portable nonself-supporting ladders should be erected at a pitch of 75½ degrees for maximum balance and strength. A simple rule for setting up a ladder at the proper angle is to place the base a distance from the vertical wall equal to one-fourth the working length of the ladder.

(ii) Portable ladders are designed as a one-man working ladder based on a 200-pound load.

(iii) The ladder base section must be placed with a secure footing. Safety shoes of good substantial design should be installed on all ladders. Where ladders with no safety shoes or spikes are used on hard, slick surfaces, a foot-ladder board should be employed.

(iv) The top of the ladder must be placed with the two rails supported, unless equipped with a single support attachment. Such an attachment should be substantial and large enough to support the ladder under load.

(v) When ascending or descending, the climber must face the ladder.

(vi) Ladders must not be tied or fastened together to provide longer sections. They must be equipped with the hardware fittings necessary if the manufacturer endorses extended uses.

(vii) Ladders should not be used as a brace, skid, guy or gin pole, gangway, or for other uses than that for which they were intended, unless specifically recommended for use by the manufacturer.

(viii) Users are cautioned to take proper safety measures when metal ladders are used in areas containing electric circuits to prevent short circuits or electrical shock.

§ 1910.27 Fixed ladders.

(a) *Design requirements*—(1) *Design considerations.* All ladders, appurtenances, and fastenings shall be designed to meet the following load requirements:

(i) The minimum design live load shall be a single concentrated load of 200 pounds.

(ii) The number and position of additional concentrated live-load units of 200 pounds each as determined from anticipated usage of the ladder shall be considered in the design.

(iii) The live loads imposed by persons occupying the ladder shall be considered to be concentrated at such points as will cause the maximum stress in the structural member being considered.

(iv) The weight of the ladder and attached appurtenances together with the live load shall be considered in the design of rails and fastenings.

(2) *Design stresses.* Design stresses for wood components of ladders shall not exceed those specified in § 1910.25. All wood parts of fixed ladders shall meet the requirements of § 1910.25(b).

For fixed ladders consisting of wood side rails and wood rungs or cleats, used at a pitch in the range 75 degrees to 90 degrees, and intended for use by no more than one person per section, single ladders as described in § 1910.25(c)(3)(ii) are acceptable.

(b) *Specific features*—(1) *Rungs and cleats.* (i) All rungs shall have a minimum diameter of three-fourths inch for metal ladders, except as covered in subparagraph (7)(i) of this paragraph, and a minimum diameter of 1⅛ inches for wood ladders.

(ii) The distance between rungs, cleats, and steps shall not exceed 12 inches and shall be uniform throughout the length of the ladder.

(iii) The minimum clear length of rungs or cleats shall be 16 inches.

(iv) Rungs, cleats, and steps shall be free of splinters, sharp edges, burrs, or projections which may be a hazard.

(v) The rungs of an individual-rung ladder shall be so designed that the foot cannot slide off the end. A suggested design is shown in figure D-1.

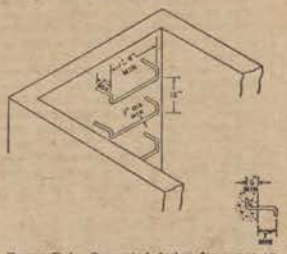


FIGURE D-1.—Suggested design for rungs on individual-rung ladders.

(2) *Side rails.* Side rails which might be used as a climbing aid shall be of such cross sections as to afford adequate gripping surface without sharp edges, splinters, or burrs.

(3) *Fastenings.* Fastenings shall be an integral part of fixed ladder design.

(4) *Splices.* All splices made by whatever means shall meet design requirements as noted in paragraph (a) of this section. All splices and connections shall have smooth transition with original members and with no sharp or extensive projections.

(5) *Electrolytic action.* Adequate means shall be employed to protect dissimilar metals from electrolytic action when such metals are joined.

(6) *Welding.* All welding shall be in accordance with the "Code for Welding in Building Construction" (AWSD1.0–1966).

(7) *Protection from deterioration.* (i) Metal ladders and appurtenances shall be painted or otherwise treated to resist corrosion and rusting when location demands. Ladders formed by individual metal rungs imbedded in concrete, which serve as access to pits and to other areas under floors, are frequently located in an atmosphere that causes corrosion and rusting. To increase rung life in such atmosphere, individual metal rungs shall

have a minimum diameter of 1 inch or shall be painted or otherwise treated to resist corrosion and rusting.

(ii) Wood ladders, when used under conditions where decay may occur, shall be treated with a nonirritating preservative, and the details shall be such as to prevent or minimize the accumulation of water on wood parts.

(iii) When different types of materials are used in the construction of a ladder, the materials used shall be so treated as to have no deleterious effect one upon the other.

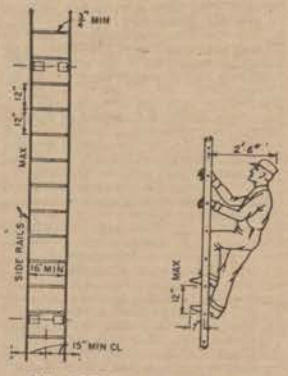
(c) *Clearance*—(1) *Climbing side.* On fixed ladders, the perpendicular distance from the centerline of the rungs to the nearest permanent object on the climbing side of the ladder shall be 36 inches for a pitch of 76 degrees, and 30 inches for a pitch of 90 degrees (fig. D-2 of this section), with minimum clearances for intermediate pitches varying between these two limits in proportion to the slope, except as provided in subparagraphs (3) and (5) of this paragraph.

(2) *Ladders without cages or wells.* A clear width of at least 15 inches shall be provided each way from the centerline of the ladder in the climbing space, except when cages or wells are necessary.

(3) *Ladders with cages or baskets.* Ladders equipped with cage or basket are excepted from the provisions of subparagraphs (1) and (2) of this paragraph, but shall conform to the provisions of paragraph (d)(1)(v) of this section. Fixed ladders in smooth-walled wells are excepted from the provisions of subparagraph (1) of this paragraph, but shall conform to the provisions of paragraph (d)(1)(vi) of this section.

(4) *Clearance in back of ladder.* The distance from the centerline of rungs, cleats, or steps to the nearest permanent object in back of the ladder shall be not less than 7 inches, except that when unavoidable obstructions are encountered, minimum clearances as shown in figure D-3 shall be provided.

(5) *Clearance in back of grab bar.* The distance from the centerline of the grab bar to the nearest permanent object in back of the grab bars shall be not less than 4 inches. Grab bars shall not protrude on the climbing side beyond the rungs of the ladder which they serve.



RAIL LADDER WITH BAR STEEL RAILS AND ROUND STEEL RUNGS

FIG. D-2

Minimum Ladder Clearances

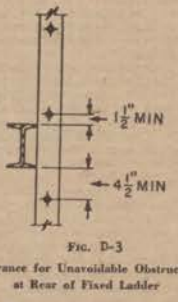


FIG. D-3

Clearance for Unavoidable Obstruction at Rear of Fixed Ladder

(6) *Step-across distance.* The step-across distance from the nearest edge of ladder to the nearest edge of equipment or structure shall be not more than 12 inches, or less than 2½ inches (fig. D-4).

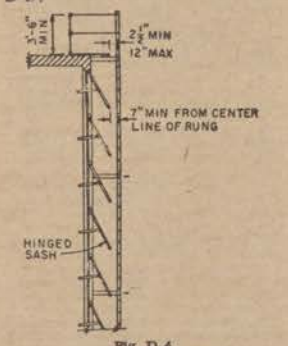
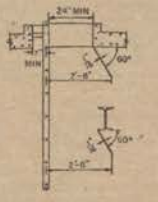


Fig. D-4
Ladder Far from Wall

(7) *Hatch cover.* Counterweighted hatch covers shall open a minimum of 60 degrees from the horizontal. The distance from the centerline of rungs or cleats to the edge of the hatch opening on the climbing side shall be not less than 24 inches for offset wells or 30 inches for straight wells. There shall be no protruding potential hazards within 24 inches of the centerline of rungs or cleats; any such hazards within 30 inches of the centerline of the rungs or cleats shall be fitted with deflector plates placed at an angle of 60 degrees from the horizontal as indicated in figure D-5. The relationship of a fixed ladder to an acceptable counterweighted hatch cover is illustrated in figure D-6.

(d) *Special requirements*—(1) *Cages or wells.* (i) Cages or wells (except on chimney ladders) shall be built, as shown on the applicable drawings, covered in detail in figures D-7, D-8, and D-9, or of equivalent construction.

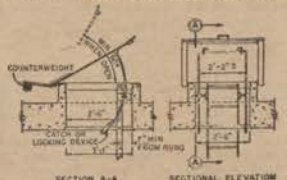
(ii) Cages or wells (except as provided in subparagraph (5) of this paragraph) conforming to the dimensions shown in figures D-7, D-8, and D-9 shall be provided on ladders of more than 20 feet to a maximum unbroken length of 30 feet.



DeBeetor Plates for Head Hazards

Fig. D-5

(iii) Cages shall extend a minimum of 42 inches above the top of landing, unless other acceptable protection is provided.



Relationship of Fixed Ladder to a Safe Access Hatch

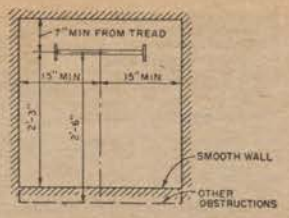
Fig. D-6

(iv) Cages shall extend down the ladder to a point not less than 7 feet nor more than 8 feet above the base of the ladder, with bottom flared not less than 4 inches, or portion of cage opposite ladder shall be carried to the base.

(v) Cages shall not extend less than 27 nor more than 28 inches from the centerline of the rungs of the ladder. Cage shall not be less than 27 inches in width. The inside shall be clear of projections. Vertical bars shall be located at a maximum spacing of 40 degrees around the circumference of the cage; this will give a maximum spacing of approximately 9½ inches, center to center.

(vi) Ladder wells shall have a clear width of at least 15 inches measured each way from the centerline of the ladder. Smooth-walled wells shall be a minimum of 27 inches from the centerline of rungs to the well wall on the climbing side of the ladder. Where other obstructions on the climbing side of the ladder exist, there shall be a minimum of 30 inches from the centerline of the rungs.

(2) *Landing platforms.* When ladders are used to ascend to heights exceeding 20 feet (except on chimneys), landing platforms shall be provided for each 30 feet of height or fraction thereof, except that, where no cage, well, or ladder safety device is provided, landing platforms shall be provided for each 20 feet of height or fraction thereof. Each ladder section shall be offset from adjacent sections. Where installation conditions (even for a short, unbroken length) require that adjacent sections be offset, landing platforms shall be provided at each offset.



Clearance Diagram for Fixed Ladder in Well

Figure D-7

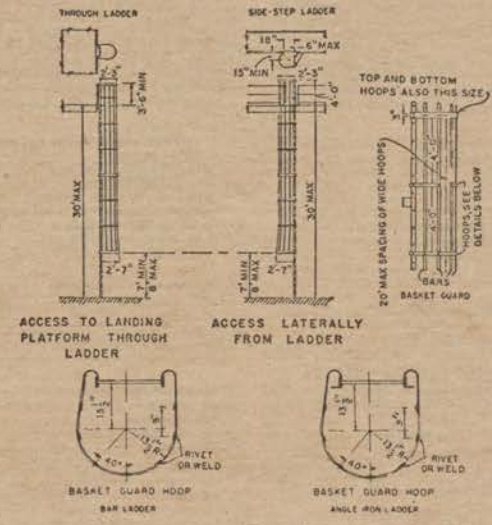


Fig. D-8

Cages for Ladders More Than 20 Feet High

(i) Where a man has to step a distance greater than 12 inches from the centerline of the rung of a ladder to the nearest edge of structure or equipment, a landing platform shall be provided. The minimum step-across distance shall be 2½ inches.

(ii) All landing platforms shall be equipped with standard railings and toeboards, so arranged as to give safe access to the ladder. Platforms shall be not less than 24 inches in width and 30 inches in length.

(iii) One rung of any section of ladder shall be located at the level of the landing laterally served by the ladder. Where access to the landing is through the ladder, the same rung spacing as used on the ladder shall be used from the landing platform to the first rung below the landing.

(3) *Ladder extensions.* The side rails of through or side-step ladder extensions shall extend 3½ feet above parapets and landings. For through ladder extensions, the rungs shall be omitted from the extension and shall have not less than 18 nor more than 24 inches clearance between rails. For side-step or offset fixed ladder sections, at landings, the side rails and rungs shall be carried to the next regular rung beyond or above the 3½ feet minimum (fig. D-10).

(4) *Grab bars.* Grab bars shall be spaced by a continuation of the rung spacing when they are located in the horizontal position. Vertical grab bars shall have the same spacing as the ladder side rails. Grab-bar diameters shall be the equivalent of the round-rung diameters.

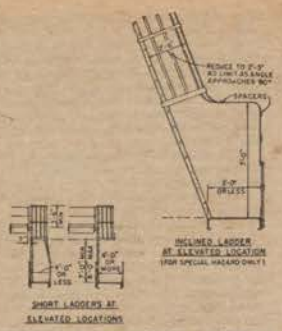


Figure D-9.—Cages—Special Applications.

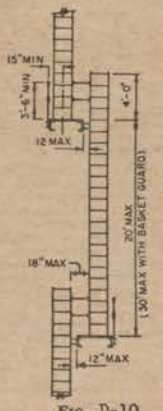


Fig. D-10

Offset Fixed Ladder Sections

(5) *Ladder safety devices.* Ladder safety devices may be used on tower, water tank, and chimney ladders over 20 feet in unbroken length in lieu of cage protection. No landing platform is required in these cases. All ladder safety devices such as those that incorporate lifebelts, friction brakes, and sliding attachments shall meet the design requirements of the ladders which they serve.

(e) *Pitch.*—(1) *Preferred pitch.* The preferred pitch of fixed ladders shall be considered to come in the range of 75 degrees and 90 degrees with the horizontal (fig. D-11).

(2) *Substandard pitch.* Fixed ladders shall be considered as substandard if they are installed within the substandard pitch range of 60 and 75 degrees with the horizontal. Substandard fixed ladders are permitted only where it is found necessary to meet conditions of installation. This substandard pitch range shall be considered as a critical range to be avoided, if possible.

(3) *Scope of coverage in this section.* This section covers only fixed ladders within the pitch range of 60 degrees and 90 degrees with the horizontal.

(4) *Pitch greater than 90 degrees.* Ladders having a pitch in excess of 90 degrees with the horizontal are prohibited.

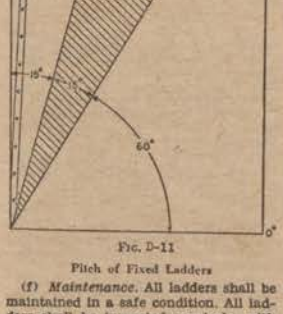


Fig. D-11

Pitch of Fixed Ladders

(f) *Maintenance.* All ladders shall be maintained in a safe condition. All ladders shall be inspected regularly, with the intervals between inspections being determined by use and exposure.

§ 1910.28 Safety requirements for scaffolding.

(a) *General requirements for all scaffolds.* (1) Scaffolds shall be furnished and erected in accordance with this standard for persons engaged in work that cannot be done safely from the ground or from solid construction, except that ladders used for such work shall conform to § 1910.25 and § 1910.26.

(2) The footing or anchorage for scaffolds shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement. Unstable objects such as barrels, boxes, loose brick, or concrete blocks shall not be used to support scaffolds or planks.

(3) Guardrails and toeboards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor except:

(i) Scaffolding wholly within the interior of a building and covering the entire floor area of any room therein and not having any side exposed to a hoistway, elevator shaft, stairwell, or other floor openings, and

(ii) Needle-beam scaffolds and floats in use by structural iron workers.

Guardrails should all be 2 x 4 inches or the equivalent, installed no less than 36 inches or not more than 42 inches high, with a midrail, when required, of 1- x 4-inch lumber or equivalent. Supports should be at intervals not to exceed ten feet. Toeboards shall be a minimum of 4 inches in height.

(4) Scaffolds and their components shall be capable of supporting without failure at least four times the maximum intended load.

(5) Scaffolds and other devices mentioned or described in this section shall be maintained in safe condition. Scaffolds shall not be altered or moved horizontally while they are in use or occupied.

(6) Any scaffold damaged or weakened from any cause shall be immediately repaired and shall not be used until repairs have been completed.

(7) Scaffolds shall not be loaded in excess of the working load for which they are intended.

(8) All load-carrying timber members of scaffold framing shall be a minimum of 1,500 *f.* (Stress Grade) construction grade lumber. All dimensions are nominal sizes as provided in the American Lumber Standards, except that where rough sizes are noted, only rough or undressed lumber of the size specified will satisfy minimum requirements. (Note: Where nominal sizes of lumber are used in place of rough sizes, the nominal size lumber shall be such as to provide equivalent strength to that specified in tables D-7 through D-12 and D-16.)

(9) All planking shall be Scaffold Grade as recognized by grading rules for the species of wood used. The maximum permissible spans for 2- x 9-inch or wider planks are shown in the following table:

	Material				
	Full thickness undressed lumber		Nominal thickness lumber		
Working load (p.s.f.)	22	30	75	25	50
Permissible span (ft.)	10	8	6	8	6

The maximum permissible span for 1¼ x 9-inch or wider plank of full thickness is 4 feet with medium loading of 50 p.s.f.

(10) Nails or bolts used in the construction of scaffolds shall be of adequate size and in sufficient numbers at each connection to develop the designed strength of the scaffold. Nails shall not be subjected to a straight pull and shall be driven full length.

(11) All planking or platforms shall be overlapped (minimum 12 inches) or secured from movement.

(12) An access ladder or equivalent safe access shall be provided.

(13) Scaffold planks shall extend over their end supports not less than 6 inches nor more than 18 inches.

(14) The poles, legs, or uprights of scaffolds shall be plumb, and securely and rigidly braced to prevent swaying and displacement.

(15) Materials being hoisted onto a scaffold shall have a tag line.

(16) Overhead protection shall be provided for men on a scaffold exposed to overhead hazards.

(17) Scaffolds shall be provided with a screen between the toeboard and the guardrail, extending along the entire opening, consisting of No. 18 gauge U.S. Standard Wire one-half-inch mesh or the equivalent, where persons are required to work or pass under the scaffolds.

(18) Employees shall not work on scaffolds during storms or high winds.

(19) Employees shall not work on scaffolds which are covered with ice or snow, unless all ice or snow is removed and planking sanded to prevent slipping.

(20) Tools, materials, and debris shall not be allowed to accumulate in quantities to cause a hazard.

(21) Only treated or protected fiber rope shall be used for or near any work involving the use of corrosive substances or chemicals.

(22) Wire or fiber rope used for scaffold suspension shall be capable of supporting at least six times the intended load.

(23) When acid solutions are used for cleaning buildings over 50 feet in height, wire rope supported scaffolds shall be used.

(24) The use of shore scaffolds or lean-to scaffolds is prohibited.

(25) Lumber sizes, when used in this section, refer to nominal sizes except where otherwise stated.

(26) Scaffolds shall be secured to permanent structures, through use of anchor bolts, reveal bolts, or other equivalent means. Window cleaners' anchor bolts shall not be used.

(27) Special precautions shall be taken to protect scaffold members, including any wire or fiber ropes, when using a heat-producing process.

(b) *General requirements for wood pole scaffolds.* (1) Scaffold poles shall bear on a foundation of sufficient size and strength to spread the load from the poles over a sufficient area to prevent settlement. All poles shall be set plumb.

(2) Where wood poles are spliced, the ends shall be squared and the upper section shall rest squarely on the lower section. Wood splice plates shall be provided on at least two adjacent sides and shall not be less than 4 feet 0 inches in length, overlapping the abutted ends equally, and have the same width and not less than the cross-sectional area of the pole. Splice plates of other materials of equivalent strength may be used.

(3) Independent pole scaffolds shall be set as near to the wall of the building as practicable.

(4) All pole scaffolds shall be securely guyed or tied to the building or structure. Where the height or length exceeds 25 feet, the scaffold shall be secured at intervals not greater than 25 feet vertically and horizontally.

(5) Putlogs or bearers shall be set with their greater dimensions vertical, long enough to project over the ledgers of the inner and outer rows of poles at least 3 inches for proper support.

(6) Every wooden putlog on single pole scaffolds shall be reinforced with a ⅛ x 2-inch steel strip or equivalent secured to its lower edge throughout its entire length.

(7) Ledgers shall be long enough to extend over two pole spaces. Ledgers shall not be spliced between the poles. Ledgers shall be reinforced by bearing blocks securely nailed to the side of the pole to form a support for the ledger.

(8) Diagonal bracing shall be provided to prevent the poles from moving in a direction parallel with the wall of the building, or from buckling.

(9) Cross bracing shall be provided between the inner and outer sets of poles in independent pole scaffolds. The free ends of pole scaffolds shall be cross braced.

(10) Full diagonal face bracing shall be erected across the entire face of pole scaffolds in both directions. The braces shall be spliced at the poles.

(11) Platform planks shall be laid with their edges close together so the platform will be tight with no spaces through which tools or fragments of material can fall.

(12) Where planking is lapped, each plank shall lap its end supports at least 12 inches. Where the ends of planks abut each other to form a flush floor, the butt joint shall be at the centerline of a pole. The abutted ends shall rest on separate bearers. Intermediate beams shall be provided where necessary to prevent dislodgment of planks due to deflection, and the ends shall be nailed or cleated to prevent their dislodgment.

(13) When a scaffold turns a corner, the platform planks shall be laid to prevent tipping. The planks that meet the corner putlog at an angle shall be laid first, extending over the diagonally placed putlog far enough to have a good safe bearing, but not far enough to involve any danger from tipping. The planking running in the opposite direction at right angles shall be laid so as to extend over and rest on the first layer of planking.

(14) When moving platforms to the next level, the old platform shall be left undisturbed until the new putlogs or bearers have been set in place, ready to receive the platform planks.

(15) Guardrails not less than 2 x 4 inches or the equivalent and not less than 36 inches or more than 42 inches high, with a mid-rail, when required, of 1 x 4-inch lumber or equivalent, and toeboards, shall be installed at all open sides on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(17) of this section.

(16) All wood pole scaffolds 60 feet or less in height shall be constructed and erected in accordance with tables D–7 through D–12 of this section. If they are over 60 feet in height they shall be designed by a registered professional engineer and constructed and erected in accordance with such design. A copy of the typical drawings and specifications shall be made available to the employer and for inspection purposes.

TABLE D-7—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF SINGLE POLE SCAFFOLDS LIGHT DUTY

	Maximum height of scaffold	
	20 feet	60 feet
Uniformly distributed load	Not to exceed 25 pounds per square foot.	
Poles or uprights	2 by 4 in.	4 by 4 in.
Pole spacing (longitudinal)	6 ft. 0 in.	10 ft. 0 in.
Maximum width of scaffold	5 ft. 0 in.	5 ft. 0 in.
Bearers or putlogs to 3 ft. 0 in. width	2 by 4 in.	2 by 4 in.
Bearers or putlogs to 5 ft. 0 in. width	2 by 6 in. or 2 by 4 in.	2 by 6 in. or 3 by 4 in. (rough).
Ledgers	1 by 4 in.	1¼ by 9 in.
Planking	1¼ by 9 in. (rough)	2 by 9 in.
Vertical spacing of horizontal members	7 ft. 0 in.	7 ft. 0 in.
Bracing, horizontal and diagonal	1 by 4 in.	1 by 4 in.
Tie-ins	1 by 4 in.	1 by 4 in.
Toeboards	4 in. high (minimum)	4 in. high (minimum).
Guardrail	2 by 4 in.	2 by 4 in.

All members except planking are used on edge.

(17) Wood-pole scaffolds shall not be erected beyond the reach of effective firefighting apparatus.

TABLE D-8—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF SINGLE POLE SCAFFOLDS

MEDIUM DUTY

Uniformly distributed load	Not to exceed 50 pounds per square foot.
Maximum height of scaffold	60 ft.
Poles or uprights	4 by 4 in.
Pole spacing (longitudinal)	8 ft. 0 in.
Maximum width of scaffold	5 ft. 0 in.
Bearers or putlogs	2 by 9 in. or 3 by 4 in.
Spacing of bearers or putlogs	8 ft. 0 in.
Ledgers	2 by 9 in.
Vertical spacing of horizontal members	9 ft. 0 in.
Bracing, horizontal	1 by 6 in. or 1¼ by 4 in.
Bracing, diagonal	1 by 4 in.
Tie-ins	1 by 4 in.
Planking	2 by 9 in.
Toeboards	4 in. high (minimum).
Guardrail	2 by 4 in.

All members except planking are used on edge.

TABLE D-9—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF SINGLE POLE SCAFFOLDS

HEAVY DUTY

Uniformly distributed load	Not to exceed 75 pounds per square foot.
Maximum height of scaffold	60 ft.
Poles or uprights	4 by 4 in.
Pole spacing (longitudinal)	6 ft. 0 in.
Maximum width of scaffold	5 ft. 0 in.
Bearers or putlogs	2 by 9 in. or 3 by 5 in. (rough).
Spacing of bearers or putlogs	6 ft. 0 in.
Ledgers	2 by 9 in.
Vertical spacing of horizontal members	6 ft. 6 in.
Bracing, horizontal and diagonal	2 by 4 in.
Tie-ins	1 by 4 in.
Planking	2 by 9 in.
Toeboards	4 in. high (minimum).
Guardrail	2 by 4 in.

All members except planking are used on edge.

TABLE D-10—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF INDEPENDENT POLE SCAFFOLDS LIGHT DUTY

	Maximum height of scaffold	
	20 feet	60 feet
Uniformly distributed load	Not to exceed 25 pounds per square foot.	
Poles or uprights	2 by 4 in.	4 by 4 in.
Pole spacing (longitudinal)	6 ft. 0 in.	10 ft. 0 in.
Pole spacing (transverse)	6 ft. 0 in.	10 ft. 0 in.
Ledgers	1 by 4 in.	1¼ by 9 in.
Bearers to 3 ft. 0 in. span	2 by 4 in.	2 by 4 in.
Bearers to 10 ft. 0 in. span	2 by 6 in. or 3 by 4 in.	2 by 9 (rough) or 3 by 8 in.
Planking	1¼ by 9 in.	2 by 9 in.
Vertical spacing of horizontal members	7 ft. 0 in.	7 ft. 0 in.
Bracing, horizontal and diagonal	1 by 4 in.	1 by 4 in.
Tie-ins	1 by 4 in.	1 by 4 in.
Toeboards	4 in. high	4 in. high (minimum).
Guardrail	2 by 4 in.	2 by 4 in.

All members except planking are used on edge.

TABLE D-11—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF INDEPENDENT POLE SCAFFOLDS

MEDIUM DUTY

Uniformly distributed load	Not to exceed 50 pounds per square foot.
Maximum height of scaffold	60 ft.
Poles or uprights	4 by 4 in.
Pole spacing (longitudinal)	8 ft. 0 in.
Pole spacing (transverse)	8 ft. 0 in.
Ledgers	2 by 9 in.

MEDIUM DUTY—Continued

Vertical spacing of horizontal members	6 ft. 0 in.
Spacing of bearers	8 ft. 0 in.
Bearers	2 by 9 in. (rough) or 2 by 10 in.
Bracing, horizontal	1 by 6 in. or 1¼ by 4 in.
Bracing, diagonal	1 by 4 in.
Tie-ins	1 by 4 in.
Planking	2 by 9 in.
Toeboards	4 in. high (minimum).
Guardrail	2 by 4 in.

All members except planking are used on edge.

TABLE D-12—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF INDEPENDENT POLE SCAFFOLDS

HEAVY DUTY

Uniformly distributed load	Not to exceed 75 pounds per square foot.
Maximum height of scaffold	60 ft.
Poles or uprights	4 by 4 in.
Pole spacing (longitudinal)	6 ft. 0 in.
Pole spacing (transverse)	8 ft. 0 in.
Ledgers	2 by 9 in.
Vertical spacing of horizontal members	4 ft. 6 in.
Bearers	2 by 9 in. (rough).
Bracing, horizontal and diagonal	2 by 4 in.
Tie-ins	1 by 4 in.
Planking	2 by 9 in.
Toeboards	4 in. high (minimum).
Guardrail	2 by 4 in.

All members except planking are used on edge.

TABLE D-13—TUBE AND COUPLER SCAFFOLDS LIGHT DUTY

Uniformly distributed load..... Not to exceed 25 p.s.f.
Post spacing (longitudinal)..... 10 ft. 0 in.
Post spacing (transverse)..... 6 ft. 0 in.

Working levels	Additional planked levels	Maximum height
1	5	125 ft.
2	4	125 ft.
3	0	91 ft. 0 in.

TABLE D-14—TUBE AND COUPLER SCAFFOLDS MEDIUM DUTY

Uniformly distributed load..... Not to exceed 50 p.s.f.
Post spacing (longitudinal)..... 8 ft. 0 in.
Post spacing (transverse)..... 6 ft. 0 in.

Working levels	Additional planked levels	Maximum height
1	5	125 ft.
2	0	75 ft. 0 in.

TABLE D-15—TUBE AND COUPLER SCAFFOLDS HEAVY DUTY

Uniformly distributed load..... Not to exceed 75 p.s.f.
Post spacing (longitudinal)..... 6 ft. 0 in.
Post spacing (traverse)..... 6 ft. 0 in.

Working levels	Additional planked levels	Maximum height
1	5	125 ft.

(c) *Tube and coupler scaffolds.* (1) A light-duty tube and coupler scaffold shall have all posts, bearers, runners, and bracing of nominal 2-inch O.D. steel tubing. The posts shall be spaced no more than 6 feet apart by 10 feet along the length of the scaffold. Other structural metals when used must be designed to carry an equivalent load.

(2) A medium-duty tube and coupler scaffold shall have all posts, runners, and bracing of nominal 2-inch O.D. steel tubing. Posts spaced not more than 6 feet apart by 8 feet along the length of the scaffold shall have bearers of nominal 2½-inch O.D. steel tubing. Posts spaced not more than 5 feet apart by 8 feet along the length of the scaffold shall have bearers of nominal 2-inch O.D. steel tubing. Other structural metals when used must be designed to carry an equivalent load.

(3) A heavy-duty tube and coupler scaffold shall have all posts, runners, and bracing of nominal 2-inch O.D. steel tubing, with the posts spaced not more than 6 feet apart by 6 feet 6 inches along the length of the scaffold. Other structural metals when used must be designed to carry an equivalent load.

(4) Tube and coupler scaffolds shall be limited in heights and working levels to those permitted in tables D–13, 14, and 15, of this section. Drawings and specifications of all tube and coupler scaffolds above the limitations in tables D–13, 14, and 15 of this section shall be designed by a registered professional engineer and copies made available to the employer and for inspection purposes.

(5) All tube and coupler scaffolds shall be constructed and erected to support four times the maximum intended loads as set forth in tables D–13, 14, and 15 of this section, or as set forth in the specifications by a registered professional engineer, copies which shall be made available to the employer and for inspection purposes.

(6) All tube and coupler scaffolds shall be erected by competent and experienced personnel.

(7) Posts shall be accurately spaced, erected on suitable bases, and maintained plumb.

(8) Runners shall be erected along the length of the scaffold located on both the inside and the outside posts at even height. Runners shall be interlocked to form continuous lengths and coupled to each post. The bottom runners shall be located as close to the base as possible. Runners shall be placed not more than 6 feet 6 inches on centers.

(9) Bearers shall be installed transversely between posts and shall be securely coupled to the posts bearing on the runner coupler. When coupled directly to the runners, the coupler must be kept as close to the posts as possible.

(10) Bearers shall be at least 4 inches but not more than 12 inches longer than the post spacing or runner spacing. Bearers may be cantilevered for use as brackets to carry not more than two planks.

(11) Cross bracing shall be installed across the width of the scaffold at least every third set of posts horizontally and every fourth runner vertically. Such bracing shall extend diagonally from the inner and outer runners upward to the next outer and inner runners.

(12) Longitudinal diagonal bracing shall be installed at approximately a 45-degree angle from near the base of the first outer post upward to the extreme top of the scaffold. Where the longitudinal length of the scaffold permits, such bracing shall be duplicated beginning at every fifth post. In a similar manner, longitudinal diagonal bracing shall also be installed from the last post extending back and upward toward the first post. Where conditions preclude the attachment of this bracing to the posts, it may be attached to the runners.

(13) The entire scaffold shall be tied to and securely braced against the building at intervals not to exceed 30 feet horizontally and 26 feet vertically.

(14) Guardrails not less than 2×4 inches or the equivalent and not less than 36 inches or more than 42 inches high, with a mid-rail, when required, of 1×4-inch lumber or equivalent, and toeboards, shall be installed at all open sides on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(17) of this section.

(d) *Tubular welded frame scaffolds.* (1) Metal tubular frame scaffolds, including accessories such as braces, brackets, trusses, screw legs, ladders, etc., shall be designed and proved to safely support four times the maximum intended load.

(2) Spacing of panels or frames shall be consistent with the loads imposed.

(3) Scaffolds shall be properly braced by cross bracing or diagonal braces, or both, for securing vertical members together laterally, and the cross braces shall be of such length as will automatically square and align vertical members so that the erected scaffold is always plumb, square, and rigid. All brace connections shall be made secure.

(4) Scaffold legs shall be set on adjustable bases or plain bases placed on mud sills or other foundations adequate to support the maximum intended load.

(5) The frames shall be placed one on top of the other with coupling or stacking pins to provide proper vertical alinement of the legs.

(6) Where uplift may occur, panels shall be locked together vertically by pins or other equivalent suitable means.

(7) Guardrails not less than 2 x 4 inches or the equivalent and not less than 36 inches or more than 42 inches high, with a mid-rail, when required, of 1- x 4-inch lumber or equivalent, and toeboards, shall be installed at all open sides on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(17) of this section.

(8) All tubular metal scaffolds shall be constructed and erected to support four times the maximum intended loads.

(9) To prevent movement, the scaffold shall be secured to the building or structure at intervals not to exceed 30 feet horizontally and 26 feet vertically.

(10) Maximum permissible spans of planking shall be in conformity with paragraph (a)(9) of this section.

(11) Drawings and specifications for all frame scaffolds over 125 feet in height above the base plates shall be designed by a registered professional engineer and copies made available to the employer and for inspection purposes.

(12) All tubular welded frame scaffolds shall be erected by competent and experienced personnel.

(13) Frames and accessories for scaffolds shall be maintained in good repair and every defect, unsafe condition, or noncompliance with this section shall be immediately corrected before further use of the scaffold. Any broken, bent, excessively rusted, altered, or otherwise structurally damaged frames or accessories shall not be used.

(14) Periodic inspections shall be made of all welded frames and accessories, and any maintenance, including painting, or minor corrections authorized by the manufacturer, shall be made before further use.

(e) *Outrigger scaffolds.* (1) Outrigger beams shall extend not more than 6 feet beyond the face of the building. The inboard end of outrigger beams, measured from the fulcrum point to the extreme point of support, shall be not less than one and one-half times the outboard end in length. The beams shall rest on edge, the sides shall be plumb, and the edges shall be horizontal. The fulcrum point of the beam shall rest on a secure bearing at least 6 inches in each horizontal dimension. The beam shall be secured in place against movement and shall be securely braced at the fulcrum point against tipping.

(2) The inboard ends of outrigger beams shall be securely supported either by means of struts bearing against sills in contact with the overhead beams or ceiling, or by means of tension members secured to the floor joists underfoot, or by both if necessary. The inboard ends of outrigger beams shall be secured against tipping and the entire supporting structure shall be securely braced in both directions to prevent any horizontal movement.

(3) Unless outrigger scaffolds are designed by a licensed professional engineer, they shall be constructed and erected in accordance with table D–16. Outrigger scaffolds designed by a registered professional engineer shall be constructed and erected in accordance with such design. A copy of the detailed drawings and specifications showing the sizes and spacing of members shall be kept on the job.

(4) Planking shall be laid tight and shall extend to within 3 inches of the building wall. Planking shall be nailed or bolted to outriggers.

(5) Where there is danger of material falling from the scaffold, a wire mesh or other enclosure shall be provided between the guardrail and the toeboard.

(6) Where additional working levels are required to be supported by the outrigger method, the plans and specifications of the outrigger and scaffolding structure shall be designed by a registered professional engineer.

(f) *Masons' adjustable multiple-point suspension scaffolds.* (1) The scaffold shall be capable of sustaining a working load of 50 pounds per square foot and shall not be loaded in excess of that figure.

(2) The scaffold shall be provided with hoisting machines that meet the requirements of Underwriters' Laboratories or Factory Mutual Engineering Corp.

TABLE D–16—MINIMUM NOMINAL SIZE AND MAXIMUM SPACING OF MEMBERS OF OUTRIGGER SCAFFOLDS

	Light duty	Medium duty
Maximum scaffold load	25 p.s.f.	50 p.s.f.
Outrigger size	2 x 10 in.	3 x 10 in.
Maximum outrigger spacing	10 ft 0 in.	6 ft 0 in.
Planking	2 x 9 in.	2 x 9 in.
Guardrail	2 x 4 in.	2 x 4 in.
Guardrail uprights	2 x 4 in.	2 x 4 in.
Toeboards	4 in. (minimum).	4 in. (minimum).

(3) The platform shall be supported by wire ropes in conformity with paragraph (a)(22) of this section, suspended from overhead outrigger beams.

(4) The scaffold outrigger beams shall consist of structural metal securely fastened or anchored to the frame or floor system of the building or structure.

(5) Each outrigger beam shall be equivalent in strength to at least a standard 7-inch, 15.3-pound steel I-beam, be at least 15 feet long, and shall not project more than 6 feet 6 inches beyond the bearing point.

(6) Where the overhang exceeds 6 feet 6 inches, outrigger beams shall be composed of stronger beams or multiple beams and be installed in accordance with approved designs and instructions.

(7) If channel iron outrigger beams are used in place of I-beams, they shall be securely fastened together with the flanges turned out.

(8) All outrigger beams shall be set and maintained with their webs into vertical position.

(9) A stop bolt shall be placed at each end of every outrigger beam.

(10) The outrigger beam shall rest on suitable wood-bearing blocks.

(11) All parts of the scaffold such as bolts, nuts, fittings, clamps, wire rope, and outrigger beams and their fastenings, shall be maintained in sound and good working condition and shall be inspected before each installation and periodically thereafter.

(12) The free end of the suspension wire ropes shall be equipped with proper size thimbles and be secured by splicing or other equivalent means. The running ends shall be securely attached to the hoisting drum and at least four turns of rope shall at all times remain on the drum.

(13) Where a single outrigger beam is used, the steel shackles or clevises with which the wire ropes are attached to the outrigger beams shall be placed directly over the hoisting drums.

(14) The scaffold platform shall be equivalent in strength to at least 2-inch planking. (For maximum planking spans see paragraph (a)(9) of this section.)

(15) Guardrails not less than 2 x 4 inches or the equivalent and not less than 36 inches or more than 42 inches high, with a mid-rail, when required, of 1 x 4-inch lumber or equivalent, and toeboards, shall be installed at all open sides on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(17) of this section.

(16) Overhead protection shall be provided on the scaffold, not more than 9 feet above the platform, consisting of 2-inch planking or material of equivalent strength laid tight, when men are at work on the scaffold and an overhead hazard exists.

(17) Each scaffold shall be installed or relocated in accordance with designs and instructions, of a registered professional engineer, and supervised by a competent, designated person.

(g) *Two-point suspension scaffolds (swinging scaffolds).* (1) Two-point suspension scaffold platforms shall be not less than 20 inches nor more than 36 inches wide overall. The platform shall be securely fastened to the hangers by U-bolts or by other equivalent means.

(2) The hangers of two-point suspension scaffolds shall be made of wrought iron, mild steel, or other equivalent material having a cross-sectional area capable of sustaining four times the maximum intended load, and shall be designed with a support for guardrail, intermediate rail, and toeboard.

(3) When hoisting machines are used on two-point suspension scaffolds, such machines shall be of a design tested and approved by Underwriters' Laboratories or Factory Mutual Engineering Corp.

(4) The roof irons or hooks shall be of wrought iron, mild steel, or other equivalent material of proper size and design, securely installed and anchored. Tiebacks of three-fourth inch manila rope or the equivalent shall serve as a secondary means of anchorage, installed at right angles to the face of the building whenever possible and secured to a structurally sound portion of the building.

(5) Guardrails not less than 2 x 4 inches or the equivalent and not less than 36 inches or more than 42 inches high, with a mid-rail, when required, of 1- x 4-inch lumber or equivalent, and toeboards, shall be installed at all open sides on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(17) of this section.

(6) Two-point suspension scaffolds shall be suspended by wire or fiber ropes. Wire and fiber ropes shall conform to paragraph (a)(22) of this section.

(7) The blocks for fiber ropes shall be of standard 6-inch size, consisting of at least one double and one single block. The sheaves of all blocks shall fit the size of rope used.

(8) All wire ropes, fiber ropes, slings, hangers, platforms, and other supporting parts shall be inspected before every installation. Periodic inspections shall be made while the scaffold is in use.

(9) On suspension scaffolds designed for a working load of 500 pounds no more than two men shall be permitted to work at one time. On suspension scaffolds with a working load of 750 pounds, no more than three men shall be permitted to work at one time. Each workman shall be protected by a safety lifebelt attached to a lifeline. The lifeline shall be securely attached to substantial members of the structure (not scaffold), or to securely rigged lines, which will safely suspend the workman in case of a fall.

(10) Where acid solutions are used, fiber ropes are not permitted unless acid-proof.

(11) Two-point suspension scaffolds shall be securely lashed to the building or structure to prevent them from swaying. Window cleaners' anchors shall not be used for this purpose.

(12) The platform of every two-point suspension scaffold shall be one of the following types:

(i) The side stringer of ladder-type platforms shall be clear straight-grained spruce or materials of equivalent strength and durability. The rungs shall be of straight-grained oak, ash, or hickory, at least 1⅛ inch in diameter, with seven-eighth inch tenons mortised into the side stringers at least seven-eighth inch. The stringers shall be tied together with the tie rods not less than one-quarter inch in diameter, passing through the stringers and riveted up tight against washers on both ends. The flooring strips shall be spaced not more than five-eighth inch apart except at the side rails where the space may be 1 inch. Ladder-type platforms shall be constructed in accordance with table D–17.

(ii) Plank-type platforms shall be composed of not less than nominal 2- x 8-inch unspliced planks, properly cleated together on the underside starting 6 inches from each end; intervals in between shall not exceed 4 feet. The plank-type platform shall not extend beyond the hangers more than 18 inches. A bar or other effective means shall be securely fastened to the platform at each end to prevent its slipping off the hanger. The span between hangers for plank-type platforms shall not exceed 10 feet.

(iii) Beam platforms shall have side stringers of lumber not less than 2 x 6 inches set on edge. The span between hangers shall not exceed 12 feet when beam platforms are used. The flooring shall be supported on 2- and 6-inch crossbeams, laid flat and set into the upper edge of the stringers with a snug fit, at intervals of not more than 4 feet, securely nailed in place. The flooring shall be of 1- x 6-inch material properly nailed. Floorboards shall not be spaced more than one-half inch apart.

TABLE D–17—SCHEDULE FOR LADDER-TYPE PLATFORMS

	Length of platform (feet)				
	13	14 & 16	18 & 20	22 & 24	26 & 30
Side stringers, minimum cross section (finished size):					
At ends (in.)	1½ x 3½	1½ x 3½	1½ x 3	1½ x 3	1½ x 3½
At middle (in.)	1½ x 3½	1½ x 3½	1½ x 4	1½ x 4½	1½ x 6
Reinforcing strip (minimum)	A ½x1½-in. steel reinforcing strip or its equivalent shall be attached to the side or underside full length.				
Rungs	Rungs shall be 1⅛-in. minimum diameter with at least ⅞-in. diameter tenons, and the maximum spacing shall be 12 in. center to center.				
Tie rods:					
Number (minimum)	3	4	4	5	6
Diameter (minimum)	½ in.	½ in.	½ in.	½ in.	½ in.
Flooring, minimum finished size (in.)	1½ x 3½	1½ x 3½	1½ x 3½	1½ x 3½	1½ x 3½

(h) *Stone setters' adjustable multiple-point suspension scaffolds.* (1) The scaffold shall be capable of sustaining a working load of 25 pounds per square foot and shall not be overloaded. Scaffolds shall not be used for storage of stone or other heavy materials.

(2) The hoisting machine and its supports shall be of a type tested and listed by Underwriters' Laboratories or Factory Mutual Engineering Corp.

(3) The platform shall be securely fastened to the hangers by u-bolts or other equivalent means.

(4) The scaffold unit shall be suspended from metal outriggers, iron brackets, wire rope slings, or iron hooks which will safely support the maximum intended load.

(5) Outriggers when used shall be set with their webs in a vertical position, securely anchored to the building or structure and provided with stop bolts at each end.

(6) The scaffold shall be supported by wire rope conforming with paragraph (a)(22) of this section, suspended from overhead supports.

(7) The free ends of the suspension wire ropes shall be equipped with proper size thimbles, secured by splicing or other equivalent means. The running ends shall be securely attached to the hoisting drum and at least four turns of rope shall remain on the drum at all times.

(8) Guardrails not less than 2 by 4 inches or the equivalent and not less than 36 inches or more than 42 inches high, with a mid-rail, when required, of 1- by 4-inch lumber or equivalent, and toeboards, shall be installed at all open sides on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(17) of this section.

(9) When two or more scaffolds are used on a building or structure they shall not be bridged one to the other but shall be maintained at even height with platforms butting closely.

(10) Each scaffold shall be installed or relocated in accordance with designs and instructions of a registered professional engineer, and such installation or relocation shall be supervised by a competent designated person.

(i) *Single-point adjustable suspension scaffolds.* (1) The scaffolding, including power units or manually operated winches, shall be of a type tested and listed by Underwriters' Laboratories or Factory Mutual Engineering Corp.

(2) The power units may be either electrically or air motor driven.

(3) All power-operated gears and brakes shall be enclosed.

(4) In addition to the normal operating brake, all-power driven units must have an emergency brake which engages automatically when the normal speed of descent is exceeded.

(5) Guards, mid-rails, and toeboards shall completely enclose the cage or basket. Guardrails shall be no less than 2 by 4 inches or the equivalent installed no less than 36 inches nor more than 42 inches above the platform. Mid-rails shall be 1 by 6 inches or the equivalent, installed equidistant between the guardrail and the platform. Toeboards shall be a minimum of 4 inches in height.

(6) The hoisting machines, cables, and equipment shall be regularly serviced and inspected after each installation and every 30 days thereafter.

(7) The units may be combined to form a two-point suspension scaffold. Such scaffold shall comply with paragraph (g) of this section.

(8) The supporting cable shall be straight for its entire length, and the operator shall not sway the basket and fix the cable to any intermediate points to change his original path of travel.

(9) Equipment shall be maintained and used in accordance with the manufacturers' instructions.

(10) Suspension methods shall conform to applicable provisions of paragraphs (f) and (g) of this section.

(j) *Boatswain's chairs.* (1) The chair seat shall be not less than 12 by 24 inches, and of 1-inch thickness. The seat shall be reinforced on the underside to prevent the board from splitting.

(2) The two fiber rope seat slings shall be of ⅝-inch diameter, reeved through the four seat holes so as to cross each other on the underside of the seat.

(3) Seat slings shall be of at least ⅝-inch wire rope when a workman is conducting a heat producing process such as gas or arc welding.

(4) The workman shall be protected by a safety life belt attached to a lifeline. The lifeline shall be securely attached to substantial members of the structure (not scaffold), or to securely rigged lines, which will safely suspend the worker in case of a fall.

(5) The tackle shall consist of correct size ball bearing or bushed blocks and properly spliced ⅝-inch diameter first-grade manila rope.

(6) The roof irons, hooks, or the object to which the tackle is anchored shall be securely installed. Tiebacks when used shall be installed at right angles to the face of the building and securely fastened to a chimney.

(k) *Carpenters' bracket scaffolds.* (1) The brackets shall consist of a triangular wood frame not less than 2 by 3 inches in cross section, or of metal of equivalent strength. Each member shall be properly fitted and securely joined.

(2) Each bracket shall be attached to the structure by means of one of the following:

(i) A bolt no less than five-eighths inch in diameter which shall extend through the inside of the building wall.

(ii) A metal stud attachment device.

(iii) Welding to steel tanks.

(iv) Hooking over a well-secured and adequately strong supporting member.

The brackets shall be spaced no more than 10 feet apart.

(3) No more than two persons shall occupy any given 10 feet of a bracket scaffold at any one time. Tools and materials shall not exceed 75 pounds in addition to the occupancy.

(4) The platform shall consist of not less than two 2- by 9-inch nominal size planks extending not more than 18 inches or less than 6 inches beyond each end support.

(5) Guardrails not less than 2 by 4 inches or the equivalent and not less than 36 inches or more than 42 inches high, with a mid-rail, when required, of 1- by 4-inch lumber or equivalent, and toeboards, shall be installed at all open sides on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(17) of this section.

(l) *Bricklayers' square scaffolds.* (1) The squares shall not exceed 5 feet in width and 5 feet in height.

(2) Members shall be not less than those specified in Table D–18.

(3) The squares shall be reinforced on both sides of each corner with 1- by 6-inch gusset pieces. They shall also have braces 1 by 8 inches on both sides running from center to center of each member, or other means to secure equivalent strength and rigidity.

(4) The squares shall be set not more than 5 feet apart for medium duty scaffolds, and not more than 8 feet apart for light duty scaffolds. Bracing 1 x 8 inches, extending from the bottom of each square to the top of the next square, shall be provided on both front and rear sides of the scaffold.

TABLE D–18—MINIMUM DIMENSIONS FOR BRICKLAYERS' SQUARE SCAFFOLD MEMBERS

Members:	Dimensions (inches)
Bearers or horizontal members	2 by 6.
Legs	2 by 6.
Braces at corners	1 by 6.
Braces diagonally from center frame	1 by 8.

(5) Platform planks shall be at least 2- by 9-inch nominal size. The ends of the planks shall overlap the bearers of the squares and each plank shall be supported by not less than three squares.

(6) Bricklayers' square scaffolds shall not exceed three tiers in height and shall be so constructed and arranged that one square shall rest directly above the other. The upper tiers shall stand on a continuous row of planks laid across the next lower tier and be nailed down or otherwise secured to prevent displacement.

(7) Scaffolds shall be level and set upon a firm foundation.

(m) *Horse scaffolds.*

(1) Horse scaffolds shall not be constructed or arranged more than two tiers or 10 feet in height.

(2) The members of the horses shall be not less than those specified in Table D–19.

(3) Horses shall be spaced not more than 5 feet for medium duty and not more than 8 feet for light duty.

(4) When arranged in tiers, each horse shall be placed directly over the horse in the tier below.

(5) On all scaffolds arranged in tiers, the legs shall be nailed down to the planks to prevent displacement or thrust and each tier shall be substantially cross braced.

TABLE D–19—MINIMUM DIMENSIONS FOR HORSE SCAFFOLD MEMBERS

Members:	Dimensions (inches)
Horizontal members or bearers	3 by 4.
Legs	1¼ by 4½
Longitudinal brace between legs	1 by 6.
Gusset brace at top of legs	1 by 8.
Half diagonal braces	1¼ by 4½

(6) Horses or parts which have become weak or defective shall not be used.

(7) Guardrails not less than 2 by 4 inches or the equivalent and not less than 36 inches or more than 42 inches high with a mid-rail, when required, of 1- by 4-inch lumber or equivalent and toeboards, shall be installed at all open sides on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(17) of this section.

(n) *Needle beam scaffold.* (1) Wood needle beams shall be in accordance with paragraph (a) (5) and (9) of this section, and shall be not less than 4 by 6 inches in size, with the greater dimension placed in a vertical direction. Metal beams or the equivalent conforming to paragraph (a) (4) and (8) of this section may be used.

(2) Ropes or hangers shall be provided for supports. The span between supports on the needle beam shall not exceed 10 feet for 4- by 6-inch timbers. Rope supports shall be equivalent in strength to 1-inch diameter first-grade manila rope.

(3) The ropes shall be attached to the needle beams by a scaffold hitch or a properly made eye splice. The loose end of the rope shall be tied by a bowline knot or by a round turn and one-half hitch.

(4) The platform span between the needle beams shall not exceed 8 feet when using 2-inch scaffold plank. For spans greater than 8 feet, platforms shall be designed based on design requirements for the special span. The overhang of each end of the platform planks shall be not less than 1 foot and not more than 18 inches.

(5) When one needle beam is higher than the other or when the platform is not level the platform shall be secured against slipping.

(6) All unattached tools, bolts, and nuts used on needle beam scaffolds shall be kept in suitable containers.

(7) One end of a needle beam scaffold may be supported by a permanent structural member conforming to paragraph (a) (4) and (8) of this section.

(8) Each man working on a needle beam scaffold 20 feet or more above the ground or floor and working with both hands, shall be protected by a safety life belt attached to a lifeline. The lifeline shall be securely attached to substantial members of the structure (not scaffold), or to securely rigged lines, which will safely suspend the workman in case of a fall.

(o) *Plasterers', decorators', and large area scaffolds.* (1) Plasterers', decorators', lathers', and ceiling workers' inside scaffolds shall be constructed in accordance with the general requirements set forth for independent wood pole scaffolds.

(2) Guardrails not less than 2 by 4 inches or the equivalent and not less than 36 inches or more than 42 inches high, with a mid-rail, when required, of 1- by 4-inch lumber or equivalent, and toeboards, shall be installed at all open sides on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(17) of this section.

(p) *Interior hung scaffolds.* (1) An interior hung scaffold should be hung or suspended from the roof structure or substantial ceiling beams.

(2) The suspended steel wire rope shall conform to paragraph (a)(22) of this section. Wire may be used providing the strength requirements of paragraph (a)(22) of this section are met.

(3) For hanging wood scaffolds, the following minimum nominal size material is recommended:

(i) Supporting bearers 2 by 9 inches on edge.

(ii) Planking 2 by 9 inches or 3 by 10 inches, with maximum span 7 feet for heavy duty and 10 feet for light duty or medium duty.

(4) Steel tube and coupler members may be used for hanging scaffolds with both types of scaffold designed to sustain a uniform distributed working load up to heavy duty scaffold loads with a safety factor of four.

(5) When a hanging scaffold is supported by means of wire rope, such wire rope shall be wrapped at least twice around the supporting members and twice around the bearers of the scaffold with each end of the wire rope secured by at least three standard wire-rope clips.

(6) All overhead supporting members shall be inspected and checked for strength before the scaffold is erected.

(7) Guardrails not less than 2 by 4 inches or the equivalent and not less than 36 inches or more than 42 inches high, with a mid-rail, when required, of 1- by 4-inch lumber or equivalent, and toeboards, shall be installed at all open sides on all scaffolds more than 10 feet above the ground or floor. Toeboards shall be a minimum of 4 inches in height. Wire mesh shall be installed in accordance with paragraph (a)(17) of this section.

(q) *Ladder-jack scaffolds.* (1) All ladder-jack scaffolds shall be limited to light duty and shall not exceed a height of 20 feet above the floor or ground.

(2) All ladders used in connection with ladder-jack scaffolds shall be heavy-duty ladders and shall be designed and constructed in accordance with § 1910.25 and § 1910.26.

(3) The ladder jack shall be so designed and constructed that it will bear on the side rails in addition to the ladder rungs, or if bearing on rungs only the bearing area shall be at least 10 inches on each rung.

(4) Ladders used in conjunction with ladder jacks shall be so placed, fastened, held, or equipped with devices so as to prevent slipping.

(5) The wood platform planks shall be not less than 2 inches nominal in thickness. Both metal and wood platform planks shall overlap the bearing surface not less than 12 inches. The span between supports for wood shall not exceed 8 feet. Platform width shall be not less than 18 inches.

(6) Not more than two persons shall occupy any given 8 feet of any ladder-jack scaffold at any one time.

(r) *Window-jack scaffolds.* (1) Window-jack scaffolds shall be used only for the purpose of working at the window opening through which the jack is placed.

(2) Window jacks shall not be used to support planks placed between one window jack and another or for other elements of scaffolding.

(3) Window-jack scaffolds shall be provided with suitable guardrails unless safety belts with lifelines are attached and provided for the workman. Window-jack scaffolds shall be used by one man only.

(s) *Roofing brackets.* (1) Roofing brackets shall be constructed to fit the pitch of the roof.

(2) Brackets shall be secured in place by nailing in addition to the pointed metal projections. The nails shall be driven full length into the roof. When rope supports are used, they shall consist of first-grade manila of at least three-quarter-inch diameter, or equivalent.

(3) A substantial catch platform shall be installed below the working area of roofs more than 20 feet from the ground to eaves with a slope greater than 3 inches in 12 inches without a parapet. In width the platform shall extend 2 feet beyond the projection of the eaves and shall be provided with a safety rail, mid-rail, and toeboard. This provision shall not apply where employees engaged in work upon such roofs are protected by a safety belt attached to a lifeline.

(t) *Crawling boards or chicken ladders.* (1) Crawling boards shall be not less than 10 inches wide and 1 inch thick, having cleats 1 x 1½ inches. The cleats shall be equal in length to the width of the board and spaced at equal intervals not to exceed 24 inches. Nails shall be driven through and clinched on the underside. The crawling board shall extend from the ridge pole to the eaves when used in connection with roof construction, repair, or maintenance.

(2) A firmly fastened lifeline of at least three-quarter-inch rope shall be strung beside each crawling board for a handhold.

(3) Crawling boards shall be secured to the roof by means of adequate ridge hooks or equivalent effective means.

(u) *Float or ship scaffolds.* (1) Float or ship scaffolds shall support not more than three men and a few light tools, such as those needed for riveting, bolting, and welding. They shall be constructed in accordance with subparagraphs (2) through (6) of this paragraph, unless substitute designs and materials provide equivalent strength, stability, and safety.

(2) The platform shall be not less than 3 feet wide and 6 feet long, made of three-quarter-inch plywood, equivalent to American Plywood Association Grade B–B, Group I, Exterior.

(3) Under the platform, there shall be two supporting bearers made from 2- x 4-inch, or 1- x 10-inch rough, selected lumber, or better. They shall be free of knots or other flaws and project 6 inches beyond the platform on both sides. The ends of the platform shall extend about 6 inches beyond the outer edges of the bearers. Each bearer shall be securely fastened to the platform.

(4) An edging of wood not less than ⅜ x 1½ inches, or equivalent, shall be placed around all sides of the platform to prevent tools from rolling off.

(5) Supporting ropes shall be 1-inch diameter manila rope or equivalent, free from deterioration, chemical damage, flaws, or other imperfections. Rope connections shall be such that the platform cannot shift or slip. If two ropes are used with each float, they should be arranged so as to provide four ends which are to be securely fastened to an overhead support. Each of the two supporting ropes shall be hitched around one end of a bearer and pass under the platforms to the other end of the bearer where it is hitched again, leaving sufficient rope at each end for the supporting ties.

(6) Each workman shall be protected by a safety lifebelt attached to a lifeline. The lifeline shall be securely attached to substantial members of the structure (not scaffold), or to securely rigged lines, which will safely suspend the workman in case of a fall.

(v) *Scope.* This section establishes safety requirements for the construction, operation, maintenance, and use of scaffolds used in the construction, alteration, demolition, and maintenance of buildings and structures.

§ 1910.29 Manually propelled mobile ladder stands and scaffolds (towers).

(a) *General requirements.*—(1) *Application.* This section is intended to prescribe rules and requirements for the design, construction, and use of mobile work platforms (including ladder stands

but not including aerial ladders) and rolling (mobile) scaffolds (towers). This standard is promulgated to aid in providing for the safety of life, limb, and property, by establishing minimum standards for structural design requirements and for the use of mobile work platforms and towers.

(2) *Working loads.* (i) Work platforms and scaffolds shall be capable of carrying the design load under varying circumstances depending upon the conditions of use. Therefore, all parts and appurtenances necessary for their safe and efficient utilization must be integral parts of the design.

(ii) Specific design and construction requirements are not a part of this section because of the wide variety of materials and design possibilities. However, the design shall be such as to produce a mobile ladder stand or scaffold that will safely sustain the specified loads. The material selected shall be of sufficient strength to meet the test requirements and shall be protected against corrosion or deterioration.

(a) The design working load of ladder stands shall be calculated on the basis of one or more 200-pound persons together with 50 pounds of equipment each.

(b) The design load of all scaffolds shall be calculated on the basis of:

Light—Designed and constructed to carry a working load of 25 pounds per square foot.

Medium—Designed and constructed to carry a working load of 50 pounds per square foot.

Heavy—Designed and constructed to carry a working load of 75 pounds per square foot.

All ladder stands and scaffolds shall be capable of supporting at least four times the design working load.

(iii) The materials used in mobile ladder stands and scaffolds shall be of standard manufacture and conform to standard specifications of strength, dimensions, and weights, and shall be selected to safely support the design working load.

(iv) Nails, bolts, or other fasteners used in the construction of ladders, scaffolds, and towers shall be of adequate size and in sufficient numbers at each connection to develop the designed strength of the unit. Nails shall be driven full length. (All nails should be immediately withdrawn from dismantled lumber.)

(v) All exposed surfaces shall be free from sharp edges, burrs or other safety hazards.

(3) *Work levels.* (i) The maximum work level height shall not exceed four (4) times the minimum or least base dimension of any mobile ladder stand or scaffold. Where the basic mobile unit does not meet this requirement, suitable outrigger frames shall be employed to achieve this least base dimension, or provisions shall be made to guy or brace the unit against tipping.

(ii) The minimum platform width for any work level shall not be less than 20 inches for mobile scaffolds (towers). Ladder stands shall have a minimum step width of 16 inches.

(iii) The supporting structure for the work level shall be rigidly braced, using adequate cross bracing or diagonal bracing with rigid platforms at each work level.

(iv) The steps of ladder stands shall be fabricated from slip resistant treads.

(v) The work level platform of scaffolds (towers) shall be of wood, aluminum, or plywood planking, steel or expanded metal, for the full width of the scaffold, except for necessary openings. Work platforms shall be secured in place. All planking shall be 2-inch (nominal) scaffold grade minimum 1,500 *f*. (stress grade) construction grade lumber or equivalent.

(vi) All scaffold work levels 10 feet or higher above the ground or floor shall have a standard (4-inch nominal) toeboard.

(vii) All work levels 10 feet or higher above the ground or floor shall have a guardrail of 2- by 4-inch nominal or the equivalent installed no less than 36 inches or more than 42 inches high, with a mid-rail, when required, of 1- by 4-inch nominal lumber or equivalent.

(viii) A climbing ladder or stairway shall be provided for proper access and egress, and shall be affixed or built into the scaffold and so located that its use will not have a tendency to tip the scaffold. A landing platform shall be provided at intervals not to exceed 30 feet.

(4) *Wheels or casters.* (i) Wheels or casters shall be properly designed for strength and dimensions to support four (4) times the design working load.

(ii) All scaffold casters shall be provided with a positive wheel and/or swivel lock to prevent movement. Ladder stands shall have at least two (2) of the four (4) casters and shall be of the swivel type.

(iii) Where leveling of the elevated work platform is required, screw jacks

or other suitable means for adjusting the height shall be provided in the base section of each mobile unit.

(b) *Mobile tubular welded frame scaffolds*—(1) *General.* Units shall be designed to comply with the requirements of paragraph (a) of this section.

(2) *Bracing.* Scaffolds shall be properly braced by cross braces and/or diagonal braces for securing vertical members together laterally. The cross braces shall be of a length that will automatically square and align vertical members so the erected scaffold is always plumb, square, and rigid.

(3) *Spacing.* Spacing of panels or frames shall be consistent with the loads imposed. The frames shall be placed one on top of the other with coupling or stacking pins to provide proper vertical alignment of the legs.

(4) *Locking.* Where uplift may occur, panels shall be locked together vertically by pins or other equivalent means.

(5) *Erection.* Only the manufacturer of a scaffold or his qualified designated agent shall be permitted to erect or supervise the erection of scaffolds exceeding 50 feet in height above the base, unless such structure is approved in writing by a registered professional engineer, or erected in accordance with instructions furnished by the manufacturer.

(c) *Mobile tubular welded sectional folding scaffolds*—(1) *General.* Units including sectional stairway and sectional ladder scaffolds shall be designed to comply with the requirements of paragraph (a) of this section.

(2) *Stairway.* An integral stairway and work platform shall be incorporated into the structure of each sectional folding stairway scaffold.

(3) *Bracing.* An integral set of pivoting and hinged folding diagonal and horizontal braces and a detachable work platform shall be incorporated into the structure of each sectional folding ladder scaffold.

(4) *Sectional folding stairway scaffolds.* Sectional folding stairway scaffolds shall be designed as medium duty scaffolds except for high clearance. These special base sections shall be designed as light duty scaffolds. When upper sectional folding stairway scaffolds are used with a special high clearance base, the load capacity of the entire scaffold shall be reduced accordingly. The width of a sectional folding stairway scaffold shall not exceed 4½ feet. The maximum length of a sectional folding stairway scaffold shall not exceed 6 feet.

(5) *Sectional folding ladder scaffolds.* Sectional folding ladder scaffolds shall be designed as light duty scaffolds including special base (open end) sections which are designed for high clearance. For certain special applications the six-foot (6') folding ladder scaffolds, except for special high clearance base sections, shall be designed for use as medium duty scaffolds. The width of a sectional folding ladder scaffold shall not exceed 4½ feet. The maximum length of a sectional folding ladder scaffold shall not exceed 6 feet 6 inches for a six-foot (6') long unit, 8 feet 6 inches for an eight-foot (8') unit or 10 feet 6 inches for a ten-foot (10') long unit.

(6) *End frames.* The end frames of sectional ladder and stairway scaffolds shall be designed so that the horizontal bearers provide supports for multiple planking levels.

(7) *Erection.* Only the manufacturer of the scaffold or his qualified designated agent shall be permitted to erect or supervise the erection of scaffolds exceeding 50 feet in height above the base, unless such structure is approved in writing by a licensed professional engineer, or erected in accordance with instructions furnished by the manufacturer.

(d) *Mobile tube and coupler scaffolds*—(1) *Design.* Units shall be designed to comply with the applicable requirements of paragraph (a) of this section.

(2) *Material.* The material used for the couplers shall be of a structural type, such as a drop-forged steel, malleable iron or structural grade aluminum. The use of gray cast iron is prohibited.

(3) *Erection.* Only the manufacturer of the scaffold or his qualified designated agent shall be permitted to erect or supervise the erection of scaffolds exceeding 50 feet in height above the base, unless such structure is approved in writing by a licensed professional engineer, or erected in accordance with instructions furnished by the manufacturer.

(e) *Mobile work platforms*—(1) *Design.* Units shall be designed for the use intended and shall comply with the requirements of paragraph (a) of this section.

(2) *Base width.* The minimum width of the base of mobile work platforms shall not be less than 20 inches.

(3) *Bracing.* Adequate rigid diagonal bracing to vertical members shall be provided.

(f) *Mobile ladder stands.*

(1) *Design.* Units shall comply with applicable requirements of paragraph (a) of this section.

(2) *Base width.* The minimum base width shall conform to paragraph (a)(3)(1) of this section. The maximum length of the base section shall be the total length of combined steps and top assembly, measured horizontally, plus five-eighths inch per step of rise.

(3) *Steps.* Steps shall be uniformly spaced, and sloped, with a rise of not less than nine (9) inches, nor more than ten (10) inches, and a depth of not less seven (7) inches. The slope of the steps section shall be a minimum of fifty-five (55) degrees and a maximum of sixty (60) degrees measured from the horizontal.

(4) *Handrails.* (i) Units having more than five (5) steps or 60 inches vertical height to the top step shall be equipped with handrails.

(ii) Handrails shall be a minimum of 29 inches high. Measurements shall be taken vertically from the center of the step.

(5) *Loading.* The load (see paragraph (a)(2)(ii)(a) of this section) shall be applied uniformly to a 3½ inches wide area front to back at the center of the width span with a safety factor of four (4).

§ 1910.30 Other working surfaces.

(a) *Dockboards (bridge plates).* (1) Portable and powered dockboards shall be strong enough to carry the load imposed on them.

(2) Portable dockboards shall be secured in position, either by being anchored or equipped with devices which will prevent their slipping.

(3) Powered dockboards shall be designed and constructed in accordance with Commercial Standard CS202-56 (1961) "Industrial Lifts and Hinged Loading Ramps published by the U.S. Department of Commerce.

(4) Handholds, or other effective means, shall be provided on portable dockboards to permit safe handling.

(5) Positive protection shall be provided to prevent railroad cars from being moved while dockboards or bridge plates are in position.

(b) *Forming machine area.* (1) Machines shall be so located as to give (i) enough clearance between machines so that the movement of one operator will not interfere with the work of another, (ii) ample room for cleaning machines and handling the work, including material and scrap. The arrangement of machines shall be such that operators will not stand in aisles.

(2) Aisles shall be provided of sufficient width to permit the free movement of employees bringing and removing material. This aisle space is to be independent of working and storage space and should be defined by marking.

(3) Wood platforms used on the floor in front of machines shall be substantially constructed.

(c) *Veneer machinery.* (1) Sides of steam vats shall extend to a height of not less than 36 inches above the floor, working platform, or ground.

(2) Large steam vats divided into sections shall be provided with substantial walkways between sections. Each walkway shall be provided with a standard handrail on each exposed side. These handrails may be removable, if necessary.

(3) Covers shall be removed only from that portion of steaming vats on which men are working and a portable railing shall be placed at this point to protect the operators.

(4) Workmen shall not ride or step on logs in steam vats.

§ 1910.31 Sources of standards.

The standards in this Subpart D are devised from the following sources:

Standard	*Source*
§ 1910.22(a)	ANSI Z4.1–1968, Requirements for Sanitation in Places of Employment.
§ 1910.22 (b) and (c).	41 CFR 50–204.3.
§ 1910.22(d)	ANSI A58.1–1955, Minimum Design Loads in Building and Other Structures.
§ 1910.23	ANSI A12.1–1967, Safety Requirements for Floor and Wall Openings, Railings, and Toeboards.
§ 1910.24	ANSI A64.1–1968, Requirements for Fixed Industrial Stairs.

Standard	*Source*
§ 1910.25	ANSI A14.1–1968, Safety Code for Portable Wood Ladders.
§ 1910.26	ANSI A14.2–1956, Portable Metal Ladders.
§ 1910.27	ANSI A14.3–1956, Safety Code for Fixed Ladders.
§ 1910.28	ANSI A10.8–1969, Safety Requirements for Scaffolding.
§ 1910.29	ANSI A92.1–1971, Standard for Manually Propelled Mobile Ladder Stands and Scaffolds.
§ 1910.30(a)	ANSI B56.1—1969, Safety Standard for Powered Industrial Trucks.
§ 1910.30(b)	ANSI B24.1–1963, Safety Standard for Forging.
§ 1910.30(c)	ANSI 01.1–1954 (R1961), Safety Code for Woodworking Machinery.

§ 1910.32 Standards organizations.

The following organizations have been referenced in this Subpart D:

American National Standards Institute, 1430 Broadway, New York, NY 10018.

Underwriters' Laboratories, Inc., 207 East Ohio Street, Chicago, IL 60611.

Factory Mutual Engineering Corp., Post Office Box 688, Norwood, MA 02062.

Subpart E—Means of Egress

§ 1910.35 Definitions.

As used in this subpart

(a) *Means of egress.* A means of egress is a continuous and unobstructed way of exit travel from any point in a building or structure to a public way and consists of three separate and distinct parts: the way of exit access, the exit, and the way of exit discharge. A means of egress comprises the vertical and horizontal ways of travel and shall include intervening room spaces, doorways, hallways, corridors, passageways, balconies, ramps, stairs, enclosures, lobbies, escalators, horizontal exits, courts, and yards.

(b) *Exit access.* Exit access is that portion of a means of egress which leads to an entrance to an exit.

(c) *Exit.* Exit is that portion of a means of egress which is separated from all other spaces of the building or structure by construction or equipment as required in this subpart to provide a protected way of travel to the exit discharge.

(d) *Exit discharge.* Exit discharge is that portion of a means of egress between the termination of an exit and a public way.

(e) *Low hazard contents.* Low hazard contents shall be classified as those of such low combustibility that no self-propagating fire therein can occur and that consequently the only probable danger requiring the use of emergency exits will be from panic, fumes, or smoke, or fire from some external source.

(f) *High-hazard contents.* High-hazard contents shall be classified as those which are liable to burn with extreme rapidity or from which poisonous fumes or explosions are to be feared in the event of fire.

(g) *Ordinary hazard contents.* Ordinary hazard contents shall be classified as those which are liable to burn with moderate rapidity and to give off a considerable volume of smoke but from which neither poisonous fumes nor explosions are to be feared in case of fire.

(h) *Approved.* For the purposes of this subpart approved shall mean listed or approved equipment by a nationally recognized testing laboratory.

§ 1910.36 General requirements.

(a) *Application.* This subpart contains general fundamental requirements essential to providing a safe means of egress from fire and like emergencies. Nothing in this subpart shall be construed to prohibit a better type of building construction, more exits, or otherwise safer conditions than the minimum requirements specified in this subpart. Exits from vehicles, vessels, or other mobile structures are not covered by this subpart.

(b) *Fundamental requirements.* (1) Every building or structure, new or old, designed for human occupancy shall be provided with exits sufficient to permit the prompt escape of occupants in case of fire or other emergency. The design of exits and other safeguards shall be such that reliance for safety to life in case of fire or other emergency will not depend solely on any single safeguard; additional safeguards shall be provided for life safety in case any single safeguard is ineffective due to some human or mechanical failure.

(2) Every building or structure shall be so constructed, arranged, equipped, maintained, and operated as to avoid undue danger to the lives and safety of its occupants from fire, smoke, fumes, or resulting panic during the period of time reasonably necessary for escape from the building or structure in case of fire or other emergency.

(3) Every building or structure shall be provided with exits of kinds, numbers, location, and capacity appropriate to the individual building or structure, with due regard to the character of the occupancy, the number of persons exposed, the fire protection available, and the height and type of construction of the building or structure, to afford all occupants convenient facilities for escape.

(4) In every building or structure exits shall be so arranged and maintained as to provide free and unobstructed egress from all parts of the building or structure at all times when it is occupied. No lock or fastening to prevent free escape from the inside of any building shall be installed except in mental, penal, or corrective institutions where supervisory personnel is continually on duty and effective provisions are made to remove occupants in case of fire or other emergency.

(5) Every exit shall be clearly visible or the route to reach it shall be conspicuously indicated in such a manner that every occupant of every building or structure who is physically and mentally capable will readily know the direction of escape from any point, and each path of escape, in its entirety, shall be so arranged or marked that the way to a place of safety outside is unmistakable. Any doorway or passageway not constituting an exit or way to reach an exit, but of such a character as to be subject to being mistaken for an exit, shall be so arranged or marked as to minimize its possible confusion with an exit and the resultant danger of persons endeavoring to escape from fire finding themselves trapped in a dead-end space, such as a cellar or storeroom, from which there is no other way out.

(6) In every building or structure equipped for artificial illumination, adequate and reliable illumination shall be provided for all exit facilities.

(7) In every building or structure of such size, arrangement, or occupancy that a fire may not itself provide adequate warning to occupants, fire alarm facilities shall be provided where necessary to warn occupants of the existence of fire so that they may escape, or to facilitate the orderly conduct of fire exit drills.

(8) Every building or structure, section, or area thereof of such size, occupancy, and arrangement that the reasonable safety of numbers of occupants may be endangered by the blocking of any single means of egress due to fire or smoke, shall have at least two means of egress remote from each other, so arranged as to minimize any possibility that both may be blocked by any one fire or other emergency conditions.

(9) Compliance with this subpart shall not be construed as eliminating or reducing the necessity for other provisions for safety of persons using a structure under normal occupancy conditions, nor shall any provision of the subpart be construed as requiring or permitting any condition that may be hazardous under normal occupancy conditions.

(c) *Protection of employees exposed by construction and repair operations.* (1) No building or structure under construction shall be occupied in whole or in part until all exit facilities required for the part occupied are completed and ready for use.

(2) No existing building shall be occupied during repairs or alterations unless all existing exits and any existing fire protection are continuously maintained, or in lieu thereof other measures are taken which provide equivalent safety.

(3) No flammable or explosive substances or equipment for repairs or alterations shall be introduced in a building of normally low or ordinary hazard classification while the building is occupied, unless the condition of use and safeguards provided are such as not to create any additional danger or handicap to egress beyond the normally permissible conditions in the building.

(d) *Maintenance.* (1) Every required exit, way of approach thereto, and way of travel from the exit into the street or open space, shall be continuously maintained free of all obstructions or impediments to full instant use in the case of fire or other emergency.

(2) Every automatic sprinkler system, fire detection and alarm system, exit lighting, fire door, and other item of equipment, where provided, shall be continuously in proper operating condition.

§ 1910.37 Means of egress, general.

(a) *Permissible exit components.* An exist shall consist only of the approved components. Exit components shall be constructed as an integral part of the building or shall be permanently affixed thereto.

(b) *Protective enclosure of exits.* When an exist is protected by separation

from other parts of the building the separating construction shall meet the following requirements.

(1) The separation shall have at least a 1-hour fire resistance rating when the exit connects three stories or less. This applies whether the stories connected are above or below the story at which exit discharge begins.

(2) The separation shall have at least a 2-hour fire resistance rating when the exit connects four or more stories, whether above or below the floor of discharge. It shall be constructed of noncombustible materials, and shall be supported by construction having at least a 2-hour fire resistance rating.

(3) Any opening therein shall be protected by an approved self-closing fire door.

(4) Openings in exit enclosures shall be confined to those necessary for access to the enclosure from normally occupied spaces and for egress from the enclosure.

(c) *Width and capacity of means of egress.* (1) The capacity in number of persons per unit of exit width for approved components of means of egress shall be as follows:

(i) Level Egress Components (including Class A Ramps) 100 persons.

(ii) Inclined Egress Components (including Class B Ramps) 60 persons.

(iii) A ramp shall be designated as Class A or Class B in accordance with the following Table E–1:

TABLE E–1

	Class A	Class B
Width	44 inches and greater.	36 to 44 inches.
Slope	1 to 12½ inches in 12 inches.	12½ to 2 inches in 12 inches.
Maximum height between landings.	No limit	12 feet.

(2) Means of egress shall be measured in units of exit width of 22 inches. Fractions of a unit shall not be counted, except that 12 inches added to one or more full units shall be counted as one-half a unit of exit width.

(3) Units of exit width shall be measured in the clear at the narrowest point of the means of egress except that a handrail may project inside the measured width on each side not more than 5 inches and a stringer may project inside the measured width not more than 1½ inches. An exit or exit access door swinging into an aisle or passageway shall not restrict the effective width thereof at any point during its swing to less than the minimum widths hereafter specified.

(d) *Egress capacity and occupant load.* (1) The capacity of means of egress for any floor, balcony, tier, or other occupied space shall be sufficient for the occupant load thereof. The occupant load shall be the maximum number of persons that may be in the space at any time.

(2) Where exits serve more than one floor, only the occupant load of each floor considered individually need be used in computing the capacity of the exits at that floor, provided that exit capacity shall not be decreased in the direction of exit travel.

(e) *Arrangement of exits.* When more than one exit is required from a story, at least two of the exits shall be remote from each other and so arranged as to minimize any possibility that both may be blocked by any one fire or other emergency condition.

(f) *Access to exits.* (1) Exits shall be so located and exit accesss shall be so arranged that exits are readily accessible at all times. Where exits are not immediately accessible from an open floor area, safe and continuous passageways, aisles, or corridors leading directly to every exit and so arranged as to provide convenient access for each occupant to at least two exits by separate ways of travel, except as a single exit or limited dead ends are permitted by other provisions of this subpart, shall be maintained.

(2) A door from a room to an exit or to a way of exit access shall be of the side-hinged, swinging type. It shall swing with exit travel when the room is occupied by more than 50 persons or used for a high hazard occupancy.

(3) In no case shall access to an exit be through a bathroom, or other room subject to locking, except where the exit is required to serve only the room subject to locking.

(4) Ways of exit access and the doors to exits to which they lead shall be so designed and arranged as to be clearly recognizable as such. Hangings or draperies shall not be placed over exit doors or otherwise so located as to conceal or obscure any exit. Mirrors shall not be placed on exit doors. Mirrors shall not be placed in or adjacent to any exit in such a manner as to confuse the direction of exit.

(5) Exit access shall be so arranged that it will not be necessary to travel toward any area of high hazard occupancy in order to reach the nearest exit, unless the path of travel is effectively shielded from the high hazard location by suitable partitions or other physical barriers.

(6) The minimum width of any way of exit access shall in no case be less than 28 inches. Where a single way of exit access leads to an exit, its capacity in terms of width shall be at least equal to the required capacity of the exit to which it leads. Where more than one way of exit access leads to an exit, each shall have a width adequate for the number of persons it must accommodate.

(g) *Exterior ways of exit access.* (1) Access to an exit may be by means of any exterior balcony, porch, gallery, or roof that conforms to the requirements of this section.

(2) Exterior ways of exit access shall have smooth, solid floors, substantially level, and shall have guards on the unenclosed sides.

(3) Where accumulation of snow or ice is likely because of the climate, the exterior way of exit access shall be protected by a roof, unless it serves as the sole normal means of access to the rooms or spaces served, in which case it may be assumed that snow and ice will be regularly removed in the course of normal occupancy.

(4) A permanent, reasonably straight path of travel shall be maintained over the required exterior way of exit access. There shall be no obstruction by railings, barriers, or gates that divide the open space into sections appurtenant to individual rooms, apartments, or other uses. Where the Assistant Secretary of Labor or his duly authorized representative finds the required path of travel to be obstructed by furniture or other movable objects, he may require that they be fastened out of the way or he may require that railings or other permanent barriers be installed to protect the path of travel against encroachment.

(5) An exterior way of exit access shall be so arranged that there are no dead ends in excess of 20 feet. Any unenclosed exit served by an exterior way of exit access shall be so located that no part of the exit extends past a vertical plane 20 feet and one-half the required width of the exit from the end of and at right angles to the way of exit access.

(6) Any gallery, balcony, bridge, porch or other exterior exit access that projects beyond the outside wall of the building shall comply with the requirements of this section as to width and arrangement.

(h) *Discharge from exits.* (1) All exits shall discharge directly to the street, or to a yard, court, or other open space that gives safe access to a public way. The streets to which the exits discharge shall be of width adequate to accommodate all persons leaving the building. Yards, courts, or other open spaces to which exits discharge shall also be of adequate width and size to provide all persons leaving the building with ready access to the street.

(2) Stairs and other exits shall be so arranged as to make clear the direction of egress to the street. Exit stairs that continue beyond the floor of discharge shall be interrupted at the floor of discharge by partitions, doors, or other effective means.

(i) *Headroom.* Means of egress shall be so designed and maintained as to provide adequate headroom, but in no case shall the ceiling height be less than 7 feet 6 inches nor any projection from the ceiling be less than 6 feet 8 inches from the floor.

(j) *Changes in elevation.* Where a means of egress is not substantially level, such differences in elevation shall be negotiated by stairs or ramps.

(k) *Maintenance and workmanship* (1) Doors, stairs, ramps, passages, signs, and all other components of means of egress shall be of substantial, reliable construction and shall be built or installed in a workmanlike manner.

(2) Means of egress shall be continuously maintained free of all obstructions or impediments to full instant use in the case of fire or other emergency.

(3) Any device or alarm installed to restrict the improper use of an exit shall be so designed and installed that it cannot, even in cases of failure, impede or prevent emergency use of such exit.

(l) *Furnishings and decorations.* (1) No furnishings, decorations, or other objects shall be so placed as to obstruct exits, access thereto, egress therefrom, or visibility thereof.

(2) No furnishings or decorations of an explosive or highly flammable character shall be used in any occupancy.

(m) *Automatic sprinkler systems.* All automatic sprinkler systems shall be continuously maintained in reliable operating condition at all times, and such periodic inspections and tests shall be made as are necessary to assure proper maintenance.

(n) *Alarm and fire protection systems.* (1) Systems shall be under the supervision of a responsible person who shall cause proper tests to be made at weekly intervals and have general charge of all alterations and additions.

(2) Fire alarm signaling equipment shall be restored to service as promptly as possible after each test or alarm, and shall be kept in normal condition for operation. Equipment requiring rewinding or replenishing shall be rewound or replenished as promptly as possible after each test or alarm.

(o) *Fire retardant paints.* Fire retardant paints or solutions shall be renewed at such intervals as necessary to maintain the necessary flame retardant properties.

(p) [Reserved]

(q) *Exit marking.* (1) Exits shall be marked by a readily visible sign. Access to exits shall be marked by readily visible signs in all cases where the exit or way to reach it is not immediately visible to the occupants.

(2) Any door, passage, or stairway which is neither an exit nor a way of exit access, and which is so located or arranged as to be likely to be mistaken for an exit, shall be identified by a sign reading "Not an Exit" or similar designation, or shall be identified by a sign indicating its actual character, such as "To Basement," "Storeroom," "Linen Closet," or the like.

(3) Every required sign designating an exit or way of exit access shall be so located and of such size, color, and design as to be readily visible. No decorations, furnishings, or equipment which impair visibility of an exit sign shall be permitted, nor shall there be any brightly illuminated sign (for other than exit purposes), display, or object in or near the line of vision to the required exit sign of such a character as to so detract attention from the exit sign that it may not be noticed.

(4) Every exit sign shall be distinctive in color and shall provide contrast with decorations, interior finish, or other signs.

(5) A sign reading "Exit", or similar designation, with an arrow indicating the direction, shall be placed in every location where the direction of travel to reach the nearest exit is not immediately apparent.

(6) Every exit sign shall be suitably illuminated by a reliable light source giving a value of not less than 5 footcandles on the illuminated surface. Artificial lights giving illumination to exit signs other than the internally illuminated types shall have screens, discs, or lenses of not less than 25 square inches area made of translucent material to show red or other specified designating color on the side of the approach.

(7) Each internally illuminated exit sign shall be provided in all occupancies where reduction of normal illumination is permitted.

(8) Every exit sign shall have the word "Exit" in plainly legible letters not less than 6 inches high, with the principal strokes of letters not less than three-fourths-inch wide.

§ 1910.38 Specific means of egress requirements by occupancy. [Reserved]

§ 1910.39 Sources of standards.

The entire subpart is promulgated from NFPA 101–1970, Life Safety Code.

§ 1910.40 Standards organizations.

Specific standards of the following organization have been referenced in this subpart. Copies of the standards may be obtained from the issuing organization:

National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210.

[39 FR 23502, June 27, 1974, as amended at 40 FR 18426, April 28, 1975]

Subpart F—Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms

§ 1910.66 Powered platforms for exterior building maintenance.

(a) *Definitions applicable to this section.*—(1) *Angulated roping.* A system of platform suspension in which the upper wire rope sheaves or suspension points are closer to the plane of the building face than the corresponding attachment points on the platform, thus causing the platform to press against the face of the building during its vertical travel.

(2) *ANSI.* American National Standards Institute.

(3) *Babbitted fastenings.* The method of providing wire rope attachments in which the ends of the wire strands are bent back and are held in a tapered socket by means of poured molten babbitt metal.

(4) *Brake—disc type.* A brake in which the holding effect is obtained by frictional resistance between one or more faces of discs keyed to the rotating member to be held and fixed discs keyed to the stationary or housing member (pressure between the discs being applied axially).

(5) *Brake—self-energizing band type.* An essentially unidirectional brake in which the holding effect is obtained by the snubbing action of a flexible band wrapped about a cylindrical wheel or drum affixed to the rotating member to be held, the connections and linkages being so arranged that the motion of the brake wheel or drum will act to increase the tension or holding force of the band.

(6) *Brake—shoe type.* A brake in which the holding effect is obtained by applying the direct pressure of two or more segmental friction elements held to a stationary member against a cylindrical wheel or drum affixed to the rotating member to be held.

(7) *Building face rollers.* A specialized form of guide roller designed to contact a portion of the outer face or wall structure of the building, and to assist in stabilizing the operators' platform during vertical travel.

(8) *Continuous pressure.* Operation by means of buttons or switches, any one of which may be used to control the movement of the working platform or roof car, only as long as the button or switch is manually maintained in the actuating position.

(9) *Control.* A system governing starting, stopping, direction, acceleration, speed, and retardation of moving members.

(10) *Controller.* A device or group of devices, usually contained in a single enclosure, which serves to control in some predetermined manner the apparatus to which it is connected.

(11) *Electrical ground.* A conducting connection between an electrical circuit or equipment and the earth, or some conducting body which serves in place of the earth.

(12) *Guide roller.* A rotating, bearing-mounted, generally cylindrical member, operating separately or as part of a guide shoe assembly, attached to the platform, and providing rolling contact with building guideways, or other building contact members.

(13) *Guide shoe.* An assembly of rollers, slide members, or the equivalent, attached as a unit to the operators' platform, and designed to engage with the building members provided for the vertical guidance of the operators' platform.

(14) *Interlock.* A device actuated by the operation of some other device with which it is directly associated, to govern succeeding operations of the same or allied devices.

(15) *Operating device.* A pushbutton, lever, or other manual device used to actuate a control.

(16) *Powered platform.* Equipment to provide access to the exterior of a building for maintenance, consisting of a suspended power-operated working platform, a roof car, or other suspension means, and the requisite operating and control devices.

(17) *Rated load.* The combined weight of employees, tools, equipment, and other material which the working platform is designed and installed to lift.

(18) *Relay, direction.* An electrically energized contactor responsive to an initiating control circuit, which in turn causes a moving member to travel in a particular direction.

(19) *Relay, potential for vertical travel.* An electrically energized contactor responsive to initiating control circuit, which in turn controls the operation of a moving member in both directions. This relay usually operates in conjunction with direction relays, as covered under the definition, "relay, direction."

(20) *Roof car.* A structure for the suspension of a working platform, providing for its horizontal movement to working positions.

(21) *Roof-powered platform.* A powered platform having the raising and lowering mechanism located on a roof car.

(22) *Self-powered platform.* A powered platform having the raising and lowering mechanism located on the working platform.

(23) *Traveling cable.* A cable made up of electrical or communication conductors or both, and providing electrical connection between the working platform and the roof car or other fixed point.

(24) *Weatherproof.* Equipment so constructed or protected that exposure to

the weather will not interfere with its proper operation.

(25) *Working platform.* The suspended structure arranged for vertical travel which provides access to the exterior of the building or structure.

(26) *Yield point.* The stress at which the material exhibits a permanent set of 0.2 percent.

(27) *Zinced fastenings.* The method of providing wire rope attachments in which the splayed or fanned wire ends are held in a tapered socket by means of poured molten zinc.

(b) *General requirements*—(1) *Application.* (i) This section establishes safety requirements for the design, construction, installation, operation, maintenance, inspection, and use of power-operated platforms for exterior building maintenance. The requirements of this section do not apply to temporary equipment used for construction work; or to devices which are raised and lowered manually.

(ii) The purpose of this standard is to provide for the safety of life and limb of users of exterior powered platforms, as well as of others who may be exposed. The equipment described in this section is intended for use by one or more workmen who are engaged in exterior work, such as window cleaning, caulking, metal-polishing, and general exterior building maintenance or repairs.

(2) *Existing and new equipment.* This section applies to all powered platforms installed subsequent to the effective date of these regulations with the exception of powered platforms installed for emergency purposes.

(3) *Design requirements.* All new powered platforms for exterior building maintenance purchased and used after the effective date of these regulations shall meet all of the design, construction, installation, and maintenance requirements of Part II and III of the "American National Standard Safety Requirements for Powered Platforms for Exterior Building Maintenance ANSI A120.1–1970" and of this section. Reference shall be made to appropriate parts of ANSI A120.1–1970 for detail specifications for equipment and special installations.

(4) *Limitation.* The requirements of this section apply only to electric powered platforms. It is not the intent of this section to prohibit the use of other types of power. Installation of powered platforms using other types of power is permitted, provided such platforms have adequate protective devices for the type of power used, and otherwise provide for reasonable safety of life and limb to users of equipment and to others who may be exposed.

(5) *Types of powered platforms.* (i) For the purpose of applying this standard, powered platforms are divided into two basic types, Type F and Type T.

(ii) Powered platforms designated as Type F shall meet all the requirements in Part II of ANSI A120.1—1970, American National Standard Safety Requirements for Powered Platforms for Exterior Building Maintenance. A basic requirement of Type F equipment is that the work platform is suspended by at least four wire ropes and designed so that failure of any one wire rope will not substantially alter the normal position of the working platform. Another basic requirement of Type F equipment is that only one layer of hoisting rope is permitted on winding drums. Type F powered platforms may be either roof-powered or self-powered.

(iii) Powered platforms designated as Type T shall meet all the requirements in Part III of ANSI A120.1—1970 American National Standard Safety Requirement for Powered Platforms for Exterior Building Maintenance. A basic requirement of Type T equipment is that the working platform is suspended by at least two wire ropes. Failure of one wire rope would not permit the working platform to fall to the ground, but would upset its normal position. The employer shall require employees working on Type T equipment to wear safety belts, which are attached by lifelines to either the working platform or the building structure. Type T powered platforms may be either roof-powered or self-powered.

(iv) The requirements of this section apply to powered platforms with winding drum type hoisting machines. It is not the intent of this section to prohibit powered platforms using other types of hoisting machines such as, but not limited to, traction drum hoisting machines, air powered machines, hydraulic powered machines, and internal combustion machines. Installation of powered platforms with other types of hoisting machines is permitted, provided adequate protective devices are used, and provided reasonable safety of life and limb to users of the equipment and to others who may be exposed is assured.

(c) *Type F powered platforms*—(1) *Roof car, general.* (i) A roof car shall be provided whenever it is necessary to move the working platform horizontally to working or storage positions.

(ii) The maximum rated speed at which a power traversed roof car may be moved in a horizontal direction shall be 50 feet per minute.

(2) *Movement and positioning of roof car.* (i) Provision shall be made to protect against having the roof car leave the roof or enter roof areas not designed for travel.

(ii) The horizontal motion of the roof cars shall be positively controlled so as to insure proper movement and positioning of the roof car.

(iii) Roof car positioning devices shall be provided to insure that the working platform is placed and retained in proper position for vertical travel and during storage.

(iv) Mechanical stops shall be provided to prevent the traversing of the roof car beyond its normal limits of travel. Such stops shall be capable of withstanding a force equal to 100 percent of the inertial effect of the roof car in motion with traversing power applied.

(v) (*a*) The operating device of a power-operated roof car for traversing shall be located on the roof car, the working platform, or both, and shall be of the continuous pressure weatherproof electric type. If more than one operating device is provided, they shall be so arranged that traversing is possible only from one operating device at a time.

(*b*) The operating device shall be so connected that it is not operable until:

(*1*) The working platform is located at its uppermost position of travel and is not in contact with the building face or fixed vertical guides in the face of the building; and

(*2*) All protective devices and interlocks are in a position for traversing.

(3) *Roof car stability.* Roof car stability shall be determined by either subdivision (i) or (ii) of this subparagraph, whichever is greater.

(i) The roof car shall be continuously stable, considering overturning moment as determined by 125 percent rated load, plus maximum dead load and the prescribed wind loading.

(ii) The roof car and its anchorages shall be capable of resisting accidental over-tensioning of the wire ropes suspending the working platform and this calculated value shall include the effect of one and one-half times the value. For this calculation, the simultaneous effect of one-half wind load shall be included, and the design stresses shall not exceed those referred to in paragraph (b) (3) of this section.

(iii) If the load on the motors is at any time in excess of three times that required for lifting the working platform with its rated load, the motor shall stall.

(4) *Access to the roof car.* Safe access to the roof car and from the roof car to the working platform shall be provided. If the access to the roof car at any point of its travel is not over the roof area or where otherwise necessary for safety, self-closing, self-locking gates shall be provided. Applicable provisions of the American National Standard Safety Requirements for Floor and Wall Openings, Railings and Toeboard, A12.1–1967, shall apply.

(5) *Means for maintenance, repair, and storage.* Means shall be provided to run the roof car away from the roof perimeter, where necessary, and to provide a safe area for maintenance, repairs, and storage. Provisions shall be made to secure the machine in the stored position. For stored machines subject to wind forces, see special design and anchorage requirements for "wind forces" in Part II, section 10.5.1.1 of ANSI A120.1—1970, American National Standards Safety Requirements for Powered Platforms for Exterior Building Maintenance.

(6) *General requirements for working platforms.* The working platform shall be of girder or truss construction and shall be adequate to support its rated load under any position of loading, and comply with the provisions set forth in section 10 of ANSI A120.1—1970, American National Standard Safety Requirements for Powered Platforms for Exterior Building Maintenance.

(7) *Load rating plate.* Each working platform shall bear a manufacturer's load rating plate, conspicuously posted; stating the maximum permissible rated load. Load rating plates shall be made of noncorrosive material and shall have letters and figures stamped, etched, or cast on the surface. The minimum height of the letters and figures shall be one-fourth inch.

(8) *Minimum size.* The working platform shall have a minimum net width of 24 inches.

(9) *Guardrails.* Working platforms shall be furnished with permanent guard rails not less than 36 inches high, and not more than 42 inches high at the front (building side). At the rear, and on the sides, the rail shall not be less than 42 inches high. An intermediate guardrail shall be provided around the entire platform between the top guardrail and the toeboard.

(10) *Toeboards.* A 4-inch toeboard shall be provided along all sides of the working platform.

(11) *Open spaces between guardrails and toeboards.* The spaces between the intermediate guardrail and platform toeboard on the building side of the working platform, and between the top guardrail and the toeboard on other sides of the platform, shall be filled with metallic mesh or similar material that will reject a ball 1 inch in diameter. The installed mesh shall be capable of withstanding a load of 100 pounds applied horizontally over any area of 144 square inches. If the space between the platform and the building face does not exceed 8 inches, and the platform is restrained by guides, the mesh may be omitted on the front side.

(12) *Flooring.* The platform flooring shall be of the nonskid type, and if of open construction, shall reject a $\frac{9}{16}$-inch diameter ball, or be provided with a screen below the floor to reject a $\frac{9}{16}$ inch diameter ball.

(13) *Access gates.* Where access gates are provided, they shall be self-closing and self-locking.

(14) *Operating device for vertical movement of the working platform.* (i) The normal operating device for the working platform shall be located on the working platform and shall be of the continuous pressure weatherproof electric type.

(ii) The operating device shall be operable only when all electrical protective devices and interlocks on the working platform are in position for normal service, and the roof car, if provided, is at an established operating point.

(15) *Emergency electric operative device.* (i) In addition, on roof-powered platforms, an emergency electric operating device shall be provided near the hoisting machine for use in the event of failure of the normal operating device for the working platform, or failure of the traveling cable system. The emergency operating device shall be mounted in a locked compartment and shall have a legend mounted thereon reading: "For Emergency Operation Only. Establish Communication With Personnel on Working Platform Before Use."

(ii) A key for unlocking the compartment housing the emergency operating device shall be mounted in a break-glass receptacle located near the emergency operating device.

(16) *Manual cranking for emergency operation.* Emergency operation of the main drive machine may be provided to allow manual cranking. This provision for manual operation shall be designed so that not more than two persons will be required to perform this operation. The access to this provision shall include a means to automatically make the machine inoperative electrically while under the emergency manual operation. The design shall be such that the emergency brake is operative at or below governor tripping speed during manual operation.

(17) *Arrangement and guarding of hoisting equipment.* (i) Hoisting equipment shall consist of a power-driven drum or drum contained in the roof car (roof-powered platforms) or contained on the working platform (self-powered platform).

(ii) The hoisting equipment shall be power-operated in both up and down directions.

(iii) Guard or other protective devices shall be installed wherever rotating shafts or other mechanisms or gears may expose personnel to a hazard.

(iv) Friction devices or clutches shall not be used for connecting the main driving mechanism to the drum or drums. Belt- or chain-driven machines are prohibited.

(18) *Hoisting motors.* (i) Hoisting motors shall be electric and of weatherproof construction.

(ii) Hoisting motors shall be in conformance with applicable provisions of subparagraph (22) of this paragraph, Electrical wiring and equipment.

(iii) Hoisting motors shall be directly connected to the hoisting machinery. Motor couplings, if used, shall be of steel construction.

(19) *Brakes.* The hoisting machine(s) shall have two independent braking means, each designed to stop and hold the working platform with 125 percent of rated load.

(20) *Hoisting ropes and rope connections.* (i) Working platforms shall be suspended by wire ropes of either 6 x 19 or 6 x 37 classification, preformed or nonpreformed.

(ii) The minimum grade of the wire rope shall be improved plow steel. Ropes shall be fabricated of drawn galvanized or bright wire. Drawn galvanized wire rope shall be fabricated of individual wires on which the zinc coating has been applied at an intermediate size, and the wire then drawn to finished size and to the same tolerances and with the same mechanical properties as for uncoated wire of equal grade.

(iii) The minimum factor of safety shall be ten, and shall be calculated by the following formula:

$$F = \frac{S \times N}{W}$$

Where

S = Manufacturer's rated breaking strength of one rope.

N = Number of ropes under load.

W = Maximum static load on all ropes with the platform and its rated load at any point of its travel.

(iv) Hoisting ropes shall be sized to conform with the required factor of safety, but in no case shall the size be less than five-sixteenths-inch diameter.

(v) Winding drums shall have at least three turns of rope remaining when the platform has landed at the lowest possible point of its travel.

(vi) The lengthening or repairing of wire rope by the joining of two or more lengths is prohibited.

(vii) The nondrum ends of the hoisting ropes shall be provided with individual shackle rods which will permit individual adjustment of rope lengths, if required.

(viii) Reverse bends in rope arrangement should be avoided. More than two reverse bends in each rope is prohibited.

(21) *Rope tag data.* (i) A metal data tag shall be securely attached to one of the wire rope fastenings. This data tag shall bear the following wire rope data:

(*a*) The diameter in inches.

(*b*) Construction classification.

(*c*) Whether nonpreformed or preformed.

(*d*) The grade of material used.

(*e*) The manufacturer's rated breaking strength.

(*f*) Name of the manufacturer of the rope.

(*g*) The month and year the ropes were installed.

(*h*) Name of the person or firm who installed ropes.

(ii) Noncorrosive metal data tags shall be used. The minimum height of the letters, stamped or etched, shall be one-sixteenth inch.

(iii) A new tag shall be installed at each rope renewal. When ropes are refastened, the original tag shall be retained and a supplemental tag showing the date of refastening and the name of the person or firm who refastened the ropes shall be provided.

(22) *Electrical wiring and equipment.* (i) All electrical equipment and wiring shall conform to the requirements of the National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968), except as modified by ANSI A120.1–1970 "American National Standard Safety Requirements for Powered Platforms for Exterior Building Maintenance." For detail design specifications for electrical equipment, see Part 2, ANSI A120.1–1970.

(ii) All motors and operation and control equipment shall be supplied from a single power source.

(iii) The power supply for the powered platform shall be an independent circuit supplied through a fused disconnect switch.

(iv) Electrical conductor parts of the power supply system shall be protected against accidental contact.

(v) Electrical grounding shall be provided.

(*a*) Provision for electrical grounding shall be included with the power-supply system.

(*b*) Controller cabinets, motor frames, hoisting machines, the working platform, roof car and roof car track system, and noncurrent carrying parts of electrical equipment, where provided, shall be grounded.

(*c*) The controller, where used, shall be so designed and installed that a single ground or short circuit will not prevent both the normal and final stopping device from stopping the working platform.

(*d*) Means shall be provided on the roof car and working platform for grounding portable electric tools.

(*e*) The working platform shall be grounded through a grounding connection in a traveling cable. Electrically powered tools utilized on the working platform shall be grounded.

(vi) Electrical receptacles located on the roof or other exterior location shall be of a weatherproof type and shall be located so as not to be subject to contact with water or accumulated snow. The

receptacles shall be grounded and the electric cable shall include a grounding conductor. The receptacle and plug shall be a type designed to avoid hazard to persons inserting or withdrawing the plug. Provision shall be made to prevent application of cable strain directly to the plug and receptacle.

(vii) Electric runway conductor systems shall be of the type designed for use in exterior locations and shall be located so as not to be subject to contact with water or accumulated snow. The conductors, collectors, and disconnecting means shall conform to the same requirements as those for cranes and hoists in Article 610 of the National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968). A grounded conductor shall parallel the power conductors and be so connected that it cannot be opened by the disconnecting means. The system shall be designed to avoid hazard to persons in the area.

(viii) Electrical protective devices and interlocks of the weatherproof type shall be provided.

(ix) Where the installation includes a roof car, electric contact(s) shall be provided and so connected that the operating devices for the working platform shall be operative only when the roof car is located and mechanically retained at an established operating point.

(x) Where the powered platform includes a power-operated roof car, the operating device for the roof car shall be inoperative when the roof car is mechanically retained at an established operating point.

(xi) An electric contact shall be provided and so connected that it will cause the down direction relay for vertical travel to open if the tension in the traveling cable exceeds safe limits.

(xii) An automatic overload device shall be provided to cut off the electrical power to the circuit in all hoisting motors for travel in the up direction, should the load applied to the hoisting ropes at either end of the working platform exceed 125 percent of its normal tension with rated load, as shown on the manufacturer's data plate on the working platform.

(xiii) An automatic device shall be provided for each hoisting rope which will cut off the electrical power to the hoisting motor or motors in the down direction and apply the brakes if any hoisting rope becomes slack.

(xiv) Upper and lower directional limit devices shall be provided to prevent the travel of the working platform beyond the normal upper and lower limits of travel.

(xv) Operation of a directional limit device shall prevent further motion in the appropriate direction, if the normal limit of travel has been reached.

(xvi) Directional limit devices, if driven from the hoisting machine by chains, tapes, or cables, shall incorporate a device to disconnect the electric power from the hoisting machine and apply both the primary and secondary brakes in the event of failure of the driving means.

(xvii) Final terminal stopping devices of the working platform:

(a) Final terminal stopping devices for the working platform shall be provided as a secondary means of preventing the working platform from overtraveling at the terminals.

(b) The device shall be set to function as close to each terminal landing as practical, but in such a way that under normal operating conditions it will not function when the working platform is stopped by the normal terminal stopping device.

(c) Operation of the final terminal stopping device shall open the potential relay for vertical travel, thereby disconnecting the electric power from the hoisting machine, and applying both the primary and secondary brakes.

(d) The final terminal stopping device for the upper limit of travel shall be mounted so that it is operated directly by the motion of the working platform itself.

(xviii) Emergency stop switches shall be provided in or adjacent to each operating device.

(xix) Emergency stop switches shall:

(a) Have red operating buttons or handles.

(b) Be conspicuously and permanently marked "Stop".

(c) Be the manually opened and manually closed type.

(d) Be positively opened with the opening not solely dependent on springs.

(xx) The manual operation of an emergency stop switch associated with an operating device for the working platform shall open the potential relay for vertical travel, thereby disconnecting the electric power from the hoisting machine and applying both the primary and secondary brakes.

(xxi) The manual operation of the emergency stop switch associated with the operating device for a power-driven roof car shall cause the electrical power to the traverse machine to be interrupted, and the traverse machine brake to apply.

(23) *Requirements for emergency communications.* (i) Communication equipment shall be provided for each powered platform for use in an emergency.

(ii) Two-way communication shall be established between personnel on the roof and personnel on the stalled working platform before any emergency operation of the working platform is undertaken by personnel on the roof.

(iii) The equipment shall permit two-way voice communication between the working platform and

(a) Designated personnel continuously available while the powered platform is in use; and

(b) Designated personnel on roof-powered platforms, undertaking emergency operation of the working platform by means of the emergency operating device located near the hoisting machine.

(iv) The emergency communication equipment shall be one of the following types:

(a) Telephone connected to the central telephone exchange system; or

(b) Telephones on a limited system or an approved two-way radio system, provided designated personnel are available to receive a message during the time the powered platform is in use.

(d) *Type T powered platforms.*—(1) *Roof car.* The requirements of paragraphs (c)(1) through (c)(5) of this section shall apply to Type T powered platforms.

(2) *Working platform.* The requirements of paragraphs (c)(6) through (c)(16) of this section apply to Type T powered platforms.

(i) The working platform shall be suspended by at least two wire ropes.

(ii) The maximum rated speed at which the working platform of self-powered platforms may be moved in a vertical direction shall not exceed 35 feet per minute.

(3) *Hoisting equipment.* The requirements of paragraphs (c)(17) and (18) of this section shall apply to Type T powered platforms.

(4) *Brakes.* Brakes requirements of paragraph (c)(19) of this section shall apply.

(5) *Hoisting ropes and rope connections.* (i) Paragraph (c)(20)(i) through (vi) and (viii) of this section shall apply to type T powered platforms.

(ii) Adjustable shackle rods in subparagraph (c)(20)(vii) of this section shall apply to type T powered platforms if the working platform is suspended by more than two wire ropes.

(6) *Electrical wiring and equipment.* (i) The requirements of paragraph (c)(22)(i) through (vi) of this section shall apply to type T powered platforms. "Circuit protection limitation," "powered platform electrical service system," all operating services and control equipment shall comply with the specifications contained in Part 2, section 26, of ANSI A120.1–1970.

(ii) For electrical protective devices the requirements of paragraph (c)(22)(i) through (viii) of this section shall apply to type T powered platforms. Requirements for the "circuit potential limitation" shall be in accordance with the specifications contained in Part 2, section 26, of ANSI A120.1–1970.

(7) *Emergency communications.* All the requirements of paragraph (c)(23) of this section shall apply to type T powered platforms.

(8) *Safety belts and lifelines.* (i) Each employee on the working platform of type T powered platforms shall be provided with a safety belt with means for attachment to a lifeline on the roof or to the working platform. It is recommended that safety belts, lines and other components, including fastening means and anchorages to the working platform, building, or structure, be capable of withstanding a static load of 4,000 pounds without damage or permanent deformation of any part.

(ii) Fastening devices should be of the self-closing type, equipped with a locking device to prevent accidental opening of the fastening device.

(iii) Harness-type belts are recommended. If body-type belts are used, it is recommended that the portion of the belt bearing on the front of the wearer's body have a minimum width of 3 inches.

(iv) It is recommended that the line used to connect the belt to the platform, or to a lifeline attached to the building, have a maximum length of 5 feet.

(e) *Inspections and tests.*—(1) *Inspections and tests of new installations and alterations.* All powered platform installations shall, on their completion, and before being placed in service, be subjected to an acceptance test in the field to determine that all parts of the installation conform to applicable requirements of this standard, and that all safety and operating equipment functions as required. A similar inspection and test shall be made following a major alteration to an existing installation.

(2) *Periodic inspections and tests.* Each installation shall undergo a periodic inspection and test at least every 12 months. All parts of the equipment shall be inspected, and where necessary, tested to determine that they are in safe operating condition.

(3) *Maintenance inspections and tests.* Each installation shall undergo a maintenance inspection and test every 30 days, except where the cleaning cycle is less than 30 days such inspection and test shall be made prior to each cleaning cycle. The results of these inspections and tests shall be recorded in a log which is available for review by the Assistant Secretary of Labor or his designated representative. Each log entry shall include the date of the inspection or test and shall be signed by the person making the inspection or test.

(4) *Special inspection of governors and secondary brakes.* (i) Special inspections and tests of the governor and secondary braking system shall be made at intervals not exceeding 1 year.

(ii) The inspection and test shall include a verification that the initiating device for the secondary breaking operates at the proper overspeed.

(iii) If adequate tests cannot be performed in the field, the initiating device may be removed from the powered platform and sent to a shop equipped to make such a test.

(iv) The inspection shall include a verification of the proper functioning of the secondary brake. If an adequate test cannot be performed in the field, the hoisting machine may be removed from the building and sent to a shop equipped to make such a test.

(v) If any hoisting machine or initiating device for the secondary brake system is removed from the building for testing, all reinstalled and directly related components shall be reinspected prior to returning the powered platform installation to service.

(5) *Adverse weather.* The operation of powered platforms during severe adverse weather conditions is prohibited.

(6) *Maintenance.* (i) Required maintenance. All parts of equipment on which safe operation depends shall be maintained in proper working order so that they perform the function for which they are intended.

(ii) Broken or worn parts, worn switch contacts, brushes, and short flexible conductors of electrical devices, which may interfere with safe operation, shall be replaced promptly. Electrical receptacles and plugs shall be replaced promptly when worn or damaged. All electrical connections shall be kept tight.

(iii) Components of the electrical service system and traveling cables shall be replaced when damaged or substantially abraded.

(iv) Gears, shafts, bearings, brakes, and hoisting drums shall be maintained in proper alinement. Gears shall be replaced promptly when there is evidence of appreciable wear.

(7) *Cleaning.* (i) Controller contactors and relays shall be kept clean and free from dirt.

(ii) All other parts shall be kept clean, if their proper functioning would be affected by the presence of dirt or other contaminants.

(8) *Periodic reshackling of hoisting ropes.* The hoisting ropes shall be reshackled at the nondrum ends at intervals not exceeding 24 months. In reshackling the ropes, a sufficient length shall be cut from the end of the rope to remove damaged or fatigued portions.

(9) *Making safety devices inoperative.* No person shall at any time make any required safety device or electrical protective device inoperative, except when necessary during tests, inspections, and maintenance. Immediately upon completion of such test, inspections, and maintenance, the devices shall be restored to their normal operating condition.

(10) *Damaged rope.* Wire ropes shall be replaced whenever there are six or more broken wires in any one lay of the wire rope, or whenever the ropes are damaged or in a deteriorated condition.

(11) *Roof track system.* Roof track systems, tiedowns, or similar equipment, if provided, shall be maintained in proper working order so that they perform the function for which they are intended.

(12) *Building face guiding members.* T-rails, indented mullions, or equivalent guides located in the face of the building, if provided, shall be maintained in proper working order so that they perform the function for which they are intended.

Brackets for cable stabilizers, if provided, shall similarly be maintained in proper working order.

§ 1910.67 Vehicle-mounted elevating and rotating work platforms.

(a) *Definitions applicable to this section.*—(1) *Aerial device.* Any vehicle-mounted device, telescoping or articulating, or both, which is used to position personnel.

(2) *Aerial ladder.* An aerial device consisting of a single- or multiple-section extensible ladder.

(3) *Articulating boom platform.* An aerial device with two or more hinged boom sections.

(4) *Extensible boom platform.* An aerial device (except ladders) with a telescopic or extensible boom. Telescopic derricks with personnel platform attachments shall be considered to be extensible boom platforms when used with a personnel platform.

(5) *Insulated aerial device.* An aerial device designed for work on energized lines and apparatus.

(6) *Mobile unit.* A combination of an aerial device, its vehicle, and related equipment.

(7) *Platform.* Any personnel-carrying device (basket or bucket) which is a component of an aerial device.

(8) *Vehicle.* Any carrier that is not manually propelled.

(9) *Vertical tower.* An aerial device designed to elevate a platform in a substantially vertical axis.

(b) *General requirements.* (1) Unless otherwise provided in this section, aerial devices (aerial lifts) acquired on or after July 1, 1975, shall be designed and constructed in conformance with the applicable requirements of the American National Standard for "Vehicle Mounted Elevating and Rotating Work Platforms," ANSI A92.2–1969, including appendix. Aerial lifts acquired for use before July 1, 1975 which do not meet the requirements of ANSI A92.2–1969, may not be used after July 1, 1976, unless they shall have been modified so as to conform with the applicable design and construction requirements of ANSI A92.2–1969. Aerial devices include the following types of vehicle-mounted aerial devices used to elevate personnel to jobsites above ground: (i) Extensible boom platforms, (ii) aerial ladders, (iii) articulating boom platforms, (iv) vertical towers, and (v) a combination of any of the above. Aerial equipment may be made of metal, wood, fiberglass reinforced plastic (FRP), or other material; may be powered or manually operated; and are deemed to be aerial lifts whether or not they are capable of rotating about a substantially vertical axis.

(2) Aerial lifts may be "field modified" for uses other than those intended by the manufacturer, provided the modification has been certified in writing by the manufacturer or by any other equivalent entity, such as a nationally recognized testing laboratory, to be in conformity with all applicable provisions of ANSI A92.2–1969 and this section, and to be at least as safe as the equipment was before modification.

(3) The requirements of this section do not apply to firefighting equipment or to the vehicles upon which aerial devices are mounted, except with respect to the requirement that a vehicle be a stable support for the aerial device.

(4) When operating aerial lifts proximate to, under, over, by or near electric power lines, the requirements of this paragraph (b)(4) shall apply.

(i) The following clearances shall be maintained:

(A) For lines rated at 50kV or less, the minimum clearance between the lines and any part of the aerial lift shall be at least 10 feet;

(B) When the lines are rated in excess of 50 kV, the minimum clearance between the lines and any part of the aerial lift shall be at least 10 feet plus 0.4 inch for each kilovolt in excess of 50kV, or twice the length of the line insulator, but never less than 10 feet;

(C) the requirements set forth in paragraph (b)(4)(i) of this section do not apply (1) where the work is performed from an aerial device insulated for the work, and the work is performed by either telecommunications employees, line-clearance tree-trimming employees, or electric utility employees; or (2) where the electric power transmission or distribution lines have been de-energized and visibly grounded at the point of work, or where insulating barriers, not a part of or an attachment to the aerial

lift, have been erected to prevent physical contact with the lines.

(ii) Proximity warning devices may be used, but not in lieu of meeting the requirements contained in paragraph (b)(4)(i) of this section.

(iii) The owner of the lines or his authorized representative shall be notified and provided with all pertinent information before the commencement of operations near electrical lines.

(iv) Any overhead wire shall be considered to be an energized line until the owner of the line or his authorized representative states that it is deenergized.

(c) *Specific requirements*—(1) *Ladder trucks and tower trucks.* Before the truck is moved for highway travel, aerial ladders shall be secured in the lower traveling position by the locking device above the truck cab, and the manually operated device at the base of the ladder, or by other equally effective means (e.g., cradles which prevent rotation of the ladder in combination with positive acting linear actuators).

(2) *Extensible and articulating boom platforms.* (i) Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.

(ii) Only trained persons shall operate an aerial lift.

(iii) Belting off to an adjacent pole, structure, or equipment while working from an aerial lift shall not be permitted.

(iv) Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.

(v) A body belt shall be worn and a lanyard attached to the boom or basket when working from an aerial lift.

(vi) Boom and basket load limits specified by the manufacturer shall not be exceeded.

(vii) The brakes shall be set and outriggers, when used, shall be positioned on pads or a solid surface. Wheel chocks shall be installed before using an aerial lift on an incline.

(viii) An aerial lift truck may not be moved when the boom is elevated in a working position with men in the basket, except for equipment which is specifically designed for this type of operation in accordance with the provisions of paragraphs (b)(1) and (b)(2) of this section.

(ix) Articulating boom and extensible boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls. Upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the employee in the lift, except in case of emergency.

(x) Climbers shall not be worn while performing work from an aerial lift.

(xi) The insulated portion of an aerial lift shall not be altered in any manner that might reduce its insulating value.

(xii) Before moving an aerial lift for travel, the boom(s) shall be inspected to see that it is properly cradled and outriggers are in stowed position, except as provided in paragraph (c)(2)(viii) of this section.

(3) *Electrical tests.* Electrical tests shall be made in conformance with the requirements of ANSI A92.2–1969, Section 5. However, equivalent DC voltage tests may be used in lieu of the AC voltage test specified in A92.2–1969. DC voltage tests which are approved by the equipment manufacturer or equivalent entity shall be considered an equivalent test for the purpose of this paragraph (c)(3).

(4) *Bursting safety factor.* All critical hydraulic and pneumatic components shall comply with the provisions of the American National Standards Institute standard, ANSI A92.2–1969, Section 4.9 Bursting Safety Factor. Critical components are those in which a failure would result in a free fall or free rotation of the boom. All noncritical components shall have a bursting safety factor of at least two to one.

(5) *Welding standards.* All welding shall conform to the following Automotive Welding Society (AWS) Standards, as applicable:

(i) Standard Qualification Procedure. AWS B3.0–41.

(ii) Recommended Practices for Automotive Welding Design, AWS D8.4–61.

(iii) Standard Qualification of Welding Procedures and Welders for Piping and Tubing. AWS D10.9–69.

(iv) Specifications for Welding Highway and Railway Bridges, AWS D2.0–69.

[39 FR 23502, June 27, 1974, as amended at 40 FR 13439, Mar. 26, 1975]

§ 1910.68 Manlifts.

(a) *Definitions applicable to this section*—(1) *Handhold (Handgrip).* A handhold is a device attached to the belt which can be grasped by the passenger to provide a means of maintaining balance.

(2) *Open type.* One which has a handgrip surface fully exposed and capable of being encircled by the passenger's fingers.

(3) *Closed type.* A cup-shaped device, open at the top in the direction of travel of the step for which it is to be used, and closed at the bottom, into which the passenger may place his fingers.

(4) *Limit switch.* A device, the purpose of which is to cut off the power to the motor and apply the brake to stop the carrier in the event that a loaded step passes the terminal landing.

(5) *Manlift.* A device consisting of a power-driven endless belt moving in one direction only, and provided with steps or platforms and handholds attached to it for the transportation of personnel from floor to floor.

(6) *Rated speed.* Rated speed is the speed for which the device is designed and installed.

(7) *Split-rail switch.* An electric limit switch operated mechanically by the rollers on the manlift steps. It consists of an additional hinged or "split" rail, mounted on the regular guiderail, over which the step rollers pass. It is spring-loaded in the "split" position. If the step supports no load, the rollers will "bump" over the switch; if a loaded step should pass over the section, the split rail will be forced straight, tripping the switch and opening the electrical circuit.

(8) *Step (platform).* A step is a passenger carrying unit.

(9) *Travel.* The travel is the distance between the centers of the top and bottom pulleys.

(b) *General requirements*—(1) *Application.* This section applies to the construction, maintenance, inspection, and operation of manlifts in relation to accident hazards. Manlifts covered by this section consist of platforms or brackets and accompanying handholds mounted on, or attached to an endless belt, operating vertically in one direction only and being supported by, and driven through pulleys, at the top and bottom. These manlifts are intended for conveyance of persons only. It is not intended that this section cover moving stairways, elevators with enclosed platforms ("Paternoster" elevators), gravity lifts, nor conveyors used only for conveying material. This section applies to manlifts used to carry only personnel trained and authorized by the employer in their use.

(2) *Purpose.* The purpose of this section is to provide reasonable safety for life and limb.

(3) *Design requirements.* All new manlift installations and equipment installed after the effective date of these regulations shall meet the design requirements of the "American National Safety Standard for Manlifts ANSI A90.1–1969", and the requirements of this section.

(4) Reference to other codes and subparts. The following codes, and subparts of this part, are applicable to this section. Safety Code for Mechanical Power Transmission Apparatus ANSI B15.1–1953 (R 1958) and Subpart O; National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968) and Subpart S; Safety Code for Fixed Ladders, ANSI A14.3–1956 and Safety Requirements for Floor and Wall Openings, Railings and Toeboards, ANSI A12.1–1967 and Subpart D.

(5) *Floor openings*—(i) *Allowable size.* Floor openings for both the "up" and "down" runs shall be not less than 28 inches nor more than 36 inches in width for a 12-inch belt; not less than 34 inches nor more than 38 inches for a 14-inch belt; and not less than 36 inches nor more than 40 inches for a 16-inch belt and shall extend not less than 24 inches, nor more than 28 inches from the face of the belt.

(ii) *Uniformity.* All floor openings for a given manlift shall be uniform in size and shall be approximately circular, and each shall be located vertically above the opening below it.

(6) *Landing*—(i) *Vertical clearance.* The clearance between the floor or mounting platform and the lower edge

for the conical guard above it required by subparagraph (7) of this paragraph shall not be less than 7 feet 6 inches. Where this clearance cannot be obtained no access to the manlift shall be provided and the manlift runway shall be enclosed where it passes through such floor.

(ii) *Clear landing space.* The landing space adjacent to the floor openings shall be free from obstruction and kept clear at all times. This landing space shall be at least 2 feet in width from the edge of the floor opening used for mounting and dismounting.

(iii) *Lighting and landing.* Adequate lighting, not less than 5-foot candles, shall be provided at each floor landing at all times when the lift is in operation.

(iv) *Landing surface.* The landing surfaces at the entrances and exits to the manlift shall be constructed and maintained as to provide safe footing at all times.

(v) *Emergency landings.* Where there is a travel of 50 feet or more between floor landings, one or more emergency landings shall be provided so that there will be a landing (either floor or emergency) for every 25 feet or less of manlift travel.

(a) Emergency landings shall be accessible from both the "up" and "down" rungs of the manlift and shall give access to the ladder required in subparagraph (12) of this paragraph.

(b) Emergency landings shall be completely enclosed with a standard railing and toeboard.

(c) Platforms constructed to give access to bucket elevators or other equipment for the purpose of inspection, lubrication, and repair may also serve as emergency landings under this rule. All such platforms will then be considered part of the emergency landing and shall be provided with standard railings and toeboards.

(7) *Guards on underside of floor openings*—(i) *Fixed type.* On the ascending side of the manlift floor openings shall be provided with a bevel guard or cone meeting the following requirements:

(a) The cone shall make an angle of not less than 45° with the horizontal. An angle of 60° or greater shall be used where ceiling heights permit.

(b) The lower edge of this guard shall extend at least 42 inches outward from any handhold on the belt. It shall not extend beyond the upper surface of the floor above.

(c) The cone shall be made of not less than No. 18 U.S. gauge sheet steel or material of equivalent strength or stiffness. The lower edge shall be rolled to a minimum diameter of one-half inch and the interior shall be smooth with no rivets, bolts or screws protruding.

(ii) *Floating type.* In lieu of the fixed guards specified in subdivision (i) of this subparagraph a floating type safety cone may be used, such floating cones to be mounted on hinges at least 6 inches below the underside of the floor and so constructed as to actuate a limit switch should a force of 2 pounds be applied on the edge of the cone closest to the hinge. The depth of this floating cone need not exceed 12 inches.

(8) *Protection of entrances and exits*—(i) *Guardrail requirement.* The entrances and exits at all floor landings affording access to the manlift shall be guarded by a maze (staggered railing) or a handrail equipped with self-closing gates.

(ii) *Construction.* The rails shall be standard guardrails with toeboards meeting the provisions of the Safety Requirements for Floor and Wall Openings, Railings and Toeboards, ANSI A12.1–1967 and section 1910.23.

(iii) *Gates.* Gates, if used, shall open outward and shall be self-closing. Corners of gates shall be rounded.

(iv) *Maze.* Maze or staggered openings shall offer no direct passage between enclosure and outer floor space.

(v) Except where building layout prevents, entrances at all landings shall be in the same relative position.

(vi) If located in buildings to which the public has access, such manlift or manlifts shall be located in an enclosure protected by self-closing spring-locked doors. Keys to such doors shall be limited to authorized personnel.

(9) *Guards for openings*—(i) *Construction.* The floor opening at each landing shall be guarded on sides not used for entrance or exit by a wall, a railing and toeboard or by panels of wire mesh of suitable strength.

(ii) *Height and location.* Such rails or guards shall be at least 42 inches in height on the up-running side and 66 inches on the down-running side.

(10) *Bottom arrangement*—(i) *Bottom landing.* At the bottom landing the clear area shall be not smaller than the area enclosed by the guardrails on the floors above, and any wall in front of the down-running side of the belt shall be not less than 48 inches from the face of the belt. This space shall not be encroached upon by stairs or ladders.

(ii) *Location of lower pulley.* The lower (boot) pulley shall be installed so that it is supported by the lowest landing served. The sides of the pulley support shall be guarded to prevent contact with the pulley or the steps.

(iii) *Mounting platform.* A mounting platform shall be provided in front of or to one side of the uprun at the lowest landing, unless the floor level is such that the following requirement can be met: The floor or platform shall be at or above the point at which the upper surface of the ascending step completes its turn and assumes a horizontal position.

(iv) *Guardrails.* To guard against persons walking under a descending step, the area on the downside of the manlift shall be guarded in accordance with subparagraph (8) of this paragraph. To guard against a person getting between the mounting platform and an ascending step, the area between the belt and the platform shall be protected by a guardrail.

(11) *Top arrangements*—(i) *Clearance from floor.* A top clearance shall be provided of at least 11 feet above the top terminal landing. This clearance shall be maintained from a plane through each face of the belt to a vertical cylindrical plane having a diameter 2 feet greater than the diameter of the floor opening, extending upward from the top floor to the ceiling on the up-running side of the belt. No encroachment of structural or machine supporting members within this space will be permitted.

(ii) *Pulley clearance.* (a) There shall be a clearance of at least 5 feet between the center of the head pulley shaft and any ceiling obstruction.

(b) The center of the head pulley shaft shall be not less than 6 feet above the top terminal landing.

(iii) *Emergency grab rail.* An emergency grab bar or rail and platform shall be provided at the head pulley when the distance to the head pulley is over 6 feet above the top landing, otherwise only a grab bar or rail is to be provided to permit the rider to swing free should the emergency stops become inoperative.

(12) *Emergency exit ladder.* A fixed metal ladder accessible from both the "up" and "down" run of the manlift shall be provided for the entire travel of the manlift. Such ladder shall be in accordance with the existing ANSI A14.3–1956, Safety Code for Fixed Ladders and section 1910.27.

(13) *Superstructure bracing.* Manlift rails shall be secured in such a manner as to avoid spreading, vibration, and misalinement.

(14) *Illumination*—(i) *General.* Both runs of the manlift shall be illuminated at all times when the lift is in operation. An intensity of not less than 1-foot candle shall be maintained at all points. (However, see subparagraph (6)(iii) of this paragraph for illumination requirements at landings.)

(ii) *Control of illumination.* Lighting of manlift runways shall be by means of circuits permanently tied in to the building circuits (no switches), or shall be controlled by switches at each landing. Where separate switches are provided at each landing, any switch shall turn on all lights necessary to illuminate the entire runway.

(15) *Weather protection.* The entire manlift and its driving mechanism shall be protected from the weather at all times.

(c) *Mechanical requirements*—(1) *Machines, general*—(i) *Brakes.*—Brakes provided for stopping and holding a manlift shall be inherently self-engaging, by requiring power or force from an external source to cause disengagement. The brake shall be electrically released, and shall be applied to the motor shaft for direct-connected units or to the input shaft for belt-driven units. The brake shall be capable of stopping and holding the manlift when the descending side is loaded with 250 lb on each step.

(ii) *Belt.* (a) The belts shall be of hard-woven canvas, rubber-coated canvas, leather, or other material meeting the strength requirements of paragraph (b)(3) of this section and having a coefficient of friction such that when used

in conjunction with an adequate tension device it will meet the brake test specified in subdivision (i) of this subparagraph.

(b) The width of the belt shall be not less than 12 inches for a travel not exceeding 100 feet, not less than 14 inches for a travel greater than 100 feet but not exceeding 150 feet and 16 inches for a travel exceeding 150 feet.

(c) A belt that has become torn while in use on a manlift shall not be spliced and put back in service.

(2) *Speed.*—(i) *Maximum speed.* No manlift designed for a speed in excess of 80 feet per minute shall be installed.

(3) *Platforms or steps.*—(i) *Minimum depth.* Steps or platforms shall be not less than 12 inches nor more than 14 inches deep, measured from the belt to the edge of the step or platform.

(ii) *Width.* The width of the step or platform shall be not less than the width of the belt to which it is attached.

(iii) *Distance between steps.* The distance between steps shall be equally spaced and not less than 16 feet measured from the upper surface of one step to the upper surface of the next step above it.

(iv) *Angle of step.* The surface of the step shall make approximately a right angle with the "up" and "down" run of the belt, and shall travel in the approximate horizontal position with the "up" and "down" run of the belt.

(v) *Surfaces.* The upper or working surfaces of the step shall be of a material having inherent nonslip characteristics (coefficient of friction not less than 0.5) or shall be covered completely by a nonslip tread securely fastened to it.

(vi) *Strength of step supports.* When subjected to a load of 400 pounds applied at the approximate center of the step, step frames, or supports and their guides shall be of adequate strength to:

(a) Prevent the disengagement of any step roller.

(b) Prevent any appreciable misalinement.

(c) Prevent any visible deformation of the steps or its support.

(vii) *Prohibition of steps without handholds.* No steps shall be provided unless there is a corresponding handhold above or below it meeting the requirements of subparagraph (4) of this paragraph. If a step is removed for repairs or permanently, the handholds immediately above and below it shall be removed before the lift is again placed in service.

(4) *Handholds.*—(i) *Location.* Handholds attached to the belt shall be provided and installed so that they are not less than 4 feet nor more than 4 feet 8 inches above the step tread. These shall be so located as to be available on the both "up" and "down" run of the belt.

(ii) *Size.* The grab surface of the handhold shall be not less than 4½ inches in width, not less than 3 inches in depth, and shall provide 2 inches of clearance from the belt. Fastenings for handholds shall be located not less than 1 inch from the edge of the belt.

(iii) *Strength.* The handhold shall be capable of withstanding, without damage, a load of 300 pounds applied parallel to the run of the belt.

(iv) *Prohibition of handhold without steps.* No handhold shall be provided without a corresponding step. If a handhold is removed permanently or temporarily, the corresponding step and handhold for the opposite direction of travel shall also be removed before the lift is again placed in service.

(v) *Type.* All handholds shall be of the closed type.

(5) *Up limit stops.*—(i) *Requirements.* Two separate automatic stop devices shall be provided to cut off the power and apply the brake when a loaded step passes the upper terminal landing. One of these shall consist of a split-rail switch mechanically operated by the step roller and located not more than 6 inches above the top terminal landing. The second automatic stop device may consist of any of the following:

(a) Any split-rail switch placed 6 inches above and on the side opposite the first limit switch.

(b) An electronic device.

(c) A switch actuated by a lever, rod, or plate, the latter to be placed on the "up" side of the head pulley so as to just clear a passing step.

(ii) *Manual reset location.* After the manlift has been stopped by a stop device it shall be necessary to reset the automatic stop manually. The device shall be so located that a person resetting it shall have a clear view of both the "up" and "down" runs of the manlift. It shall not be possible to reset the device from any step or platform.

(iii) *Cut-off point.* The initial limit stop device shall function so that the manlift will be stopped before the loaded step has reached a point 24 inches above the top terminal landing.

(iv) *Electrical requirements.* (a) Where such switches open the main motor circuit directly they shall be of the multipole type.

(b) Where electronic devices are used they shall be so designed and installed that failure will result in shutting off the power to the driving motor.

(c) Where flammable vapors or dusts may be present all electrical installations shall be in accordance with the National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968), requirements for such locations.

(d) Unless of the oil-immersed type controller contacts carrying the main motor current shall be copper to carbon or equal, except where the circuit is broken at two or more points simultaneously.

(6) *Emergency stop.*—(i) *General.* An emergency stop means shall be provided.

(ii) *Location.* This stop means shall be within easy reach of the ascending and descending runs of the belt.

(iii) *Operation.* This stop means shall be so connected with the control lever or operating mechanism that it will cut off the power and apply the brake when pulled in the direction of travel.

(iv) *Rope.* If rope is used, it shall be not less than three-eighths inch in diameter. Wire rope, unless manila-covered, shall not be used.

(7) *Instruction and warning signs.*—(i) *Instruction signs at landings or belts.* Signs of conspicuous and easily read style giving instructions for the use of the manlift shall be posted at each landing or stenciled on the belt.

(a) Such signs shall be of letters not less than 1 inch in height and of a color having high contrast with the surface on which it is stenciled or painted (white or yellow on black or black on white or gray).

(b) The instructions shall read approximately as follows:

Face the Belt.
Use the Handholds.
To Stop—Pull Rope.

(ii) *Top floor warning sign and light.* (a) At the top floor an illuminated sign shall be displayed bearing the following wording:

"TOP FLOOR—GET OFF"

Signs shall be in block letters not less than 2 inches in height. This sign shall be located within easy view of an ascending passenger and not more than 2 feet above the top terminal landing.

(b) In addition to the sign required by subdivision (a) of this subdivision, a red warning light of not less than 40-watt rating shall be provided immediately below the upper landing terminal and so located as to shine in the passenger's face.

(iii) *Visitor warning.* A conspicuous sign having the following legend—AUTHORIZED PERSONNEL ONLY—shall be displayed at each landing. The sign shall be of block letters not less than 2 inches in height and shall be of a color offering high contrast with the background color.

(d) *Operating rules.*—(1) *Proper use of manlifts.* No freight, packaged goods, pipe, lumber, or construction materials of any kind shall be handled on any manlift.

(e) *Periodic inspection.*—(1) *Frequency.* All manlifts shall be inspected by a competent designated person at intervals of not more than 30 days. Limit switches shall be checked weekly. Manlifts found to be unsafe shall not be operated until properly repaired.

(2) *Items covered.* This periodic inspection shall cover but is not limited to the following items:

Steps.
Step Fastenings.
Rails.
Rail Supports and Fastenings.
Rollers and Slides.
Belt and Belt Tension.
Handholds and Fastenings.
Floor Landings.
Guardrails.
Lubrication.
Limit Switches.
Warning Signs and Lights.
Illumination.
Drive Pulley.
Bottom (boot) Pulley and Clearance.
Pulley Supports.
Motor.
Driving Mechanism.
Brake.
Electrical Switches.
Vibration and Misalignment.
"Skip" on up or down run when mounting step (indicating worn gears).

(3) *Inspection log.* A written record shall be kept of findings at each inspection. Records of inspection shall be made available to the Assistant Secretary of Labor or his duly authorized representative.

(Source: ANSI A90.1–1969 Safety Code for Manlifts.)

§ 1910.69 Sources of standards.

Sec.	Source
1910.66	ANSI A120.1–1970 Safety Code for Powered Platforms for Exterior Building Maintenance.
1910.67	ANSI A92.2–1969, American National Standard for Vehicle-Mounted Elevating and Rotating Work Platforms.
1910.68	ANSI A90.1–1969 Safety Code for Manlifts.

§ 1910.70 Standards organizations.

Specific standards of the following organizations have been referenced in this subpart. Copies of the standards may be obtained from the issuing organization.

American National Standards Institute
1430 Broadway
New York, New York 10018

American Welding Society
2501 NW. 7th Street
Miami, Florida 33125

[39 FR 23502, June 27, 1974, as amended at 40 FR 13440, March 26, 1975]

Subpart G—Occupational Health and Environmental Control

§ 1910.94 Ventilation.

(a) *Abrasive blasting.*—(1) *Definitions applicable to this paragraph.*—(i) *Abrasive.* A solid substance used in an abrasive blasting operation.

(ii) *Abrasive-blasting respirator.* A continuous flow air-line respirator constructed so that it will cover the wearer's head, neck, and shoulders to protect him from rebounding abrasive.

(iii) *Blast cleaning barrel.* A complete enclosure which rotates on an axis, or which has an internal moving tread to tumble the parts, in order to expose various surfaces of the parts to the action of an automatic blast spray.

(iv) *Blast cleaning room.* A complete enclosure in which blasting operations are performed and where the operator works inside of the room to operate the blasting nozzle and direct the flow of the abrasive material.

(v) *Blasting cabinet.* An enclosure where the operator stands outside and operates the blasting nozzle through an opening or openings in the enclosure.

(vi) *Clean air.* Air of such purity that it will not cause harm or discomfort to an individual if it is inhaled for extended periods of time.

(vii) *Dust collector.* A device or combination of devices for separating dust from the air handled by an exhaust ventilation system.

(viii) *Exhaust ventilation system.* A system for removing contaminated air from a space, comprising two or more of the following elements (a) enclosure or hood, (b) duct work, (c) dust collecting equipment, (d) exhauster, and (e) discharge stack.

(ix) *Particulate-filter respirator.* An air purifying respirator, commonly referred to as a dust or a fume respirator, which removes most of the dust or fume from the air passing through the device.

(x) *Respirable dust.* Airborne dust in sizes capable of passing through the upper respiratory system to reach the lower lung passages.

(xi) *Rotary blast cleaning table.* An enclosure where the pieces to be cleaned are positioned on a rotating table and are passed automatically through a series of blast sprays.

(xii) *Abrasive blasting.* The forcible application of an abrasive to a surface by pneumatic pressure, hydraulic pressure, or centrifugal force.

(2) *Dust hazards from abrasive blasting.* (i) Abrasives and the surface coatings on the materials blasted are shattered and pulverized during blasting operations and the dust formed will contain particles of respirable size. The composition and toxicity of the dust from these sources shall be considered in making an evaluation of the potential health hazards.

(ii) The concentration of respirable dust or fume in the breathing zone of the abrasive-blasting operator or any other worker shall be kept below the levels specified in § 1910.1000.

(iii) Organic abrasives which are combustible shall be used only in automatic systems. Where flammable or explosive dust mixtures may be present, the construction of the equipment, including the exhaust system and all electric wiring, shall conform to the requirements of American National Standard Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying, Z33.1–1961 (NFPA 91–1961), and the National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968). The blast nozzle shall be bonded and grounded to prevent the build up of static charges. Where flammable or explosive dust mixtures may be present, the abrasive blasting enclosure, the ducts, and the dust collector shall be constructed with loose panels or explosion venting areas, located on sides away from any occupied area, to provide for pressure relief in case of explosion, following the principles set forth in the National Fire Protection Association Explosion Venting Guide, NFPA 68–1954.

(3) *Blast-cleaning enclosures.* (i) Blast-cleaning enclosures shall be exhaust ventilated in such a way that a continuous inward flow of air will be maintained at all openings in the enclosure during the blasting operation.

(a) All air inlets and access openings shall be baffled or so arranged that by the combination of inward air flow and baffling the escape of abrasive or dust particules into an adjacent work area will be minimized and visible spurts of dust will not be observed.

(b) The rate of exhaust shall be sufficient to provide prompt clearance of the dust-laden air within the enclosure after the cessation of blasting.

(c) Before the enclosure is opened, the blast shall be turned off and the exhaust system shall be run for a sufficient period of time to remove the dusty air within the enclosure.

(d) Safety glass protected by screening shall be used in observation windows, where hard deep-cutting abrasives are used.

(e) Slit abrasive-resistant baffles shall be installed in multiple sets at all small access openings where dust might escape, and shall be inspected regularly and replaced when needed.

(f) Doors shall be flanged and tight when closed.

(g) Doors on blast-cleaning rooms shall be operable from both inside and outside, except that where there is a small operator access door, the large work access door may be closed or opened from the outside only.

(4) *Exhaust ventilation systems.* (i) The construction, installation, inspection, and maintenance of exhaust systems shall conform to the principles and requirements set forth in American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2–1960, and ANSI Z33.1–1961.

(a) When dust leaks are noted, repairs shall be made as soon as possible.

(b) The static pressure drop at the exhaust ducts leading from the equipment shall be checked when the installation is completed and periodically thereafter to assure continued satisfactory operation. Whenever an appreciable change in the pressure drop indicates a partial blockage, the system shall be cleaned and returned to normal operating condition.

(ii) In installations where the abrasive is recirculated, the exhaust ventilation system for the blasting enclosure shall not be relied upon for the removal of fines from the spent abrasive instead of an abrasive separator. An abrasive separator shall be provided for the purpose.

(iii) The air exhausted from blast-cleaning equipment shall be discharged through dust collecting equipment. Dust collectors shall be set up so that the accumulated dust can be emptied and removed without contaminating other working areas.

(5) *Personal protective equipment.* (i) Only respiratory protective equipment approved by the Bureau of Mines, U.S. Department of the Interior (see 30 CFR Part 11) shall be used for protection of personnel against dusts produced during abrasive-blasting operations.

(ii) Abrasive-blasting respirators shall be worn by all abrasive-blasting operators:

(a) When working inside of blast-cleaning rooms, or

(b) When using silica sand in manual blasting operations where the nozzle and blast are not physically separated from

the operator in an exhaust ventilated enclosure, or

(c) Where concentrations of toxic dust dispersed by the abrasive blasting may exceed the limits set in § 1910.1000 and the nozzle and blast are not physically separated from the operator in an exhaust-ventilated enclosure.

(iii) Particulate filter respirators, commonly referred to as dust-filter respirators, properly fitted, may be used for short, intermittent, or occasional dust exposures such as cleanup, dumping of dust collectors, or unloading shipments of sand at a receiving point, when it is not feasible to control the dust by enclosure, exhaust ventilation, or other means. Respirators used shall be approved (see 30 CFR Part 11) for protection against the specific type of dust encountered.

(a) Dust-filter respirators may be used to protect the operator of outside abrasive-blasting operations where nonsilica abrasives are used on materials having low toxicities.

(b) Dust-filter respirators shall not be used for continuous protection where silica sand is used as the blasting abrasive, or toxic materials are blasted.

(iv) A respiratory protection program as defined and described in § 1910.134 (a) and (b), shall be established wherever it is necessary to use respiratory protective equipment.

(v) Operators shall be equipped with heavy canvas or leather gloves and aprons or equivalent protection to protect them from the impact of abrasives. Safety shoes shall be worn to protect against foot injury where heavy pieces of work are handled.

(a) Safety shoes shall conform to the requirements of American National Standard for Men's Safety-Toe Footwear, Z41.1–1967.

(b) Equipment for protection of the eyes and face shall be supplied to the operator when the respirator design does not provide such protection and to any other personnel working in the vicinity of abrasive blasting operations. This equipment shall conform to the requirements of § 1910.133.

(6) *Air supply and air compressors.* The air for abrasive-blasting respirators shall be free of harmful quantities of dusts, mists, or noxious gases, and shall meet the requirements for air purity set forth in ANSI Z9.2–1960. The air from the regular compressed air line of the plant may be used for the abrasive-blasting respirator if (i) a trap and carbon filter are installed and regularly maintained, to remove oil, water, scale, and odor, (ii) a pressure reducing diaphragm or valve is installed to reduce the pressure down to requirements of the particular type of abrasive-blasting respirator, and (iii) an automatic control is provided to either sound an alarm or shut down the compressor in case of overheating.

(7) *Operational procedures and general safety.* Dust shall not be permitted to accumulate on the floor or on ledges outside of an abrasive-blasting enclosure, and dust spills shall be cleaned up promptly. Aisles and walkways shall be kept clear of steel shot or similar abrasive which may create a slipping hazard.

(8) *Scope.* This paragraph (a) applies to all operations where an abrasive is forcibly applied to a surface by pneumatic or hydraulic pressure, or by centrifugal force. It does not apply to steam blasting, or steam cleaning, or hydraulic cleaning methods where work is done without the aid of abrasives.

(b) *Grinding, polishing, and buffing operations*—(1) *Definitions applicable to this paragraph*—(i) *Abrasive cutting-off wheels.* Organic-bonded wheels, the thickness of which is not more than one forty-eighth of their diameter for those up to, and including, 20 inches in diameter, and not more than one-sixtieth of their diameter for those larger than 20 inches in diameter, used for a multitude of operations variously known as cutting, cutting off, grooving, slotting, coping, and jointing, and the like. The wheels may be "solid" consisting of organic-bonded abrasive material throughout, "steel centered" consisting of a steel disc with a rim of organic-bonded material moulded around the periphery, or of the "inserted tooth" type consisting of a steel disc with organic-bonded abrasive teeth or inserts mechanically secured around the periphery.

(ii) *Belts.* All power-driven, flexible, coated bands used for grinding, polishing, or buffing purposes.

(iii) *Branch pipe.* The part of an exhaust system piping that is connected directly to the hood or enclosure.

(iv) *Cradle.* A movable fixture, upon which the part to be ground or polished is placed.

(v) *Disc wheels.* All power-driven rotatable discs faced with abrasive materials, artificial or natural, and used for grinding or polishing on the side of the assembled disc.

(vi) *Entry loss.* The loss in static pressure caused by air flowing into a duct or hood. It is usually expressed in inches of water gauge.

(vii) *Exhaust system.* A system consisting of branch pipes connected to hoods or enclosures, one or more header pipes, an exhaust fan, means for separating solid contaminants from the air flowing in the system, and a discharge stack to outside.

(viii) *Grinding wheels.* All power-driven rotatable grinding or abrasive wheels, except disc wheels as defined in this standard, consisting of abrasive particles held together by artificial or natural bonds and used for peripheral grinding.

(ix) *Header pipe (main pipe).* A pipe into which one or more branch pipes enter and which connects such branch pipes to the remainder of the exhaust system.

(x) *Hoods and enclosures.* The partial or complete enclosure around the wheel or disc through which air enters an exhaust system during operation.

(xi) *Horizontal double-spindle disc grinder.* A grinding machine carrying two power-driven, rotatable, coaxial, horizontal spindles upon the inside ends of which are mounted abrasive disc wheels used for grinding two surfaces simultaneously.

(xii) *Horizontal single-spindle disc grinder.* A grinding machine carrying an abrasive disc wheel upon one or both ends of a power-driven, rotatable single horizontal spindle.

(xiii) *Polishing and buffing wheels.* All power-driven rotatable wheels composed all or in part of textile fabrics, wood, felt, leather, paper, and may be coated with abrasives on the periphery of the wheel for purposes of polishing, buffing, and light grinding.

(xiv) *Portable grinder.* Any power-driven rotatable grinding, polishing, or buffing wheel mounted in such manner that it may be manually manipulated.

(xv) *Scratch brush wheels.* All power-driven rotatable wheels made from wire or bristles, and used for scratch cleaning and brushing purposes.

(xvi) *Swing-frame grinder.* Any power-driven rotatable grinding, polishing, or buffing wheel mounted in such a manner that the wheel with its supporting framework can be manipulated over stationary objects.

(xvii) *Velocity pressure (vp).* The kinetic pressure in the direction of flow necessary to cause a fluid at rest to flow at a given velocity. It is usually expressed in inches of water gage.

(xviii) *Vertical spindle disc grinder.* A grinding machine having a vertical, rotatable power-driven spindle carrying a horizontal abrasive disc wheel.

(2) *Application.* Wherever dry grinding, dry polishing or buffing is performed, and employee exposure, without regard to the use of respirators, exceeds the permissible exposure limits prescribed in § 1910.1000 or other sections of this part, a local exhaust ventilation system shall be provided and used to maintain employee exposures within the prescribed limits.

(3) *Hood and branch pipe requirements.* (i) Hoods connected to exhaust systems shall be used, and such hoods shall be designed, located, and placed so that the dust or dirt particles shall fall or be projected into the hoods in the direction of the air flow. No wheels, discs, straps, or belts shall be operated in such manner and in such direction as to cause the dust and dirt particles to be thrown into the operator's breathing zone.

(ii) Grinding wheels on floor stands, pedestals, benches, and special-purpose grinding machines and abrasive cutting-off wheels shall have not less than the minimum exhaust volumes shown in Table G–4 with a recommended minimum duct velocity of 4,500 feet per minute in the branch and 3,500 feet per minute in the main. The entry losses from all hoods except the vertical-spindle disc grinder hood, shall equal 0.65 velocity pressure for a straight takeoff and 0.45 velocity pressure for a tapered takeoff. The entry loss for the vertical-

spindle disc grinder hood is shown in figure G–1 (following § 1910.94(b)).

For any wheel wider than wheel diameters shown in Table G–4, increase the

TABLE G–4—GRINDING AND ABRASIVE CUTTING-OFF WHEELS

Wheel diameter (inches)	Wheel width (inches)	Minimum exhaust volume (feet³/min.)
To 9	1½	220
Over 9 to 16	2	300
Over 16 to 19	3	500
Over 19 to 24	4	610
Over 24 to 30	5	880
Over 30 to 36	6	1,200

exhaust volume by the ratio of the new width to the width shown.

Example:

If wheel width = 4½ inches, then

$$\frac{4.5}{4} \times 610 = 686 \text{ (rounded to 690)}.$$

(iii) Scratch-brush wheels and all buffing and polishing wheels mounted on floor stands, pedestals, benches, or special-purpose machines shall have not less than the minimum exhaust volume shown in Table G–5.

TABLE G–5—BUFFING AND POLISHING WHEELS

Wheel diameter (inches)	Wheel width (inches)	Minimum exhaust volume (feet³/min.)
To 9	2	300
Over 9 to 16	3	500
Over 16 to 19	4	610
Over 19 to 24	5	740
Over 24 to 30	6	1,000
Over 30 to 36	6	1,200

(iv) Grinding wheels or discs for horizontal single-spindle disc grinders shall be hooded to collect the dust or dirt generated by the grinding operation and the hoods shall be connected to branch pipes having exhaust volumes as shown in Table G–6.

TABLE G–6—HORIZONTAL SINGLE-SPINDLE DISC GRINDER

Disc diameter (inches):	Exhaust volume (ft.³/min.)
Up to 12	220
Over 12 to 19	390
Over 19 to 30	610
Over 30 to 36	880

(v) Grinding wheels or discs for horizontal double-spindle disc grinders shall have a hood enclosing the grinding chamber and the hood shall be connected to one or more branch pipes having exhaust volumes as shown in Table G–7

TABLE G–7—HORIZONTAL DOUBLE-SPINDLE DISC GRINDER

Disc diameter (inches):	Exhaust volume (ft.³/min.)
Up to 19	610
Over 19 to 25	880
Over 25 to 30	1,200
Over 30 to 53	1,770
Over 53 to 72	6,280

(vi) Grinding wheels or discs for vertical single-spindle disc grinders shall be encircled with hoods to remove the dust generated in the operation. The hoods shall be connected to one or more branch pipes having exhaust volumes as shown in Table G–8.

TABLE G–8—VERTICAL SPINDLE DISC GRINDER

Disc diameter (inches)	One-half or more of disc covered		Disc not covered	
	Number[1]	Exhaust feet³/min.	Number[1]	Exhaust feet³/min.
Up to 20	1	300	2	780
Over 20 to 30	2	760	2	1,480
Over 30 to 53	2	1,770	4	3,530
Over 53 to 72	2	3,140	8	6,010

[1] Number of exhaust outlets around periphery of hood, or equal distribution provided by other means.

(vii) Grinding and polishing belts shall be provided with hoods to remove dust and dirt generated in the operations and the hoods shall be connected to branch pipes having exhaust volumes as shown in Table G–9.

TABLE G–9—GRINDING AND POLISHING BELTS

Belts width (inches):	Exhaust volume (ft.³/min.)
Up to 3	220
Over 3 to 5	300
Over 5 to 7	390
Over 7 to 9	500
Over 9 to 11	610
Over 11 to 13	740

(viii) Cradles and swing-frame grinders. Where cradles are used for handling the parts to be ground, polished, or buffed, requiring large partial enclosures to house the complete operation, a minimum average air velocity of 150 feet per minute shall be maintained over the entire opening of the enclosure. Swing-frame grinders shall also be exhausted in the same manner as provided for cradles. (See fig. G–3)

(ix) Where the work is outside the hood, air volumes must be increased as shown in American Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2–1960 (section 4, exhaust hoods).

(4) *Exhaust systems.* (i) Exhaust systems for grinding, polishing, and buffing operations should be designed in accordance with American Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2–1960.

(ii) Exhaust systems for grinding, polishing, and buffing operations shall be tested in the manner described in American Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2–1960.

(iii) All exhaust systems shall be provided with suitable dust collectors.

(5) *Hood and enclosure design.* (i) (a) It is the dual function of grinding and abrasive cutting-off wheel hoods to protect the operator from the hazards of bursting wheels as well as to provide a means for the removal of dust and dirt generated. All hoods shall be not less in structural strength than specified in the American National Standard Safety Code for the Use, Care, and Protection of Abrasive Wheels, B7.1–1970.

(b) Due to the variety of work and types of grinding machines employed, it is necessary to develop hoods adaptable to the particular machine in question, and such hoods shall be located as close as possible to the operation.

(ii) Exhaust hoods for floor stands, pedestals, and bench grinders shall be designed in accordance with figure G–2. The adjustable tongue shown in the figure shall be kept in working order and shall be adjusted within one-fourth inch of the wheel periphery at all times.

(iii) Swing-frame grinders shall be provided with exhaust booths as indicated in figure G–3.

(iv) Portable grinding operations, whenever the nature of the work permits, shall be conducted within a partial enclosure. The opening in the enclosure shall be no larger than is actually required in the operation and an average face air velocity of not less than 200 feet per minute shall be maintained.

(v) Hoods for polishing and buffing and scratch-brush wheels shall be constructed to conform as closely to figure G–4 as the nature of the work will permit.

(vi) Cradle grinding and polishing operations shall be performed within a partial enclosure similar to figure G–5. The operator shall be positioned outside the working face of the opening of the enclosure. The face opening of the enclosure should not be any greater in area than that actually required for the performance of the operation and the average air velocity into the working face of the enclosure shall not be less than 150 feet per minute.

(vii) Hoods for horizontal single-spindle disc grinders shall be constructed to conform as closely as possible to the hood shown in figure G–6. It is essential that there be a space between the back of the wheel and the hood, and a space around the periphery of the wheel of at least 1 inch in order to permit the suction to act around the wheel periphery. The opening on the side of the disc shall be no larger than is required for the grinding operation, but must never be less than twice the area of the branch outlet.

(viii) Horizontal double-spindle disc grinders shall have a hood encircling the wheels and grinding chamber similar to that illustrated in figure G–7. The openings for passing the work into the grinding chamber should be kept as small as possible, but must never be less than twice the area of the branch outlets.

(ix) Vertical-spindle disc grinders shall be encircled with a hood so constructed that the heavy dust is drawn off a surface of the disc and the lighter dust exhausted through a continuous slot at the top of the hood as shown in figure G–1.

(x) Grinding and polishing belt hoods shall be constructed as close to the operation as possible. The hood should extend almost to the belt, and 1-inch wide openings should be provided on either side. Figure G–8 shows a typical hood for a belt operation.

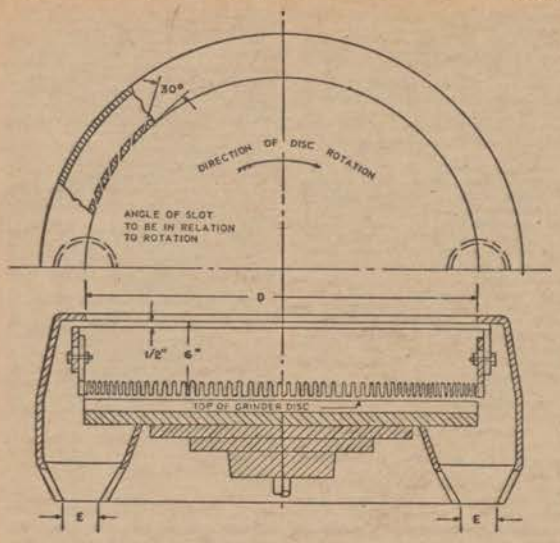


Fig. G-1
Vertical Spindle Disc Grinder Exhaust Hood and Branch Pipe Connections

Dia D, Inches		Exhaust E		Volume Exhausted at 4,500 ft/min ft³/min	Note
Min	Max	No. Pipes	Dia		
	20	1	4½	500	When one-half or more of the disc can be hooded, use exhaust ducts as shown at the left.
Over 20	30	2	4	780	
Over 30	72	2	6	1,270	
Over 41	72	2	8	2,140	
	20	2	4	780	When no hood can be used over disc, use exhaust ducts as shown at left.
Over 20	30	2	5½	1,480	
Over 30	53	4	6	2,530	
Over 53	72	5	7	3,810	

Entry loss = 1.0 slot velocity pressure + 0.5 branch velocity pressure
Minimum slot velocity = 2,000 ft/min – ½-inch slot width

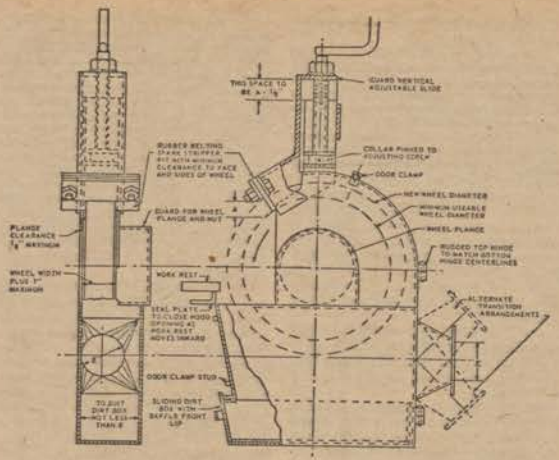


Fig. G-2
Standard Grinder Hood

Wheel Dimension			Exhaust Outlet, Inches	Volume of Air at 4,500 ft/min
Diameter, Inches		Width, Inches		
Min = d	Max = D	Max	E	
	9	1½	3	220
Over 9	16	3	4	390
Over 16	19	4	4½	500
Over 19	24	4	5	610
Over 24	30	5	6	880
Over 30	36	6	7	1,270

Entry loss = 0.45 velocity pressure for tapered takeoff
0.65 velocity pressure for straight takeoff

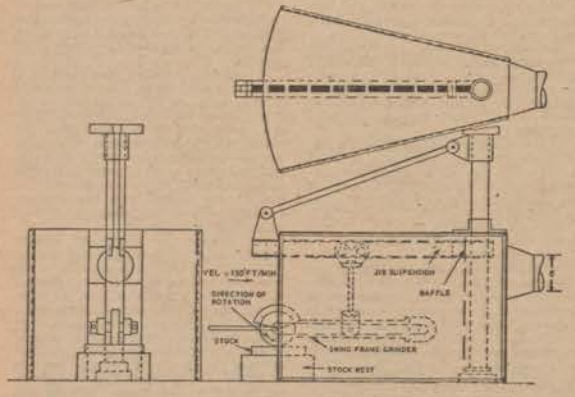


Fig. G-3
A Method of Applying an Exhaust Enclosure to Swing-Frame Grinders
NOTE: Baffle to reduce front opening as much as possible

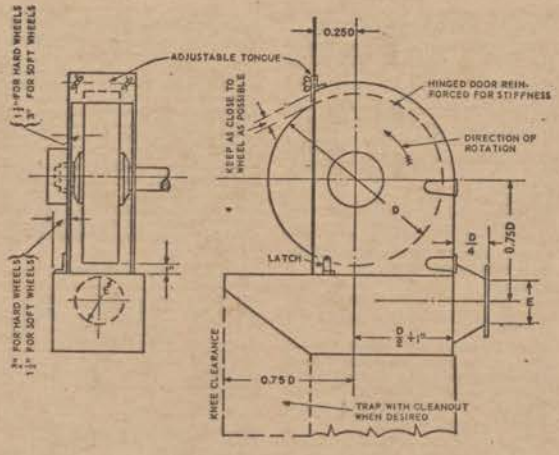


Fig. G-4
Standard Buffing and Polishing Hood

Wheel Dimension, Inches			Exhaust Outlet, Inches	Volume of Air at 4,500 ft/min
Diameter		Width		
Min = d	Max = D	Max	E	
	9	2	3½	310
Over 9	16	3	4	500
Over 16	19	4	5	610
Over 19	24	5	5½	740
Over 24	30	6	6½	1,040
Over 30	36	6	7	1,200

Entry loss = 0.35 velocity pressure for tapered takeoff
0.65 velocity pressure for straight takeoff

TABLE H-12—MAXIMUM ALLOWABLE SIZE OF CONTAINERS AND PORTABLE TANKS

Container type	Flammable liquids			Combustible liquids	
	Class IA	Class IB	Class IC	Class II	Class III
Glass or approved plastic	1 pt.	1 qt.	1 gal.	1 gal.	1 gal.
Metal (other than DOT drums)	1 gal.	5 gal.	5 gal.	5 gal.	5 gal.
Safety cans	2 gal.	5 gal.	5 gal.	5 gal.	5 gal.
Metal drums (DOT spec.)	60 gal.	60 gal.	60 gal.	60 gal.	60 gal.
Approved portable tanks	660 gal.	660 gal.	660 gal.	660 gal.	660 gal.

Container exemptions: (a) Medicines, beverages, foodstuffs, cosmetics, and other common consumer items, when packaged according to commonly accepted practices, shall be exempt from the requirements of § 1910.106 (d) (2) (i) and (ii).

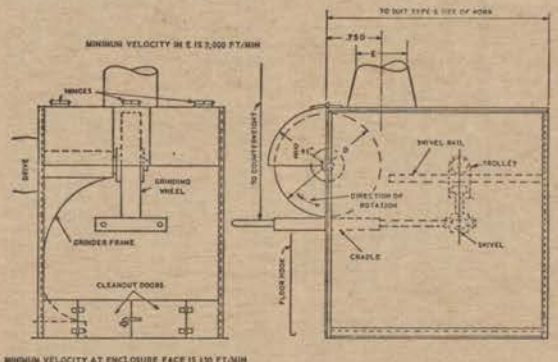


Fig. G-5
Cradle Polishing or Grinding Enclosure
Entry loss = 0.45 velocity pressure for tapered takeoff

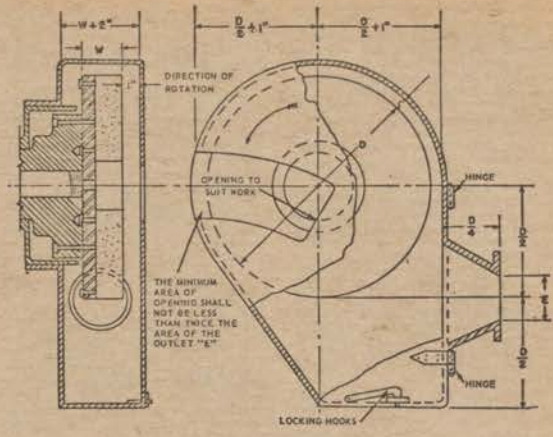


Fig. G-6
Horizontal Single-Spindle Disc Grinder Exhaust Hood and Branch Pipe Connections

Dia D, Inches		Exhaust E	Volume Exhausted at 4,500 ft/min ft³/min
Min	Max	Dia, Inches	
	12	3	220
Over 12	19	4	390
Over 19	30	5	610
Over 30	36	6	880

NOTE: If grinding wheels are used for disc grinding purposes, hoods must conform to structural strength and materials as described in 9.1.

Entry loss = 0.45 velocity pressure for tapered takeoff

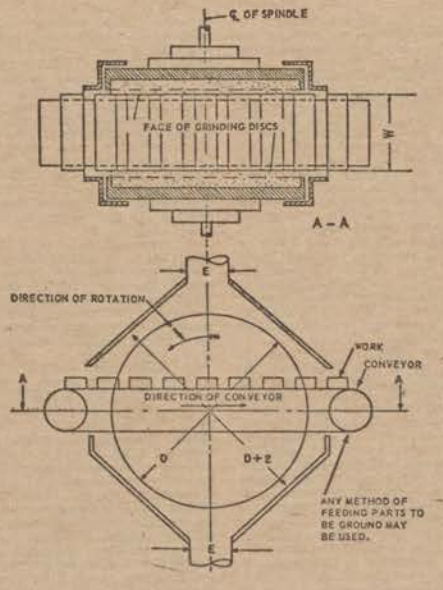


Fig. G-7
Horizontal Double-Spindle Disc Grinder Exhaust Hood and Branch Pipe Connections

Disc Dia, Inches		Exhaust E		Volume Exhausted at 4,500 ft/min ft³/min	Note
Min	Max	No. Pipes	Dia		
	19	1	5	610	When width "W" permits, exhaust ducts should be as near heaviest grinding as possible.
Over 19	25	1	6	880	
Over 25	37	1	7	1,200	
Over 37	53	2	6	1,760	
Over 53	72	4	5	2,440	

Entry loss = 0.45 velocity pressure for tapered takeoff

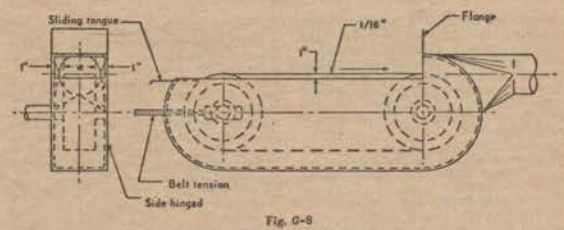


Fig. G-8
A Typical Hood for a Belt Operation

Belt Width W, Inches	Exhaust Volume, ft³/min
up to 3	220
3 to 5	390
5 to 7	610
7 up to 9	880
9 to 11	1,200
11 to 13	1,760

Minimum duct velocity = 4,500 ft/min branch, 3,500 ft/min main
Entry loss = 0.45 velocity pressure for tapered takeoff
0.65 velocity pressure for straight takeoff

(6) *Scope.* This paragraph (b), prescribes the use of exhaust hood enclosures and systems in removing dust, dirt, fumes, and gases generated through the grinding, polishing, or buffing of ferrous and nonferrous metals.

(c) *Spray-finishing operations.*—(1) *Definitions applicable to this paragraph.*—(i) *Spray-finishing operations.* Spray-finishing operations are employment of methods wherein organic or inorganic materials are utilized in dispersed form for deposit on surfaces to be coated, treated, or cleaned. Such methods of deposit may involve either automatic, manual, or electrostatic deposition but do not include metal spraying or metallizing, dipping, flow coating, roller coating, tumbling, centrifuging, or spray washing and degreasing as conducted in self-contained washing and degreasing machines or systems.

(ii) *Spray booth.* Spray booths are defined and described in § 1910.107(a). (See sections 103, 104, and 105 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33–1969).

(iii) *Spray room.* A spray room is a room in which spray-finishing operations not conducted in a spray booth are performed separately from other areas.

(iv) *Minimum maintained velocity.* Minimum maintained velocity is the velocity of air movement which must be maintained in order to meet minimum specified requirements for health and safety.

(2) *Location and application.* Spray booths or spray rooms are to be used to enclose or confine all operations. Spray-finishing operations shall be located as provided in sections 201 through 206 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33–1969.

(3) *Design and construction of spray booths.* (i) Spray booths shall be designed and constructed in accordance with § 1910.107(b) (1)–(4) and (6)–(10) (see sections 301–304 and 306–310 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33–1969), for general construction specifications. For a more detailed discussion of fundamentals relating to this subject, see ANSI Z9.2–1960.

(a) Lights, motors, electrical equipment, and other sources of ignition shall conform to the requirements of § 1910.107 (b) (10) and (c). (See section 310 and chapter 4 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33–1969.)

(b) In no case shall combustible material be used in the construction of a spray booth and supply or exhaust duct connected to it.

(ii) Unobstructed walkways shall not be less than 6½ feet high and shall be

maintained clear of obstruction from any work location in the booth to a booth exit or open booth front. In booths where the open front is the only exit, such exits shall be not less than 3 feet wide. In booths having multiple exits, such exits shall not be less than 2 feet wide, provided that the maximum distance from the work location to the exit is 25 feet or less. Where booth exits are provided with doors, such doors shall open outward from the booth.

(iii) Baffles, distribution plates, and dry-type overspray collectors shall conform to the requirements of § 1910.107 (b) (4) and (5). (See sections 304 and 305 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33–1969.)

(c) Overspray filters shall be installed and maintained in accordance with the requirements of § 1910.107(b)(5), (see section 305 of the Standard for Spray Finishing Using Flammable and Combustible Materials, NFPA No. 33–1969), and shall only be in a location easily accessible for inspection, cleaning, or replacement.

(b) Where effective means, independent of the overspray filters, are installed which will result in design air distribution across the booth cross section, it is permissible to operate the booth without the filters in place.

(iv) (a) For wet or water-wash spray booths, the water-chamber enclosure, within which intimate contact of contaminated air and cleaning water or other cleaning medium is maintained, if made of steel, shall be 18 gage or heavier and adequately protected against corrosion.

(b) Chambers may include scrubber spray nozzles, headers, troughs, or other devices. Chambers shall be provided with adequate means for creating and maintaining scrubbing action for removal of particulate matter from the exhaust air stream.

(v) Collecting tanks shall be of welded steel construction or other suitable noncombustible material. If pits are used as collecting tanks, they shall be concrete, masonry, or other material having similar properties.

(a) Tanks shall be provided with weirs, skimmer plates, or screens to prevent sludge and floating paint from entering the pump suction box. Means for automatically maintaining the proper water level shall also be provided. Fresh water inlets shall not be submerged. They shall terminate at least one pipe diameter above the safety overflow level of the tank.

(b) Tanks shall be so constructed as to discourage accumulation of hazardous deposits.

(vi) Pump manifolds, risers, and headers shall be adequately sized to insure sufficient water flow to provide efficient operation of the water chamber.

(4) *Design and construction of spray rooms.* (i) Spray rooms, including floors, shall be constructed of masonry, concrete, or other noncombustible material.

(ii) Spray rooms shall have noncombustible fire doors and shutters.

(iii) Spray rooms shall be adequately ventilated so that the atmosphere in the breathing zone of the operator shall be maintained in accordance with the requirements of subparagraph (6)(ii) of this paragraph.

(iv) Spray rooms used for production spray-finishing operations shall conform to the requirements for spray booths.

(5) *Ventilation.* (i) Ventilation shall be provided in accordance with provisions of § 1910.107(d) (see chapter 5 of the Standard for Spray Finishing Using Flammable or Combustible Materials, NFPA No. 33–1969), and in accordance with the following:

(a) Where a fan plenum is used to equalize or control the distribution of exhaust air movement through the booth, it shall be of sufficient strength or rigidity to withstand the differential air pressure or other superficially imposed loads for which the equipment is designed and also to facilitate cleaning. Construction specifications shall be at least equivalent to those of subdivision (iii) of this subparagraph.

(b) All fan ratings shall be in accordance with Air Moving and Conditioning Association Standard Test Code for Testing Air Moving Devices, Bulletin 210, April 1962.

(ii) Inlet or supply ductwork used to transport makeup air to spray booths or surrounding areas shall be constructed of noncombustible materials.

(a) If negative pressure exists within inlet ductwork, all seams and joints shall be sealed if there is a possibility of infiltration of harmful quantities of noxious gases, fumes, or mists from areas through which ductwork passes.

(b) Inlet ductwork shall be sized in accordance with volume flow requirements and provide design air requirements at the spray booth.

(c) Inlet ductwork shall be adequately supported throughout its length to sustain at least its own weight plus any negative pressure which is exerted upon it under normal operating conditions.

(iii) Ducts shall be so constructed as to provide structural strength and stability at least equivalent to sheet steel of not less than the following thickness:

Diameter or Greater Dimension	(U.S. gauge)
Up to 8 inches inclusive	No. 24
Over 8 inches to 18 inches inclusive	No. 22
Over 18 inches to 30 inches inclusive	No. 20
Over 30 inches	No. 16

(a) Exhaust ductwork shall be adequately supported throughout its length to sustain its weight plus any normal accumulation in interior during normal operating conditions and any negative pressure exerted upon it.

(b) Exhaust ductwork shall be sized in accordance with good design practice which shall include consideration of fan capacity, length of duct, number of turns and elbows, variation in size, volume, and character of materials being exhausted. See American National Standard Z9.2–1960 for further details and explanation concerning elements of design.

(c) Longitudinal joints in sheet steel ductwork shall be either lock-seamed, riveted, or welded. For other than steel construction, equivalent securing of joints shall be provided.

(d) Circumferential joints in ductwork shall be substantially fastened together and lapped in the direction of airflow. At least every fourth joint shall be provided with connecting flanges, bolted together, or of equivalent fastening security.

(e) Inspection or clean-out doors shall be provided for every 9 to 12 feet of running length for ducts up to 12 inches in diameter, but the distance between clean-out doors may be greater for larger pipes. (See 8.3.2i of American National Standard Z9.1–1951.) A clean-out door or doors shall be provided for servicing the fan, and where necessary, a drain shall be provided.

(f) Where ductwork passes through a combustible roof or wall, the roof or wall shall be protected at the point of penetration by open space or fire-resistive material between the duct and the roof or wall. When ducts pass through fire-walls, they shall be provided with automatic fire dampers on both sides of the wall, except that three-eighth-inch steel plates may be used in lieu of automatic fire dampers for ducts not exceeding 18 inches in diameter.

(g) Ductwork used for ventilating any process covered in this standard shall not be connected to ducts ventilating any other process or any chimney or flue used for conveying any products of combustion.

(6) *Velocity and air flow requirements.* (i) Except where a spray booth has an adequate air replacement system, the velocity of air into all openings of a spray booth shall be not less than that specified in Table G–10 for the operating conditions specified. An adequate air replacement system is one which introduces replacement air upstream or above the object being sprayed and is so designed that the velocity of air in the booth cross section is not less than that specified in Table G–10 when measured upstream or above the object being sprayed.

Table G-10—Minimum Maintained Velocities Into Spray Booths

Operating conditions for objects completely inside booth	Crossdraft, f.p.m.	Airflow velocities, f.p.m. Design	Range
Electrostatic and automatic airless operation contained in booth without operator	Negligible	50 large booth 100 small booth	50–75 75–125
Air-operated guns, manual or automatic	Up to 50	100 large booth 150 small booth	75–125 125–175
Air-operated guns, manual or automatic	Up to 100	150 large booth 200 small booth	125–175 150–250

Notes:

(1) Attention is invited to the fact that the effectiveness of the spray booth is dependent upon the relationship of the depth of the booth to its height and width.

(2) Crossdrafts can be eliminated through proper design and such design should be sought. Crossdrafts in excess of 100 fpm (feet per minute) should not be permitted.

(3) Excessive air pressures result in loss of both efficiency and material waste in addition to creating a backlash that may carry overspray and fumes into adjacent work areas.

(4) Booths should be designed with velocities shown in the column headed "Design." However, booths operating with velocities shown in the column headed "Range" are in compliance with this standard.

(ii) In addition to the requirements in subdivision (i) of this subparagraph the total air volume exhausted through a spray booth shall be such as to dilute solvent vapor to at least 25 percent of the lower explosive limit of the solvent being sprayed. An example of the method of calculating this volume is given below.

Example: To determine the lower explosive limits of the most common solvents used in spray finishing, see Table G–11. Column 1 gives the number of cubic feet of vapor per gallon of solvent and column 2 gives the lower explosive limit (LEL) in percentage by volume of air. Note that the quantity of solvent will be diminished by the quantity of solids and nonflammables contained in the finish.

To determine the volume of air in cubic feet necessary to dilute the vapor from 1 gallon of solvent to 25 percent of the lower explosive limit, apply the following formula:

$$\text{Dilution volume required per gallon of solvent} = \frac{4\,(100-\text{LEL})\ \text{(cubic feet of vapor per gallon)}}{\text{LEL}}$$

Using toluene as the solvent.

(1) LEL of toluene from Table G–11, column 2, is 1.4 percent.

(2) Cubic feet of vapor per gallon from Table G–11, column 1, is 30.4 cubic feet per gallon.

(3) Dilution volume required=

$$\frac{4\,(100-1.4)\ 30.4}{1.4}=8{,}564 \text{ cubic feet.}$$

(4) To convert to cubic feet per minute of required ventilation, multiply the dilution volume required per gallon of solvent by the number of gallons of solvent evaporated per minute.

Table G–11—Lower Explosive Limit of Some Commonly Used Solvents

Solvent	Cubic feet per gallon of vapor of liquid at 70° F. and 760 mm.	Lower explosive limit in percent by volume of air at 70° F.
	Column 1	Column 2
Acetone	44.6	2.6
Amyl Acetate (sec)	21.6	[1] 1.0
Amyl Alcohol (n)	26.8	1.2
Amyl Alcohol (sec)	26.8	1.2
Benzene	36.8	[1] 1.4
Butyl Acetate (n)	24.8	1.7
Butyl Alcohol (n)	35.2	1.4
Butyl Cellosolve	24.8	1.1
Cellosolve	33.6	1.8
Cellosolve Acetate	22.2	1.7
Cyclohexanone	31.2	[1] 1.1
1,1 Dichloroethylene	42.4	5.9
1,2 Dichloroethylene	42.4	9.7
Ethyl Acetate	32.8	2.5
Ethyl Alcohol	55.2	4.3
Ethyl Lactate	26.0	[1] 1.5
Methyl Acetate	40.0	3.1
Methyl Alcohol	86.8	7.0
Methyl Cellosolve	40.8	2.5
Methyl Ethyl Ketone	36.0	1.8
Methyl n-Propyl Ketone	30.4	1.5
Naphtha (VM&P) (76° Naphtha)	22.4	0.9
Naphtha (76° Flash) Safety Solvent—Stoddard Solvent	23.2	1.0
Propyl Acetate (n)	27.7	2.0
Propyl Acetate (iso)	28.0	1.7
Propyl Alcohol (n)	44.8	2.1
Propyl Alcohol (iso)	44.0	2.0
Toluene	30.4	1.4
Turpentine	39.6	0.8
Xylene (o)	28.4	1.0

[1] At 212° F.

(iii) (a) When an operator must position himself in a booth downstream of the object being sprayed, an air supplied respirator or other type of respirator approved by the Bureau of Mines, U.S. Department of the Interior or specified in ANSI Z88.2–1969 for the material being sprayed should be used by the operator.

(b) Where downdraft booths are provided with doors, such doors shall be closed when spray painting.

(7) *Make-up air.* (i) Clean fresh air, free of contamination from adjacent industrial exhaust systems, chimneys, stacks, or vents, shall be supplied to a spray booth or room in quantities equal to the volume of air exhausted through the spray booth.

(ii) Where a spray booth or room receives make-up air through self-closing doors, dampers, or louvers, they shall be fully open at all times when the booth or room is in use for spraying. The velocity of air through such doors, dampers, or louvers shall not exceed 200 feet per minute. If the fan characteristics are such that the required air flow through the booth will be provided, higher velocities through the doors, dampers, or louvers may be used.

(iii) (a) Where the air supply to a spray booth or room is filtered, the fan static pressure shall be calculated on the assumption that the filters are dirty to the extent that they require cleaning or replacement.

(b) The rating of filters shall be governed by test data supplied by the manufacturer of the filter. A pressure gage shall be installed to show the pressure drop across the filters. This gage shall be marked to show the pressure drop at which the filters require cleaning or replacement. Filters shall be replaced or cleaned whenever the pressure drop across them becomes excessive or whenever the air flow through the face of the booth falls below that specified in Table G–10.

(iv) (a) Means for heating make-up air to any spray booth or room, before or at the time spraying is normally performed, shall be provided in all places where the outdoor temperature may be expected to remain below 55° F. for appreciable periods of time during the operation of the booth except where adequate and safe means of radiant heating for all operating personnel affected is provided. The replacement air during the heating seasons shall be maintained at not less than 65° F. at the point of entry into the spray booth or spray room. When otherwise unheated make-up air would be at a temperature of more than 10° F. below room temperature, its temperature shall be regulated as provided in section 3.6.3 of ANSI Z9.2–1960.

(b) As an alternative to an air replacement system complying with the preceding section, general heating of the building in which the spray room or booth is located may be employed provided that all occupied parts of the building are maintained at not less than 65° F. when the exhaust system is in operation or the general heating system supplemented by other sources of heat may be employed to meet this requirement.

(c) No means of heating make-up air shall be located in a spray booth.

(d) Where make-up air is heated by coal or oil, the products of combustion shall not be allowed to mix with the make-up air, and the products of combustion shall be conducted outside the building through a flue terminating at a point remote from all points where make-up air enters the building.

(e) Where make-up air is heated by gas, and the products of combustion are not mixed with the make-up air but are conducted through an independent flue to a point outside the building remote from all points where make-up air enters the building, it is not necessary to comply with (f) of this subdivision.

(f) Where make-up air to any manually operated spray booth or room is heated by gas and the products of combustion are allowed to mix with the supply air, the following precautions must be taken:

(1) The gas must have a distinctive and strong enough odor to warn workmen in a spray booth or room of its presence if in an unburned state in the make-up air.

(2) The maximum rate of gas supply to the make-up air heater burners must not exceed that which would yield in excess of 200 p.p.m. (parts per million) of carbon monoxide or 2,000 p.p.m. of total combustible gases in the mixture if the unburned gas upon the occurrence of flame failure were mixed with all of the make-up air supplied.

(3) A fan must be provided to deliver the mixture of heated air and products of combustion from the plenum chamber housing the gas burners to the spray booth or room.

(8) *Scope.* Spray booths or spray rooms are to be used to enclose or confine all spray finishing operations covered by this paragraph (c). This paragraph does not apply to the spraying of the exteriors of buildings, fixed tanks, or similar structures, nor to small portable spraying apparatus not used repeatedly in the same location.

(d) *Open surface tanks.*—(1) *General.* (i) This paragraph applies to all operations involving the immersion of materials in liquids, or in the vapors of such liquids, for the purpose of cleaning or altering the surface or adding to or imparting a finish thereto or changing the character of the materials, and their subsequent removal from the liquid or vapor, draining, and drying. These operations include washing, electroplating, anodizing, pickling, quenching, dying, dipping, tanning, dressing, bleaching, degreasing, alkaline cleaning, stripping, rinsing, digesting, and other similar operations.

(ii) Except where specific construction specifications are prescribed in this section, hoods, ducts, elbows, fans, blowers, and all other exhaust system parts, components, and supports thereof shall be so constructed as to meet conditions of service and to facilitate maintenance and shall conform in construction to the specifications contained in American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2–1960.

(2) *Classification of open-surface tank operations.* (i) Open-surface tank operations shall be classified into 16 classes, numbered A–1 to D–4, inclusive.

(ii) *Determination of class.* Class is determined by two factors, hazard potential designated by a letter from A to D, inclusive, and rate of gas, vapor, or mist evolution designated by a number from 1 to 4, inclusive (for example, B-3).

(iii) Hazard potential is an index, on a scale of from A to D, inclusive, of the severity of the hazard associated with the substance contained in the tank because of the toxic, flammable, or explosive nature of the vapor, gas, or mist produced therefrom. The toxic hazard is determined from the concentration, measured in parts by volume of a gas or vapor, per million parts by volume of contaminated air (p.p.m.), or in milligrams of mist per cubic meter of air (mg./m.³), below which ill effects are unlikely to occur to the exposed worker. The concentrations shall be those in § 1910.1000.

(iv) The relative fire or explosion hazard is measured in degrees Fahrenheit in terms of the closed-cup flash point of the substance in the tank. Detailed information on the prevention of fire hazards in dip tanks may be found in Dip Tanks Containing Flammable or Combustible Liquids, NFPA No. 34–1966, National Fire Protection Association. Where the tank contains a mixture of liquids, other than organic solvents, whose effects are additive, the hygienic standard of the most toxic component (for example, the one having the lowest p.p.m. or mg./m.³) shall be used, except where such substance constitutes an insignificantly small fraction of the mixture. For mixtures of organic solvents, their combined effect, rather than that of either individually, shall determine the hazard potential. In the absence of information to the contrary, the effects shall be considered as additive. If the sum of the ratios of the airborne concentration of each contaminant to the toxic concentration of that contaminant exceeds unity, the toxic concentration shall be considered to have been exceeded. (See Note A to subdivision (v) of this subparagraph.)

(v) Hazard potential shall be determined from Table G–12, with the value indicating greater hazard being used. When the hazardous material may be either a vapor with a threshhold limit value (*TLV*) in p.p.m. or a mist with a *TLV* in mg./m.³, the *TLV* indicating the greater hazard shall be used (for example, A takes precedence over B or C; B over C; C over D).

Note A:

$$\frac{c_1}{TLV_1}+\frac{c_2}{TLV_2}+\frac{c_3}{TLV_3}+\ldots\frac{c_n}{TLV_n}>1$$

where:

c_n = Concentration measured at the operation in p.p.m

Table G–12—Determination of Hazard Potential

Hazard potential	Toxicity group		
	Gas or vapor (p.p.m.)	Mist (mg./m³)	Flash point (in degrees F.)
A	0–10	0–0.1	
B	11–100	0.11–1.0	Under 100
C	101–500	1.1–10	100–200
D	Over 500	Over 10	Over 200

(vi) Rate of gas, vapor, or mist evolution is a numerical index, on a scale of from 1 to 4, inclusive, both of the relative capacity of the tank to produce gas, vapor, or mist and of the relative energy with which it is projected or carried upwards from the tank. Rate is evaluated in terms of

(*a*) The temperature of the liquid in the tank in degrees Fahrenheit;

(*b*) The number of degrees Fahrenheit that this temperature is below the boiling point of the liquid in degrees Fahrenheit;

(*c*) The relative evaporation of the liquid in still air at room temperature in an arbitrary scale—fast, medium, slow, or nil; and

(*d*) The extent that the tank gases or produces mist in an arbitrary scale—high, medium, low, and nil. (See Table G–13, Note 2.) Gassing depends upon electrochemical or mechanical processes, the effects of which have to be individually evaluated for each installation (see Table G–13, Note 3).

(vii) Rate of evolution shall be determined from Table G–13. When evaporation and gassing yield different rates, the lowest numerical value shall be used.

Table G–13—Determination of Rate of Gas, Vapor, or Mist Evolution[1]

Rate	Liquid temperature,[2] F.	Degrees below boiling point	Relative evaporation[3]	Gassing[4]
1	Over 200	0–20	Fast	High.
2	150–200	21–50	Medium	Medium.
3	94–149	51–100	Slow	Low.
4	Under 94	Over 100	Nil	Nil.

Note 1. In certain classes of equipment specifically vapor degreasers, an internal condenser or vapor level thermostat is used to prevent the vapor from leaving the tank during normal operation. In such cases, rate of vapor evolution from the tank into the workroom is not dependent upon the factors listed in the table, but rather upon abnormalities of operating procedure, such as carryout of vapors from excessively fast action, dragout of liquid by entrainment in parts, contamination of solvent by water and other materials, or improper heat balance. When operating procedure is excellent, effective rate of evolution may be taken as 4. When operating procedure is average, the effective rate of evolution may be taken as 3. When operation is poor, a rate of 2 or 1 is indicated, depending upon observed conditions.

Note 2. Relative evaporation rate is determined according to the methods described by A. K. Doolittle in Industrial and Engineering Chemistry, vol. 27, p. 1169, (3) where time for 100-percent evaporation is as follows: Fast: 0–3 hours; Medium: 3–12 hours; Slow: 12–50 hours; Nil: more than 50 hours.

Note 3. Gassing means the formation by chemical or electrochemical action of minute bubbles of gas under the surface of the liquid in the tank and is generally limited to aqueous solutions.

(3) *Ventilation.* Where ventilation is used to control potential exposures to workers as defined in subparagraph (2) (iii) of this paragraph, it shall be adequate to reduce the concentration of the air contaminant to the degree that a hazard to the worker does not exist. Methods of ventilation are discussed in American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2–1960.

(4) *Control requirements.* (i) Control velocities shall conform to Table G–14 in all cases where the flow of air past the breathing or working zone of the operator and into the hoods is undisturbed by local environmental conditions, such as open windows, wall fans, unit heaters, or moving machinery.

(ii) All tanks exhausted by means of hoods which

(*a*) Project over the entire tank;

(*b*) Are fixed in position in such a location that the head of the workman, in all his normal operating positions while working at the tank, is in front of all hood openings; and

(*c*) Are completely enclosed on at least two sides, shall be considered to be exhausted through an enclosing hood.

(*d*) The quantity of air in cubic feet per minute necessary to be exhausted through an enclosing hood shall be not less than the product of the control velocity times the net area of all openings in the enclosure through which air can flow into the hood.

Table G–14—Control Velocities in Feet Per Minute (f.p.m.) for Undisturbed Locations

Class	Enclosing hood		Lateral exhaust[5]	Canopy hood[5]	
	One open side	Two open sides		Three open sides	Four open sides
B–1 and A–2	100	150	150	Do not use	Do not use
A–3 (Note 2), B–1, B–2, and C–1	75	100	100	125	175
A–3 (Note 2), B–1, B–2, and D–1 (Note 3)	65	90	75	100	150
A–2, C–2, and D–1 (Note 3)	50	75	50	75	125
B–4 (Note 2), C–3, and D–2 (Note 3)	General room ventilation required.				
A–4, C–4, D–3 (Note 3), and D–4					

Notes:
1. See Table G–15 for computation of ventilation rate.
2. Do not use canopy hood for Hazard Potential A processes.
3. Where complete control of hot water is desired, design as next highest class.

(iii) All tanks exhausted by means of hoods which do not project over the entire tank, and in which the direction of air movement into the hood or hoods is substantially horizontal, shall be considered to be laterally exhausted. The quantity of air in cubic feet per minute necessary to be laterally exhausted per square foot of tank area in order to maintain the required control velocity shall be determined from Table G–15 for all variations in ratio of tank width (*W*) to tank length (*L*). The total quantity of air in cubic feet per minute required to be exhausted per tank shall be not less than the product of the area of tank surface times the cubic feet per minute per square foot of tank area, determined from Table G–15.

(*a*) For lateral exhaust hoods over 42 inches wide, or where it is desirable to reduce the amount of air removed from the workroom, air supply slots or orifices shall be provided along the side or the center of the tank opposite from the exhaust slots. The design of such systems shall meet the following criteria:

(*1*) The supply air volume plus the entrained air shall not exceed 50 percent of the exhaust volume.

(*2*) The velocity of the supply airstream as it reaches the effective control area of the exhaust slot shall be less than the effective velocity over the exhaust slot area.

(*3*) The vertical height of the receiving exhaust hood, including any baffle, shall not be less than one-quarter the width of the tank.

(*4*) The supply airstream shall not be allowed to impinge on obstructions between it and the exhaust slot in such a manner as to significantly interfere with the performance of the exhaust hood.

(*5*) Since most failure of push-pull systems result from excessive supply air volumes and pressures, methods of measuring and adjusting the supply air shall be provided. When satisfactory control has been achieved, the adjustable features of the hood shall be fixed so that they will not be altered.

(iv) All tanks exhausted by means of hoods which project over the entire tank, and which do not conform to the definition of enclosing hoods, shall be considered to be overhead canopy hoods. The quantity of air in cubic feet per minute necessary to be exhausted through a canopy hood shall be not less than the product of the control velocity times the net area of all openings between the bottom edges of the hood and the top edges of the tank.

(v) The rate of vapor evolution (including steam or products of combustion) from the process shall be estimated. If the rate of vapor evolution is equal to or greater than 10 percent of the calculated exhaust volume required, the exhaust volume shall be increased in equal amount.

(5) *Spray cleaning and degreasing.* Wherever spraying or other mechanical means are used to disperse a liquid above an open-surface tank, control must be provided for the airborne spray. Such operations shall be enclosed as completely as possible. The inward air velocity into the enclosure shall be sufficient to prevent the discharge of spray into the workroom. Mechanical baffles may be used to help prevent the discharge of spray. Spray painting operations are covered by paragraph (c) of this section.

(6) *Control means other than ventilation.* Tank covers, foams, beads, chips, or other materials floating on the tank surface so as to confine gases, mists, or vapors to the area under the cover or to the foam, bead, or chip layer; or surface tension depressive agents added to the liquid in the tank to minimize mist formation, or any combination thereof, may all be used as gas, mist, or vapor control means for open-surface tank operations, provided that they effectively reduce the concentrations of hazardous materials in the vicinity of the worker below the limits set in accordance with subparagraph (2) of this paragraph.

(7) *System design.* (i) The equipment for exhausting air shall have sufficient capacity to produce the flow of air required in each of the hoods and openings of the system.

(ii) The capacity required in subdivision (i) of this subparagraph shall be obtained when the airflow producing equipment is operating against the following pressure losses, the sum of which is the static pressure:

(*a*) Entrance losses into the hood.

(*b*) Resistance to airflow in branch pipe including bends and transformations.

(*c*) Entrance loss into the main pipe.

(*d*) Resistance to airflow in main pipe including bends and transformations.

(*e*) Resistance of mechanical equipment; that is, filters, washers, condensers, absorbers, etc., plus their entrance and exit losses.

(*f*) Resistance in outlet duct and discharge stack.

(iii) Two or more operations shall not be connected to the same exhaust system where either one or the combination of the substances removed may constitute a fire, explosion, or chemical reaction hazard in the duct system. Traps or other devices shall be provided to insure that condensate in ducts does not drain back into any tank.

(iv) The exhaust system, consisting of hoods, ducts, air mover, and discharge outlet, shall be designed in accordance with American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2–1960, or the manual, Industrial Ventilation, published by the American Conference of Governmental Industrial Hygienists 1970. Airflow and pressure loss data provided by the manufacturer of any air cleaning device shall be included in the design calculations.

(8) *Operation.* (i) The required airflow shall be maintained at all times during which gas, mist, or vapor is emitted from the tank, and at all times the tank, the draining, or the drying area is in operation or use. When the system is first installed, the airflow from each hood shall be measured by means of a pitot traverse in the exhaust duct and corrective action taken if the flow is less than that required. When the proper flow is obtained, the hood static pressure shall be measured and recorded. At intervals of not more than 3 months operation, or after a prolonged shutdown period, the hoods and duct system shall be inspected for evidence of corrosion or damage. In any case where the airflow is found to be less than required, it shall be increased to the required value. (Information on airflow and static pressure measurement and calculations may be found in American National Standard Fundamental Governing the Design and Operation of Local Exhaust Systems, Z9.2–1960, or in the manual, Industrial Ventilation, published by the American Conference of Governmental Industrial Hygienists.)

(ii) The exhaust system shall discharge to the outer air in such a manner that the possibility of its effluent entering any building is at a minimum. Recirculation shall only be through a device for contaminant removal which will prevent the creation of a health hazard in the room or area to which the air is recirculated.

(iii) A volume of outside air in the range of 90 percent to 110 percent of the exhaust volume shall be provided to each room having exhaust hoods. The outside air supply shall enter the workroom in such a manner as not to be detrimental to any exhaust hood. The airflow of the makeup air system shall be measured on installation. Periodically, thereafter, the airflow should be remeasured, and corrective action shall be taken when the airflow is below that required. The makeup air shall be uncontaminated.

(9) *Personal protection.* (i) All employees working in and around open-surface tank operations must be instructed as to the hazards of their respective jobs, and in the personal protection and first aid procedures applicable to these hazards.

(ii) All persons required to work in such a manner that their feet may become wet shall be provided with rubber or other impervious boots or shoes, rubbers, or wooden-soled shoes sufficient to keep feet dry.

(iii) All persons required to handle work wet with a liquid other than water shall be provided with gloves impervious to such a liquid and of a length sufficient to prevent entrance of liquid into the tops of the gloves. The interior of gloves shall be kept free from corrosive or irritating contaminants.

(iv) All persons required to work in such a manner that their clothing may become wet shall be provided with such aprons, coats, jackets, sleeves, or other garments made of rubber, or of other materials impervious to liquids other than water, as are required to keep their clothing dry. Aprons shall extend well

Table G–15—Minimum Ventilation Rate in Cubic Feet of Air Per Minute Per Square Foot of Tank Area for Lateral Exhaust

Required minimum control velocity, f.p.m. (from Table G–14)	C.f.m. per sq. ft. to maintain required minimum velocity at following ratios (tank width (W)/tank length (L)),[1,2]				
	0.0–0.09	0.1–0.24	0.25–0.49	0.5–0.99	1.0–2.0
Hood along one side or two parallel sides of tank when one hood is against a wall or baffle.[3] Also for a manifold along tank centerline.[4]					
50	50	60	75	90	100
75	75	90	112	130	150
100	100	125	150	175	200
150	150	190	225	260	300
Hood along one side or two parallel sides of free standing tank not against wall or baffle.					
50	75	90	100	110	125
75	110	130	150	170	190
100	150	175	200	225	250
150	225	260	300	340	375

[1] It is not practicable to ventilate across the long dimension of a tank where ratio $\frac{W}{L}$ exceeds 2.0.

It is undesirable to do so when $\frac{W}{L}$ exceeds 1.0. For circular tanks with lateral exhaust along up to ¼ the circumference, use $W/L=1.0$; for over one-half the circumference use $W/L=0.5$.

[2] Baffle is a vertical plate the same length as the tank, and with the top of the plate as high as the tank is wide. If the exhaust hood is on the side of a tank against a building wall or close to it, it is perfectly baffled.

[3] Use $\frac{W}{L}$ as tank width in computing when manifold is along centerline, or when hoods are used on two parallel sides of a tank.

[4] Tank Width (W) means the effective width over which the hood must pull air to operate (for example, where the hood face is set back from the edge of the tank, this set back must be added to measuring tank width). The surface area of tanks can frequently be reduced and better control obtained (particularly on canveyorized systems) by using covers extending from the upper edges of the slots toward the center of the tank.

below the top of boots to prevent liquid splashing into the boots. Provision of dry, clean, cotton clothing along with rubber shoes or short boots and an apron impervious to liquids other than water shall be considered a satisfactory substitute where small parts are cleaned, plated, or acid dipped in open tanks and rapid work is required.

(v) Whenever there is a danger of splashing, for example, when additions are made manually to the tanks, or when acids and chemicals are removed from the tanks, the employees so engaged shall be required to wear either tight-fitting chemical goggles or an effective face shield. See § 1910.133.

(vi) When, during emergencies as described in subparagraph (11)(v) of this paragraph, workers must be in areas where concentrations of air contaminants are greater than the limit set by subparagraph (2)(iii) of this paragraph, or oxygen concentrations are less than 19.5 percent, they shall be required to wear respirators adequate to reduce their exposure to a level below these limits, or to provide adequate oxygen. Such respirators shall also be provided in marked, quickly accessible storage compartments built for the purpose, when there exists the possibility of accidental release of hazardous concentrations of air contaminants. Respirators shall be approved by the U.S. Bureau of Mines, U.S. Department of the Interior and shall be selected by a competent industrial hygienist or other technically qualified source. Respirators shall be used in accordance with § 1910.134, and persons who may require them shall be trained in their use.

(vii) Near each tank containing a liquid which may burn, irritate, or otherwise be harmful to the skin if splashed upon the worker's body, there shall be a supply of clean cold water. The water pipe (carrying a pressure not exceeding 25 pounds) shall be provided with a quick opening valve and at least 48 inches of hose not smaller than three-fourths inch, so that no time may be lost in washing off liquids from the skin or clothing. Alternatively, deluge showers and eye flushes shall be provided in cases where harmful chemicals may be splashed on parts of the body.

(viii) Operators with sores, burns, or other skin lesions requiring medical treatment shall not be allowed to work at their regular operations until so authorized by a physician. Any small skin abrasions, cuts, rash, or open sores which are found or reported shall be treated by a properly designated person so that chances of exposures to the chemicals are removed. Workers exposed to chromic acids shall have a periodic examination made of the nostrils and other parts of the body, to detect incipient ulceration.

(ix) Sufficient washing facilities, including soap, individual towels, and hot water, shall be provided for all persons required to use or handle any liquids which may burn, irritate, or otherwise be harmful to the skin, on the basis of at least one basin (or its equivalent) with a hot water faucet for every 10 employees. See § 1910.141(d).

(x) Locker space or equivalent clothing storage facilities shall be provided to prevent contamination of street clothing.

(xi) First aid facilities specific to the hazards of the operations conducted shall be readily available.

(10) *Special precautions for cyanide.* Dikes or other arrangements shall be provided to prevent the possibility of intermixing of cyanide and acid in the event of tank rupture.

(11) *Inspection, maintenance, and installation.*

(i) Floors and platforms around tanks shall be prevented from becoming slippery both by original type of construction and by frequent flushing. They shall be firm, sound, and of the design and construction to minimize the possibility of tripping.

(ii) Before cleaning the interior of any tank, the contents shall be drained off, and the cleanout doors shall be opened where provided. All pockets in tanks or pits, where it is possible for hazardous vapors to collect, shall be ventilated and cleared of such vapors.

(iii) Tanks which have been drained to permit employees to enter for the purposes of cleaning, inspection, or maintenance may contain atmospheres which are hazardous to life or health, through the presence of flammable or toxic air contaminants, or through the absence of sufficient oxygen. Before employees shall be permitted to enter any such tank, appropriate tests of the atmosphere shall be made to determine if the limits set by subparagraph (2)(iii) of this paragraph are exceeded, or if the oxygen concentration is less than 19.5 percent.

(iv) If the tests made in accordance with subdivision (iii) of this subparagraph indicate that the atmosphere in the tank is unsafe, before any employee is permitted to enter the tank, the tank shall be ventilated until the hazardous atmosphere is removed, and ventilation shall be continued so as to prevent the occurrence of a hazardous atmosphere as long as an employee is in the tank.

(v) If, in emergencies, such as rescue work, it is necessary to enter a tank which may contain a hazardous atmosphere, suitable respirators, such as self-contained breathing apparatus; hose mask with blower, if there is a possibility of oxygen deficiency; or a gas mask, selected and operated in accordance with subparagraph (9)(vi) of this paragraph, shall be used. If a contaminant in the tank can cause dermatitis, or be absorbed through the skin, the employee entering the tank shall also wear protective clothing. At least one trained standby employee, with suitable respirator, shall be present in the nearest uncontaminated area. The standby employee must be able to communicate with the employee in the tank and be able to haul him out of the tank with a lifeline if necessary.

(vi) Maintenance work requiring welding or open flame, where toxic metal fumes such as cadmium, chromium, or lead may be evolved, shall be done only with sufficient local exhaust ventilation to prevent the creation of a health hazard, or be done with respirators selected and used in accordance with subparagraph (9)(vi) of this paragraph. Welding, or the use of open flames near any solvent cleaning equipment shall be permitted only after such equipment has first been thoroughly cleared of solvents and vapors.

(12) *Vapor degreasing tanks.* (i) In any vapor degreasing tank equipped with a condenser or vapor level thermostat, the condenser or thermostat shall keep the level of vapors below the top edge of the tank by a distance at least equal to one-half the tank width, or at least 36 inches, whichever is shorter.

(ii) Where gas is used as a fuel for heating vapor degreasing tanks, the combustion chamber shall be of tight construction, except for such openings as the exhaust flue, and those that are necessary for supplying air for combustion. Flues shall be of corrosion-resistant construction and shall extend to the outer air. If mechanical exhaust is used on this flue, a draft diverter shall be used. Special precautions must be taken to prevent solvent fumes from entering the combustion air of this or any other heater when chlorinated or fluorinated hydrocarbon solvents (for example, trichlorotrifluoroethane, Freon) are used.

(iii) Heating elements shall be so designed and maintained that their surface temperature will not cause the solvent or mixture to decompose, break down, or be converted into an excessive quantity of vapor.

(iv) Tanks or machines of more than 1 square feet of vapor area, used for solvent cleaning or vapor degreasing, shall be equipped with suitable cleanout or sludge doors located near the bottom of each tank or still. These doors shall be so designed and gasketed that there will be no leakage of solvent when they are closed.

(13) *Scope.* (i) This paragraph (d) applies to all operations involving the immersion of materials in liquids, or in the vapors of such liquids, for the purpose of cleaning or altering their surfaces, or adding or imparting a finish thereto, or changing the character of the materials, and their subsequent removal from the liquids or vapors, draining, and drying. Such operations include washing, electroplating, anodizing, pickling, quenching, dyeing, dipping, tanning, dressing, bleaching, degreasing, alkaline cleaning, stripping, rinsing, digesting, and other similar operations, but do not include molten materials handling operations, or surface coating operations.

(ii) "Molten materials handling operations" means all operations, other than welding, burning, and soldering operations, involving the use, melting, smelting, or pouring of metals, alloys, salts, or other similar substances in the molten state. Such operations also include heat treating baths, descaling baths, die casting stereotyping, galvanizing, tinning, and similar operations.

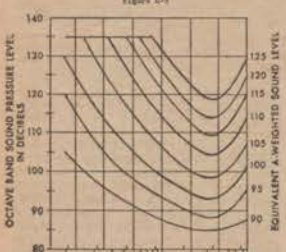
(iii) "Surface coating operations" means all operations involving the application of protective, decorative, adhesive, or strengthening coating or impregnation to one or more surfaces, or into the interstices of any object or material, by means of spraying, spreading, flowing, brushing, roll coating, pouring, cementing, or similar means; and any subsequent draining or drying operations, excluding open-tank operations.

[39 FR 23502, June 27, 1974, as amended at 40 FR 23073, May 28, 1975; 40 FR 24822, June 9, 1975]

§ 1910.95 Occupational noise exposure.

(a) Protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in Table G–16 when measured on the A scale of a standard sound level meter at slow response. When noise levels are determined by octave band analysis, the equivalent A-weighted sound level may be determined as follows:

Figure G-9



Equivalent sound level contours. Octave band sound pressure levels may be converted to the equivalent A-weighted sound level by plotting them on this graph and noting the A-weighted sound level corresponding to the point of highest penetration into the sound level contours. This equivalent A-weighted sound level, which may differ from the actual A-weighted sound level of the noise, is used to determine exposure limits from Table 1 G–16.

(b)(1) When employees are subjected to sound exceeding those listed in Table G–16, feasible administrative or engineering controls shall be utilized. If such controls fail to reduce sound levels within the levels of Table G–16, personal protective equipment shall be provided and used to reduce sound levels within the levels of the table.

(2) If the variations in noise level involve maxima at intervals of 1 second or less, it is to be considered continuous.

(3) In all cases where the sound levels exceed the values shown herein, a continuing, effective hearing conservation program shall be administered.

Table G–16—Permissible Noise Exposures

Duration per day, hours	Sound level dBA slow response
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

[1] When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: $C_1/T_1+C_2/T_2$ C_n/T_n exceeds unity, then, the mixed exposure should be considered to exceed the limit value. C_n indicates the total time of exposure at a specified noise level, and T_n indicates the total time of exposure permitted at that level.

Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level.

§ 1910.96 Ionizing radiation.

(a) *Definitions applicable to this section.* (1) "Radiation" includes alpha rays, beta rays, gamma rays, X-rays, neutrons, high-speed electrons, high-speed protons, and other atomic particles; but such term does not include sound or radio waves, or visible light, or infrared or ultraviolet light.

(2) "Radioactive material" means any material which emits, by spontaneous nuclear disintegration, corpuscular or electromagnetic emanations.

(3) "Restricted area" means any area access to which is controlled by the employer for purposes of protection of individuals from exposure to radiation or radioactive materials.

(4) "Unrestricted area" means any area access to which is not controlled by the employer for purposes of protection of individuals from exposure to radiation or radioactive materials.

(5) "Dose" means the quantity of ionizing radiation absorbed, per unit of mass, by the body or by any portion of the body. When the provisions in this section specify a dose during a period of time, the dose is the total quantity of radiation absorbed, per unit of mass, by the body or by any portion of the body during such period of time. Several different units of dose are in current use. Definitions of units used in this section are set forth in subparagraphs (6) and (7) of this paragraph.

(6) "Rad" means a measure of the dose of any ionizing radiation to body tissues in terms of the energy absorbed per unit of mass of the tissue. One rad is the dose corresponding to the absorption of 100 ergs per gram of tissue (1 millirad (mrad) = 0.001 rad).

(7) "Rem" means a measure of the dose of any ionizing radiation to body tissue in terms of its estimated biological effect relative to a dose of 1 roentgen (r) of X-rays (1 millirem (mrem) = 0.001 rem). The relation of the rem to other dose units depends upon the biological effect under consideration and upon the conditions for irradiation. Each of the following is considered to be equivalent to a dose of 1 rem:

(i) A dose of 1 roentgen due to X- or gamma radiation;

(ii) A dose of 1 rad due to X-, gamma, or beta radiation;

(iii) A dose of 0.1 rad due to neutrons or high energy protons;

(iv) A dose of 0.05 rad due to particles heavier than protons and with sufficient energy to reach the lens of the eye;

(v) If it is more convenient to measure the neutron flux, or equivalent, than to determine the neutron dose in rads, as provided in subdivision (iii) of this subparagraph, 1 rem of neutron radiation may, for purposes of the provisions in this section be assumed to be equivalent to 14 million neutrons per square centimeter incident upon the body; or, if there is sufficient information to estimate with reasonable accuracy the approximate distribution in energy of the neutrons, the incident number of neutrons per square centimeter equivalent to 1 rem may be estimated from Table G–17:

Table G–17—Neutron Flux Dose Equivalents

Neutron energy (million electron volts (Mev))	Number of neutrons per square centimeter equivalent to a dose of 1 rem (neutrons/cm²)	Average flux to deliver 100 millirem in 40 hours (neutrons/cm² per sec.)
Thermal	970 × 10⁶	670
0.0001	720 × 10⁶	500
0.005	820 × 10⁶	570
0.02	400 × 10⁶	280
0.1	120 × 10⁶	80
0.5	43 × 10⁶	30
1.0	26 × 10⁶	18
2.5	25 × 10⁶	20
5.0	28 × 10⁶	18
7.5	24 × 10⁶	17
10	24 × 10⁶	17
10 to 30	14 × 10⁶	10

(8) For determining exposures to X- or gamma rays up to 3 Mev., the dose limits specified in this section may be assumed to be equivalent to the "air dose". For the purpose of this section "air dose" means that the dose is measured by a properly calibrated appropriate instrument in air at or near the body surface in the region of the highest dosage rate.

(b) *Exposure of individuals to radiation in restricted areas.* (1) Except as provided in subparagraph (2) of this paragraph, no employer shall possess, use, or transfer sources of ionizing radiation in such a manner as to cause any individual in a restricted area to receive in any period of one calendar quarter from sources in the employer's possession or control a dose in excess of the limits specified in Table G–18:

Table G–18

	Rems per calendar quarter
Whole body; Head and trunk; active blood-forming organs; lens of eyes; or gonads	1¼
Hands and forearms; feet and ankles	18¾
Skin of whole body	7½

(2) An employer may permit an individual in a restricted area to receive doses to the whole body greater than those permitted under subparagraph (1) of this paragraph, so long as:

(i) During any calendar quarter the dose to the whole body shall not exceed 3 rems; and

(ii) The dose to the whole body, when added to the accumulated occupational dose to the whole body, shall not exceed 5 (N–18) rems, where "N" equals the individual's age in years at his last birthday; and

(iii) The employer maintains adequate past and current exposure records which show that the addition of such a dose will not cause the individual to exceed the amount authorized in this subparagraph. As used in this subparagraph "Dose to the whole body" shall be deemed to include any dose to the whole body, gonad, active bloodforming organs, head and trunk, or lens of the eye.

(3) No employer shall permit any employee who is under 18 years of age to receive in any period of one calendar quarter a dose in excess of 10 percent of the limits specified in Table G–18.

(4) "Calendar quarter" means any 3-month period determined as follows:

(i) The first period of any year may begin on any date in January: *Provided*, That the second, third, and fourth periods accordingly begin on the same date in April, July, and October, respectively, and that the fourth period extends into January of the succeeding year, if necessary to complete a 3-month quarter. During the first year of use of this method of determination, the first period for that year shall also include any additional days in January preceding the starting date for the first period; or

(ii) The first period in a calendar year of 13 complete, consecutive calendar weeks; the second period in a calendar year of 13 complete consecutive weeks; the third period in a calendar year of 13 complete, consecutive calendar weeks; the fourth period in a calendar year of 13 complete, consecutive calendar weeks. If at the end of a calendar year there are any days not falling within a complete calendar week of that year, such days shall be included within the last complete calendar week of that year. If at the beginning of any calendar year there are days not falling within a complete calendar week of that year, such days shall be included within the last complete calendar week of the previous year; or

(iii) The four periods in a calendar year may consist of the first 14 complete, consecutive calendar weeks; the next 12 complete, consecutive calendar weeks, the next 14 complete, consecutive calendar weeks, and the last 12 complete, consecutive calendar weeks. If at the end of a calendar year there are any days not falling within a complete calendar week of that year, such days shall be included (for purposes of this section) within the last complete calendar week of the year. If at the beginning of any calendar year there are days not falling within a complete calendar week of that year, such days shall be included (for purposes of this section) within the last complete week of the previous year.

(5) No employer shall change the method used by him to determine calendar quarters except at the beginning of a calendar year.

(c) *Exposure to airborne radioactive material.* (1) No employer shall possess, use or transport radioactive material in such a manner as to cause any employee, within a restricted area, to be exposed to airborne radioactive material in an average concentration in excess of the limits specified in Table 1 of Appendix B to 10 CFR Part 20. The limits given in Table 1 are for exposure to the concentrations specified for 40 hours in any workweek of 7 consecutive days. In any such period where the number of hours of exposure is less than 40, the limits specified in the table may be increased proportionately. In any such period where the number of hours of exposure is greater than 40, the limits specified in the table shall be decreased proportionately.

(2) No employer shall possess, use, or transfer radioactive material in such a manner as to cause any individual within a restricted area, who is under 18 years of age, to be exposed to airborne radioactive material in an average concentration in excess of the limits specified in Table II of Appendix B to 10 CFR Part 20. For purposes of this subparagraph, concentrations may be averaged over periods not greater than 1 week.

(3) "Exposed" as used in this paragraph means that the individual is present in an airborne concentration. No allowance shall be made for the use of protective clothing or equipment, or particle size.

(d) *Precautionary procedures and personal monitoring.* (1) Every employer shall make such surveys as may be necessary for him to comply with the provisions in this section. "Survey" means an evaluation of the radiation hazards incident to the production, use, release, disposal, or presence of radioactive materials or other sources of radiation under a specific set of conditions. When appropriate, such evaluation includes a physical survey of the location of materials and equipment, and measurements of levels of radiation or concentrations of radioactive material present.

(2) Every employer shall supply appropriate personnel monitoring equipment, such as film badges, pocket chambers, pocket dosimeters, or film rings, to, and shall require the use of such equipment by:

(i) Each employee who enters a restricted area under such circumstances that he receives, or is likely to receive, a dose in any calendar quarter in excess of 25 percent of the applicable value specified in paragraph (b)(1) of this section, and

(ii) Each employee under 18 years of age who enters a restricted area under such circumstances that he receives, or is likely to receive, a dose in any calendar quarter in excess of 5 percent of the applicable value specified in paragraph (b)(1) of this section; and

(iii) Each employee who enters a high radiation area.

(3) As used in this section:

(i) "Personnel monitoring equipment" means devices designed to be worn or carried by an individual for the purpose of measuring the dose received (e.g., film badges, pocket chambers, pocket dosimeters, film rings, etc.);

(ii) "Radiation area" means any area, accessible to personnel, in which there exists radiation at such levels that a major portion of the body could receive in any 1 hour a dose in excess of 5 millirem, or in any 5 consecutive days a dose in excess of 100 millirem; and

(iii) "High radiation area" means any area, accessible to personnel, in which there exists radiation at such levels that a major portion of the body could receive in any one hour a dose in excess of .00 millirem.

(e) *Caution signs, labels, and signals—*(1) *General.* (i) Symbols prescribed by this paragraph shall use the conventional radiation caution colors (magenta or purple on yellow background). The symbol prescribed by this paragraph is the conventional three-bladed design:

RADIATION SYMBOL

1. Cross-hatched area is to be magenta or purple.
2. Background is to be yellow.

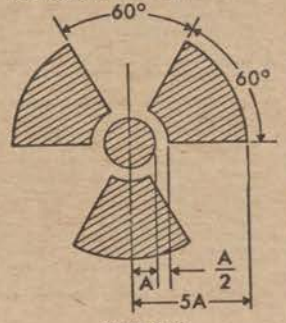


FIGURE G-10

(ii) In addition to the contents of signs and labels prescribed in this paragraph, employers may provide on or near such signs and labels any additional information which may be appropriate in aiding individuals to minimize exposure to radiation or to radioactive material.

(2) *Radiation area.* Each radiation area shall be conspicuously posted with a sign or signs bearing the radiation caution symbol described in subparagraph (1) of this paragraph and the words:

CAUTION
RADIATION AREA

(3) *High radiation area.* (i) Each high radiation area shall be conspicuously posted with a sign or signs bearing the radiation caution symbol and the words:

CAUTION
HIGH RADIATION AREA

(ii) Each high radiation area shall be equipped with a control device which shall either cause the level of radiation to be reduced below that at which an individual might receive a dose of 100 millirems in 1 hour upon entry into the area or shall energize a conspicuous visible or audible alarm signal in such a manner that the individual entering and the employer or a supervisor of the activity are made aware of the entry. In the case of a high radiation area established for a period of 30 days or less, such control device is not "airborne radioactivity area" means:

required.

(4) *Airborne radioactivity area.* (i) As used in the provisions of this section,

(a) Any room, enclosure, or operating area in which airborne radioactive materials, composed wholly or partly of radioactive material, exist in concentrations in excess of the amounts specified in column 1 of Table 1 of Appendix B to 10 CFR Part 20 or

(b) Any room, enclosure, or operating area in which airborne radioactive materials exist in concentrations which, averaged over the number of hours in any week during which individuals are in the area, exceed 25 percent of the amounts specified in column 1 of Table 1 of Appendix B to 10 CFR Part 20.

(ii) Each airborne radioactivity area shall be conspicuously posted with a sign or signs bearing the radiation caution symbol described in subparagraph (1) of this paragraph and the words:

CAUTION
AIRBORNE RADIOACTIVITY AREA

(5) *Additional requirements.*

(i) Each area or room in which radioactive material is used or stored and which contains any radioactive material (other than natural uranium or thorium) in any amount exceeding 10 times the quantity of such material specified in Appendix C to 10 CFR Part 20 shall be conspicuously posted with a sign or signs bearing the radiation caution symbol described in subparagraph (1) of this paragraph and the words:

CAUTION
RADIOACTIVE MATERIALS

(ii) Each area or room in which natural uranium or thorium is used or stored in an amount exceeding 100 times the quantity of such material specified in 10 CFR Part 20 shall be conspicuously posted with a sign or signs bearing the radiation caution symbol described in subparagraph (1) of this paragraph and the words:

CAUTION
RADIOACTIVE MATERIALS

(6) *Containers.* (i) Each container in which is transported, stored, or used a quantity of any radioactive material (other than natural uranium or thorium) greater than the quantity of such material specified in Appendix C to 10 CFR Part 20 shall bear a durable, clearly visible label bearing the radiation caution symbol described in subparagraph (1) of this paragraph and the words:

CAUTION
RADIOACTIVE MATERIALS

(ii) Each container in which natural uranium or thorium is transported, stored, or used in a quantity greater than 10 times the quantity specified in Appendix C to 10 CFR Part 20 shall bear a durable, clearly visible label bearing the radiation caution symbol described in subparagraph (1) of this paragraph and the words:

CAUTION
RADIOACTIVE MATERIALS

(iii) Notwithstanding the provisions of subdivisions (i) and (ii) of this subparagraph a label shall not be required:

(a) If the concentration of the material in the container does not exceed that specified in column 2 of Table 1 of Appendix B to 10 CFR Part 20, or

(b) For laboratory containers, such as beakers, flasks, and test tubes, used transiently in laboratory procedures when the user is present.

(iv) Where containers are used for storage, the labels required in this subparagraph shall state also the quantities and kinds of radioactive materials in the containers and the date of measurement of the quantities.

(7) *Immediate evacuation warning signal—*(i) *Signal characteristics.* (1) The signal shall be a midfrequency complex sound wave amplitude modulated at a subsonic frequency. The complex sound wave in free space shall have a fundamental frequency (f_c) between 450 and 500 hertz (Hz) modulated at a subsonic rate between 4 and 5 hertz.

(ii) The signal generator shall not be less than 75 decibels at every location where an individual may be present whose immediate, rapid, and complete evacuation is essential.

(iii) A sufficient number of signal units shall be installed such that the requirements of subdivision (ii) of this subparagraph are met at every location where an individual may be present whose immediate, rapid, and complete evacuation is essential.

(iv) The signal shall be unique in the plant or facility in which it is installed.

(v) The minimum duration of the signal shall be sufficient to insure that all affected persons hear the signal.

(vi) The signal-generating system shall respond automatically to an initiating event without requiring any human action to sound the signal.

(2) *Design objectives.* (i) The signal-generating system shall be designed to incorporate components which enable the system to produce the desired signal each time it is activated within one-half second of activation.

(ii) The signal-generating system shall be provided with an automatically activated secondary power supply which is adequate to simultaneously power all emergency equipment to which it is connected, if operation during power failure is necessary, except in those systems using batteries as the primary source of power.

(iii) All components of the signal-generating system shall be located to provide maximum practicable protection against damage in case of fire, explosion, corrosive atmosphere, or other environmental extremes consistent with adequate system performance.

(iv) The signal-generating system shall be designed with the minimum number of components necessary to make it function as intended, and should utilize components which do not require frequent servicing such as lubrication or cleaning.

(v) Where several activating devices feed activating information to a central signal generator, failure of any activating device shall not render the signal-generator system inoperable to activating information from the remaining devices.

(vi) The signal-generating system shall be designed to enhance the probability that alarm occurs only when immediate evacuation is warranted. The number of false alarms shall not be so great that the signal will come to be disregarded and shall be low enough to minimize personal injuries or excessive property damage that might result from such evacuation.

(3) *Testing.* (i) Initial tests, inspections, and checks of the signal-generating system shall be made to verify that the fabrication and installation were made in accordance with design plans and specifications and to develop a thorough knowledge of the performance of the system and all components under normal and hostile conditions.

(ii) Once the system has been placed in service, periodic tests, inspections, and checks shall be made to minimize the possibility of malfunction.

(iii) Following significant alterations or revisions to the system, tests and checks similar to the initial installation tests shall be made.

(iv) Tests shall be designed to minimize hazards while conducting the tests.

(v) Prior to normal operation the signal-generating system shall be checked physically and functionally to assure reliability and to demonstrate accuracy and performance. Specific tests shall include:

(a) All power sources.

(b) Calibration and calibration stability.

(c) Trip levels and stability.

(d) Continuity of function with loss and return of required services such as AC or DC power, air pressure, etc.

(e) All indicators.

(f) Trouble indicator circuits and signals, where used.

(g) Air pressure (if used).

(h) Determine that sound level of the signal is within the limit of subparagraph (1)(ii) of this paragraph at all points that require immediate evacuation.

(vi) In addition to the initial startup and operating tests, periodic scheduled performance tests and status checks must be made to insure that the system is at all times operating within design limits and capable of the required response. Specific periodic tests or checks or both shall include:

(a) Adequacy of signal activation device.

(b) All power sources.

(c) Function of all alarm circuits and trouble indicator circuits including trip levels.

(d) Air pressure (if used).

(e) Function of entire system including operation without power where required.

(f) Complete operational tests including sounding of the signal and determination that sound levels are adequate.

(vii) Periodic tests shall be scheduled on the basis of need, experience, difficulty, and disruption of operations. The entire system should be operationally tested at least quarterly.

(viii) All employees whose work may necessitate their presence in an area covered by the signal shall be made familiar with the actual sound of the signal—preferably as it sounds at their work location. Before placing the system into operation, all employees normally working in the area shall be made acquainted with the signal by actual demonstration at their work locations.

(g) *Exceptions from posting requirements.* Notwithstanding the provisions of paragraph (e) of this section:

(1) A room or area is not required to be posted with a caution sign because of the presence of a sealed source, provided the radiation level 12 inches from the surface of the source container or housing does not exceed 5 millirem per hour.

(2) Rooms or other areas in onsite medical facilities are not required to be posted with caution signs because of the presence of patients containing radioactive material, provided that there are personnel in attendance who shall take the precautions necessary to prevent the exposure of any individual to radiation or radioactive material in excess of the

limits established in the provisions of this section.

(3) Caution signs are not required to be posted at areas or rooms containing radioactive materials for periods of less than 8 hours: *Provided*, That

(i) The materials are constantly attended during such periods by an individual who shall take the precautions necessary to prevent the exposure of any individual to radiation or radioactive materials in excess of the limits established in the provisions of this section; and

(ii) Such area or room is subject to the employer's control.

(h) *Exemptions for radioactive materials packaged for shipment.* Radioactive materials packaged and labeled in accordance with regulations of the Department of Transportation published in 49 CFR Chapter I, are exempt from the labeling and posting requirements of this subpart during shipment, provided that the inside containers are labeled in accordance with the provisions of paragraph (e) of this section.

(i) *Instruction of personnel, posting.* (1) Employers regulated by the Atomic Energy Commission shall be governed by 10 CFR Part 20 standards. Employers in a State named in paragraph (p)(3) of this section shall be governed by the requirements of the laws and regulations of that State. All other employers shall be regulated by the following:

(2) All individuals working in or frequenting any portion of a radiation area shall be informed of the occurrence of radioactive materials or of radiation in such portions of the radiation area; shall be instructed in the safety problems associated with exposure to such materials or radiation and in precautions or devices to minimize exposure; shall be instructed in the applicable provisions of this section for the protection of employees from exposure to radiation or radioactive materials; and shall be advised of reports of radiation exposure which employees may request pursuant to the regulations in this section.

(3) Each employer to whom this section applies shall post a current copy of its provisions and a copy of the operating procedures applicable to the work conspicuously in such locations as to insure that employees working in or frequenting radiation areas will observe these documents on the way to and from their place of employment, or shall keep such documents available for examination of employees upon request.

(j) *Storage of radioactive materials.* Radioactive materials stored in a nonradiation area shall be secured against unauthorized removal from the place of storage.

(k) *Waste disposal.* No employer shall dispose of radioactive material except by transfer to an authorized recipient, or in a manner approved by the Atomic Energy Commission or a State named in paragraph (p)(3) of this section.

(l) *Notification of incidents.*—(1) *Immediate notification.* Each employer shall immediately notify the Assistant Secretary of Labor or his duly authorized representative, for employees not protected by the Atomic Energy Commission by means of 10 CFR Part 20; paragraph (p)(2) of this section, or the requirements of the laws and regulations of States named in paragraph (p)(3) of this section, by telephone or telegraph of any incident involving radiation which may have caused or threatens to cause:

(i) Exposure of the whole body of any individual to 25 rems or more of radiation; exposure of the skin of the whole body of any individual to 150 rems or more of radiation; or exposure of the feet, ankles, hands, or forearms of any individual to 375 rems or more of radiation; or

(ii) The release of radioactive material in concentrations which, if averaged over a period of 24 hours, would exceed 5,000 times the limit specified for such materials in Table II of Appendix B to 10 CFR Part 20.

(iii) A loss of 1 working week or more of the operation of any facilities affected; or

(iv) Damage to property in excess of $100,000.

(2) *Twenty-four hour notification.* Each employer shall within 24 hours following its occurrence notify the Assistant Secretary of Labor or his duly authorized representative for employees not protected by the Atomic Energy Commission by means of 10 CFR Part 20; paragraph (p)(2) of this section, or the requirements of the laws and applicable regulations of States named in paragraph (p)(3) of this section, by telephone or telegraph of any incident involving radiation which may have caused or threatens to cause:

(i) Exposure of the whole body of any individual to 5 rems or more of radiation; exposure of the skin of the whole body of any individual to 30 rems or more of radiation; or exposure of the feet, ankles, hands, or forearms to 75 rems or more of radiation; or

(ii) A loss of 1 day or more of the operation of any facilities; or

(iii) Damage to property in excess of $10,000.

(m) *Reports of overexposure and excessive levels and concentrations.* (1) In addition to any notification required by paragraph (l) of this section each employer shall make a report in writing within 30 days to the Assistant Secretary of Labor or his duly authorized representative, for employees not protected by the Atomic Energy Commission by means of 10 CFR Part 20; or under paragraph (p)(2) of this section, or the requirements of the laws and regulations of States named in paragraph (p)(3) of this section, of each exposure of an individual to radiation or concentrations of radioactive material in excess of any applicable limit in this section. Each report required under this subparagraph shall describe the extent of exposure of persons to radiation or to radioactive material; levels of radiation and concentration of radioactive material involved, the cause of the exposure, levels of concentrations; and corrective steps taken or planned to assure against a recurrence.

(2) In any case where an employer is required pursuant to the provisions of this paragraph to report to the U.S. Department of Labor any exposure of an individual to radiation or to concentrations of radioactive material, the employer shall also notify such individual of the nature and extent of exposure. Such notice shall be in writing and shall contain the following statement: "You should preserve this report for future reference."

(n) *Records.* (1) Every employer shall maintain records of the radiation exposure of all employees for whom personnel monitoring is required under paragraph (d) of this section and advise each of his employees of his individual exposure on at least an annual basis.

(2) Every employer shall maintain records in the same units used in tables in paragraph (b) of this section and Appendix B to 10 CFR Part 20.

(o) *Disclosure to former employee of individual employee's record.* (1) At the request of a former employee an employer shall furnish to the employee a report of the employee's exposure to radiation as shown in records maintained by the employer pursuant to paragraph (n)(1) of this section. Such report shall be furnished within 30 days from the time the request is made, and shall cover each calendar quarter of the individual's employment involving exposure to radiation or such lesser period as may be requested by the employee. The report shall also include the results of any calculations and analysis of radioactive material deposited in the body of the employee. The report shall be in writing and contain the following statement: "You should preserve this report for future reference."

(2) The former employee's request should include appropriate identifying data, such as social security number and dates and locations of employment.

(p) *Atomic Energy Commission licensees—AEC contractors operating AEC plants and facilities—AEC Agreement State licensees or registrants.* (1) Any employer who possesses or uses source material, byproduct material, or special nuclear material, as defined in the Atomic Energy Act of 1954, as amended, under a license issued by the Atomic Energy Commission and in accordance with the requirements of 10 CFR Part 20 shall be deemed to be in compliance with the requirements of this section with respect to such possession and use.

(2) AEC contractors operating AEC plants and facilities: Any employer who possesses or uses source material, byproduct material, special nuclear material, or other radiation sources under a contract with the Atomic Energy Commission for the operation of AEC plants and facilities and in accordance with the standards, procedures, and other requirements for radiation protection established by the Commission for such contract pursuant to the Atomic Energy Act of 1954 as amended (42 U.S.C. 2011 et seq.), shall be deemed to be in compliance with the requirements of this section with respect to such possession and use.

(3) AEC-agreement State licensees or registrants:

(i) *Atomic Energy Act sources.* Any employer who possesses or uses source material, byproduct material, or special nuclear material, as defined in the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.), and has either registered such sources with, or is operating under a license issued by, a State which has an agreement in effect with the Atomic Energy Commission pursuant to section 274(b) (42 U.S.C. 2021(b)) of the Atomic Energy Act of 1954, as amended, and in accordance with the requirements of that State's laws and regulations shall be deemed to be in compliance with the radiation requirements of this section, insofar as his possession and use of such material is concerned, unless the Secretary of Labor, after conference with the Atomic Energy Commission, shall determine that the State's program for control of these radiation sources is incompatible with the requirements of this section. Such agreements currently are in effect only in the States of Alabama, Arkansas, California, Kansas, Kentucky, Florida, Mississippi, New Hampshire, New York, North Carolina, Texas, Tennessee, Oregon, Idaho, Arizona, Colorado, Louisiana, Nebraska, Washington, Maryland, North Dakota, South Carolina, and Georgia.

(ii) *Other sources.* Any employer who possesses or uses radiation sources other than source material, byproduct material, or special nuclear material, as defined in the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.), and has either registered such sources with, or is operating under a license issued by a State which has an agreement in effect with the Atomic Energy Commission pursuant to section 274(b) (42 U.S.C. 2021(b)) of the Atomic Energy Act of 1954, as amended, and in accordance with the requirements of that State's laws and regulations shall be deemed to be in compliance with the radiation requirements of this section, insofar as his possession and use of such material is concerned, provided the State's program for control of these radiation sources is the subject of a currently effective determination by the Assistant Secretary of Labor that such program is compatible with the requirements of this section. Such determinations currently are in effect only in the States of Alabama, Arkansas, California, Kansas, Kentucky, Florida, Mississippi, New Hampshire, New York, North Carolina, Texas, Tennessee, Oregon, Idaho, Arizona, Colorado, Louisiana, Nebraska, Washington, Maryland, North Dakota, South Carolina, and Georgia.

(q) [Reserved]

(r) *Radiation standards for mining.* (1) For the purpose of this paragraph, a "working level" is defined as any combination of radon daughters in 1 liter of air which will result in the ultimate emission of 1.3×10^5 million electron volts of potential alpha energy. The numerical value of the "working level" is derived from the alpha energy released by the total decay of short-lived radon daughter products in equilibrium with 100 picocuries of radon 222 per liter of air. A working level month is defined as the exposure received by a worker breathing air at one working level concentration for 4⅓ weeks of 40 hours each.

(2) Occupational exposure to radon daughters in mines shall be controlled so that no individual will receive an exposure of more than 2 working level months in any calendar quarter and no more than 4 working level months in any calendar year. Actual exposures shall be kept as far below these values as practicable.

(3)(i) For uranium mines, records of environmental concentrations in the occupied parts of the mine, and of the time spent in each area by each person involved in an underground work shall be established and maintained. These records shall be in sufficient detail to permit calculations of the exposures, in units of working level months, of the individuals and shall be available for inspection by the Secretary of Labor or his authorized agents.

(ii) For other than uranium mines and for surface workers in all mines, subdivision (i) of this subparagraph will be applicable: *Provided, however*, That if no environmental sample shows a concentration greater than 0.33 working level in any occupied part of the mine, the maintenance of individual occupancy records and the calculation of individual exposures will not be required.

(4)(i) At the request of an employee (or former employee) a report of the employee's exposure to radiation as shown in records maintained by the employer pursuant to subparagraph (3) of this paragraph, shall be furnished to him. The report shall be in writing and contain the following statement:

> This report is furnished to you under the provisions of the U.S. Department of Labor, Ionizing Radiation Safety and Health Standards (29 CFR 1910.96(r)). You should preserve this report for future reference.

(ii) The former employee's request should include appropriate identifying data, such as social security number and dates and locations of employment.

§ 1910.97 Nonionizing radiation.

(a) *Electromagnetic radiation.*—(1) *Definitions applicable to this paragraph.* (i) The term "electromagnetic radiation" is restricted to that portion of the spectrum commonly defined as the radio frequency region, which for the purpose of this specification shall include the microwave frequency region.

(ii) *Partial body irradiation.* Pertains to the case in which part of the body is exposed to the incident electromagnetic energy.

(iii) *Radiation protection guide.* Radiation level which should not be exceeded without careful consideration of the reasons for doing so.

(iv) The word "symbol" as used in this specification refers to the overall design, shape, and coloring of the rf radiation sign shown in figure G–11.

(v) *Whole body irradiation.* Pertains to the case in which the entire body is exposed to the incident electromagnetic energy or in which the cross section of the body is smaller than the cross section of the incident radiation beam.

(2) *Radiation protection guide.* (i) For normal environmental conditions and for incident electromagnetic energy of frequencies from 10 MHz to 100 GHz, the radiation protection guide is 10 mW/cm.² (milliwatt per square centimeter) as averaged over any possible 0.1-hour period. This means the following:

Power density: 10 mW./cm.² for periods of 0.1-hour or more.

Energy density: 1 mW.-hr./cm.² (milliwatt hour per square centimeter) during any 0.1-hour period.

This guide applies whether the radiation is continuous or intermittent.

(ii) These formulated recommendations pertain to both whole body irradiation and partial body irradiation. Partial body irradiation must be included since it has been shown that some parts of the human body (e.g., eyes, testicles) may be harmed if exposed to incident radiation levels significantly in excess of the recommended levels.

(3) *Warning symbol.* (i) The warning symbol for radio frequency radiation hazards shall consist of a red isosceles triangle above an inverted black isosceles triangle, separated and outlined by an aluminum color border. The words "Warning—Radio-Frequency Radiation Hazard" shall appear in the upper triangle. See figure G–11.

(ii) American National Standard Safety Color Code for Marking Physical Hazards and the Identification of Certain Equipment, Z53.1–1953, shall be used for color specification. All lettering and the border shall be of aluminum color.

(iii) The inclusion and choice of warning information or precautionary instructions is at the discretion of the user. If such information is included it shall appear in the lower triangle of the warning symbol.

1. Place handling and mounting instructions on reverse side.
2. D = Scaling unit.
3. Lettering: Ratio of letter height to thickness of letter lines.
Upper triangle: 5 to 1 Large
6 to 1 Medium
Lower triangle 4 to 1 Small
6 to 1 Medium
4. Symbol is square, triangles are right-angle isosceles.

Fig. G-1.1
Radio-Frequency Radiation Hazard Warning Symbol

(4) *Scope.* This section applies to all radiations originating from radio stations, radar equipment, and other possible sources of electromagnetic radiation such as used for communication, radio navigation, and industrial and scientific purposes. This section does not apply to the deliberate exposure of patients by, or under the direction of, practitioners of the healing arts.

§ 1910.98 Effective dates.

(a) The provisions of this Subpart G shall become effective on August 27, 1971, except as provided in the remaining paragraphs of this section.

(b) The following provisions shall become effective on February 15, 1972:

§ 1910.94 (a)(2)(iii), (a)(3), (a)(4), (b), (c)(2), (c)(3), (c)(4), (c)(5), (c)(5)(i), (c)(6)(ii), (d)(1)(ii), (d)(3), (d)(4), (d)(5), and (d)(7).

(c) Notwithstanding anything in paragraph (a), (b), or (d) of this section, any provision in any other section of this subpart which contains in itself a specific effective date or time limitation shall become effective on such date or shall apply in accordance with such limitation.

(d) Notwithstanding anything in paragraph (a) of this section, if any standard in 41 CFR Part 50–204, other than a national consensus standard incorporated by reference in § 50–204.2(a)(1), is or becomes applicable at any time to any employment and place of employment, by virtue of the Walsh-Healey Public Contracts Act, or the Service Contract Act of 1965, or the National Foundation on Arts and Humanities Act of 1965, any corresponding established Federal standard in this Subpart G which is derived from 41 CFR Part 50–204 shall also become effective, and shall be applicable to such employment and place of employment, on the same date.

§ 1910.99 Sources of standards.

Section	Source
1910.94(a)	ANSI N2.3–1967, Immediate and Safe Practices, of Abrasive Blasting Operations.
1910.94(b)	ANSI Z43.1–1968, Ventilation Control of Grinding, Polishing, and Buffing Operations.
1910.94(c)	ANSI Z9.3–1970, Safety Code for the Design, Construction and Ventilation of Spray Finishing Operations.
1910.94(d)	ANSI Z9.1–1969, Safety Code for Ventilation and Operation of Open-Surface Tanks.
1910.95	41 CFR 50–204.10.
1910.96 (a) through (e) and (g) through (r).	41 CFR 50–204.20.
1910.96(f)	ANSI N2.3–1967, Immediate Evacuation Signal for Use in Industrial Installations Where Radiation Exposure May Occur.
1910.97	ANSI C95.1–1966, Safety Level of Electromagnetic Radiation with Respect to Personnel and American National Standards Institute C95.2–1966, Radio Frequency Radiation Hazard and Warning Signal.

[39 FR 23502, June 27, 1974, as amended at 40 FR 23073, May 28, 1975]

§ 1910.100 Standards organizations.

Specific standards of the following organizations have been referenced in this subpart. Copies of the standards may be obtained from the issuing organization.

American Conference of Governmental Industrial Hygienists, 1014 Broadway, Cincinnati, OH 45202.

American National Standards Institute, 1430 Broadway, New York, NY 10018.

National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210.

[39 FR 23502, June 27, 1974, as amended at 40 FR 18496, April 28, 1975]

Subpart H—Hazardous Materials

§ 1910.101 Compressed gases (general requirements).

(a) *Inspection of compressed gas cylinders.* Each employer shall determine that compressed gas cylinders under his control are in a safe condition to the extent that this can be determined by visual inspection. Visual and other inspections shall be conducted as prescribed in the Hazardous Materials Regulations of the Department of Transportation (49 CFR Parts 171–179 and 14 CFR Part 103). Where those regulations are not applicable, visual and other inspections shall be conducted in accordance with Compressed Gas Association Pamphlets C–6–1968 and C–8–1962.

(b) *Compressed gases.* The in-plant handling, storage, and utilization of all compressed gases in cylinders, portable

tanks, rail tankcars, or motor vehicle cargo tanks shall be in accordance with Compressed Gas Association Pamphlet P–1–1965.

(c) *Safety relief devices for compressed gas containers.* Compressed gas cylinders, portable tanks, and cargo tanks shall have pressure relief devices installed and maintained in accordance with Compressed Gas Association Pamphlets S–1.1–1963 and 1965 addenda and S–1.2–1963.

§ 1910.102 Acetylene.

(a) *Cylinders.* The in-plant transfer, handling, storage, and utilization of acetylene in cylinders shall be in accordance with Compressed Gas Association Pamphlet G–1–1966.

(b) *Piped systems.* The piped systems for the inplant transfer and distribution of acetylene shall be designed, installed, maintained, and operated in accordance with Compressed Gas Association Pamphlet G–1.3–1959.

(c) *Generators and filling cylinders.* Plants for the generation of acetylene and the charging (filling) of acetylene cylinders shall be designed, constructed, and tested in accordance with the standards prescribed in Compressed Gas Association Pamphlet G–1.4–1966.

§ 1910.103 Hydrogen.

(a) *General*—(1) *Definitions.* As used in this section (i) Gaseous hydrogen system is one in which the hydrogen is delivered, stored and discharged in the gaseous form to consumer's piping. The system includes stationary or movable confainers, pressure regulators, safety relief devices, manifolds, interconnecting piping and controls. The system terminates at the point where hydrogen at service pressure first enters the consumer's distribution piping.

(ii) Approved—Means unless otherwise indicated listed or approved by the following nationally recognized testing laboratories: Underwriters' Laboratories, Inc., and Factory Mutual Engineering Corp.

(iii) Listed—See "approved".

(iv) ASME—American Society of Mechanical Engineers.

(v) DOT Specifications—Regulations of the Department of Transportation published in 49 CFR Chapter I.

(vi) DOT regulations—See § 1910.103 (a)(1)(v).

(2) *Scope*—(i) *Gaseous hydrogen systems.* (a) Paragraph (b) of this section applies to the installation of gaseous hydrogen systems on consumer premises where the hydrogen supply to the consumer premises originates outside the consumer premises and is delivered by mobile equipment.

(b) Paragraph (b) of this section does not apply to gaseous hydrogen systems having a total hydrogen content of less than 400 cubic feet, nor to hydrogen manufacturing plants or other establishments operated by the hydrogen supplier or his agent for the purpose of storing hydrogen and refilling portable containers, trailers, mobile supply trucks, or tank cars.

(ii) *Liquefied hydrogen systems.* (a) Paragraph (c) of this section applies to the installation of liquefied hydrogen systems on consumer premises.

(b) Paragraph (c) of this section does not apply to liquefied hydrogen portable containers of less than 150 liters (39.63 gallons) capacity; nor to liquefied hydrogen manufacturing plants or other establishments operated by the hydrogen supplier or his agent for the sole purpose of storing liquefied hydrogen and refilling portable containers, trailers, mobile supply trucks, or tank cars.

(b) *Gaseous hydrogen systems*—(1) *Design.*

(i) *Containers.* (a) Hydrogen containers shall comply with one of the following:

(1) Designed, constructed, and tested in accordance with appropriate requirements of ASME Boiler and Pressure Vessel Code, Section VIII—Unfired Pressure Vessels—1968.

(2) Designed, constructed, tested and maintained in accordance with U.S. Department of Transportation Specifications and Regulations.

(b) Permanently installed containers shall be provided with substantial noncombustible supports on firm noncombustible foundations.

(c) Each portable container shall be legibly marked with the name "Hydrogen" in accordance with "Marking Portable Compressed Gas Containers to Identify the Material Contained" ANSI Z48.1—1954. Each manifolded hydrogen supply unit shall be legibly marked with the name Hydrogen or a legend such as "This unit contains hydrogen."

(ii) *Safety relief devices.* (a) Hydrogen containers shall be equipped with safety relief devices as required by the ASME Boiler and Pressure Vessel Code, Section VIII Unfired Pressure Vessels, 1968 or the DOT Specifications and Regulations under which the container is fabricated.

(b) Safety relief devices shall be arranged to discharge upward and unobstructed to the open air in such a manner as to prevent any impingement of escaping gas upon the container, adjacent structure or personnel. This requirement does not apply to DOT Specification containers having an internal volume of 2 cubic feet or less.

(c) Safety relief devices or vent piping shall be designed or located so that moisture cannot collect and freeze in a manner which would interfere with proper operation of the device.

(iii) *Piping, tubing, and fittings.* (a) Piping, tubing, and fittings shall be suitable for hydrogen service and for the pressures and temperatures involved. Cast iron pipe and fittings shall not be used.

(b) Piping and tubing shall conform to Section 2—"Industrial Gas and Air Piping"—Code for Pressure Piping, ANSI B31.1–1967 with addenda B31.1–1969.

(c) Joints in piping and tubing may be made by welding or brazing or by use of flanged, threaded, socket, or compression fittings. Gaskets and thread plants shall be suitable for hydrogen service.

(iv) *Equipment assembly.* (a) Valves, gauges, regulators, and other accessories shall be suitable for hydrogen service.

(b) Installation of hydrogen systems shall be supervised by personnel familiar with proper practices with reference to their construction and use.

(c) Storage containers, piping, valves, regulating equipment, and other accessories shall be readily accessible, and shall be protected against physical damage and against tampering.

(d) Cabinets or housings containing hydrogen control or operating equipment shall be adequately ventilated.

(e) Each mobile hydrogen supply unit used as part of a hydrogen system shall be adequately secured to prevent movement.

(f) Mobile hydrogen supply units shall be electrically bonded to the system before discharging hydrogen.

(v) *Marking.* The hydrogen storage location shall be permanently placarded as follows: "HYDROGEN—FLAMMABLE GAS—NO SMOKING—NO OPEN FLAMES," or equivalent.

(vi) *Testing.* After installations, all piping, tubing, and fittings shall be tested and proved hydrogen gas tight at maximum operating pressure.

(2) *Location*—(i) *General.* (a) The system shall be located so that it is readily accessible to delivery equipment and to authorized personnel.

(b) Systems shall be located above ground.

(c) Systems shall not be located beneath electric power lines.

(d) Systems shall not be located close to flammable liquid piping or piping of other flammable gases.

(e) Systems near aboveground flammable liquid storage shall be located on ground higher than the flammable liquid storage except when dikes, diversion curbs, grading, or separating solid walls are used to prevent accumulation of flammable liquids under the system.

(ii) *Specific requirements.* (a) The location of a system, as determined by the maximum total contained volume of hydrogen, shall be in the order of preference as indicated by Roman numerals in Table H–1.

TABLE H-1

Nature of location	Size of hydrogen system: Less than 3,000 CF	3,000 CF to 15,000 CF	In excess of 15,000 CF
Outdoors	I	I	I
In a separate building	II	II	II
In a special room	III	III	Not permitted.
Inside buildings not in a special room and exposed to other occupancies	IV	Not permitted.	Not permitted.

(b) The minimum distance in feet from a hydrogen system of indicated capacity located outdoors, in separate buildings or in special rooms to any specified outdoor exposure shall be in accordance with Table H–2.

(c) The distances in Table H–2 Items 1, 14, and 3 to 10 inclusive do not apply where protective structures such as adequate fire walls are located between the system and the exposure.

TABLE H-2

Type of outdoor exposure		Size of hydrogen system: Less than 3,000 CF	3,000 CF to 15,000 CF	In excess of 15,000 CF
1. Building or structure	Wood frame construction*	10	25	50
	Heavy timber, noncombustible or ordinary construction*	0	10	**25
	Fire-resistive construction*	0	0	0
2. Wall openings	Not above any part of a system	10	10	10
	Above any part of a system	25	25	25
3. Flammable liquids above ground	0 to 1,000 gallons	10	25	25
	In excess of 1,000 gallons	25	50	50
4. Flammable liquids below ground— 0 to 1,000 gallons.	Tank	10	10	10
	Vent or fill opening of tank	25	25	25
5. Flammable liquids below ground— in excess of 1,000 gallons.	Tank	20	20	20
	Vent or fill opening of tank	25	25	25
6. Flammable gas storage, either high pressure or low pressure.	0 to 15,000 CF capacity	10	25	25
	In excess of 15,000 CF capacity	25	50	50
7. Oxygen storage	12,000 CF or less	Refer to NFPA No. 51, gassystems for welding and cutting (1969).		
	More than 12,000 CF	Refer to NFPA No. 566, bulk oxygen systems at consumer sites (1969).		
8. Fast burning solids such as ordinary lumber, excelsior or paper		50	50	50
9. Slow burning solids such as heavy timber or coal		25	25	25
10. Open flames and other sources of ignition		25	25	25
11. Air compressor intakes or inlets to ventilating or air-conditioning equipment		50	50	50
12. Concentration of people***		25	50	50
13. Public sidewalks		15	15	15
14. Line of adjoining property which may be built upon		5	5	5

*Refer to NFPA No. 220 Standard Types of Building Construction for definitions of various types of construction. (1969 Ed.)
**But not less than one-half the height of adjacent side wall of the structure.
***In congested areas such as offices, lunchrooms, locker rooms, time-clock areas, and places of public assembly.

(d) Hydrogen systems of less than 3,000 CF when located inside buildings and exposed to other occupancies shall be situated in the building so that the system will be as follows:

(1) In an adequately ventilated area as in subparagraph (3)(ii)(b) of this paragraph.

(2) Twenty feet from stored flammable materials or oxidizing gases.

(3) Twenty-five feet from open flames, ordinary electrical equipment or other sources of ignition.

(4) Twenty-five feet from concentrations of people.

(5) Fifty feet from intakes of ventilation or air-conditioning equipment and air compressors.

(6) Fifty feet from other flammable gas storage.

(7) Protected against damage or injury due to falling objects or working activity in the area.

(8) More than one system of 3,000 CF or less may be installed in the same room, provided the systems are separated by at least 50 feet. Each such system shall meet all of the requirements of this paragraph.

(3) *Design consideration of specific locations*—(i) *Outdoor locations.* (a) Where protective walls or roofs are provided, they shall be constructed of noncombustible materials.

(b) Where the enclosing sides adjoin each other, the area shall be properly ventilated.

(c) Electrical equipment within 15 feet shall be in accordance with subpart S of this part.

(ii) *Separate buildings.* (a) Separate buildings shall be built of at least noncombustible construction. Windows and doors shall be located so as to be readily accessible in case of emergency. Windows shall be of glass or plastic in metal frames.

(b) Adequate ventilation to the outdoors shall be provided. Inlet openings shall be located near the floor in exterior walls only. Outlet openings shall be located at the high point of the room in exterior walls or roof. Inlet and outlet openings shall each have minimum total area of one (1) square foot per 1,000 cubic feet of room volume. Discharge from outlet openings shall be directed or conducted to a safe location.

(c) Explosion venting shall be provided in exterior walls or roof only. The venting area shall be equal to not less than 1 square foot per 30 cubic feet of room volume and may consist of any one or any combination of the following: walls of light, noncombustible material, preferably single thickness, single strength glass; lightly fastened hatch covers; lightly fastened swinging doors in exterior walls opening outward; lightly fastened walls or roof designed to relieve at a maximum pressure of 25 pounds per square foot.

(d) There shall be no sources of ignition from open flames, electrical equipment, or heating equipment.

(e) Electrical equipment shall be in accordance with subpart S of this part for Class I, Division 2 locations.

(f) Heating, if provided, shall be by steam, hot water, or other indirect means.

(iii) *Special rooms.* (a) Floor, walls, and ceiling shall have a fire-resistance rating of at least 2 hours. Walls or partitions shall be continuous from floor to ceiling and shall be securely anchored. At least one wall shall be an exterior wall. Openings to other parts of the building shall not be permitted. Windows and doors shall be in exterior walls and shall be located so as to be readily accessible in case of emergency. Windows shall be of glass or plastic in metal frames.

(b) Ventilation shall be as provided in subdivision (ii)(b) of this subparagraph.

(c) Explosion venting shall be as provided in subdivision (ii)(c) of this subparagraph.

(d) There shall be no sources of ignition from open flames, electrical equipment, or heating equipment.

(e) Electrical equipment shall be in accordance with Article 501 of the National Electrical Code, NFPA 70-1971; ANSI C1-1971 (Rev. of C1-1968), for Class I Division 2 locations.

(f) Heating, if provided, shall be by steam, hot water, or indirect means.

(4) *Operating instructions.* For installations which require any operation of equipment by the user, legible instructions shall be maintained at operating locations.

(5) *Maintenance.* The equipment and functioning of each charged gaseous hydrogen system shall be maintained in a safe operating condition in accordance with the requirements of this section. The area within 15 feet of any hydrogen container shall be kept free of dry vegetation and combustible material.

(c) *Liquefied hydrogen systems*—(1) *Design*—(i) *Containers.* (a) Hydrogen containers shall comply with the following: Storage containers shall be designed, constructed, and tested in accordance with appropriate requirements of the ASME Boiler and Pressure Vessel Code, Section VIII—Unfired Pressure Vessels (1968) or applicable provisions of API Standard 620, Recommended Rules for Design and Construction of Large, Welded, Low-Pressure Storage Tanks, Second Edition (June 1963) and Appendix R (April 1965).

(b) Portable containers shall be designed, constructed and tested in accordance with DOT Specifications and Regulations.

(ii) *Supports.* Permanently installed containers shall be provided with substantial noncombustible supports securely anchored on firm noncombustible foundations. Steel supports in excess of 18 inches in height shall be protected with a protective coating having a 2-hour fire-resistance rating.

(iii) *Marking.* Each container shall be legibly marked to indicate "LIQUEFIED HYDROGEN—FLAMMABLE GAS."

(iv) *Safety relief devices.* (a) (1) Stationary liquefied hydrogen containers shall be equipped with safety relief devices sized in accordance with CGA Pamphlet S-1, Part 3, Safety Relief Device Standards for Compressed Gas Storage Containers.

(2) Portable liquefied hydrogen containers complying with the U.S. Department of Transportation Regulations shall be equipped with safety relief devices as required in the U.S. Department of Transportation Specifications and Regulations. Safety relief devices shall be sized in accordance with the requirements of CGA Pamphlet S-1, Safety Relief Device Standards, Part 1, Compressed Gas Cylinders and Part 2, Cargo and Portable Tank Containers.

(b) Safety relief devices shall be arranged to discharge unobstructed to the outdoors and in such a manner as to prevent impingement of escaping liquid or gas upon the container, adjacent structures or personnel. See subparagraph (2)(i)(f) of this paragraph for venting of safety relief devices in special locations.

(c) Safety relief devices or vent piping shall be designed or located so that moisture cannot collect and freeze in a manner which would interfere with proper operation of the device.

(d) Safety relief devices shall be provided in piping wherever liquefied hydrogen could be trapped between closures.

(v) *Piping, tubing, and fittings.* (a) Piping, tubing, and fittings and gasket and thread sealants shall be suitable for hydrogen service at the pressures and temperatures involved. Consideration shall be given to the thermal expansion and contraction of piping systems when exposed to temperature fluctuations of ambient to liquefied hydrogen temperatures.

(b) Gaseous hydrogen piping and tubing (above −20° F.) shall conform to the applicable sections of Pressure Piping Section 2—Industrial Gas and Air Piping, ANSI B31.1-1967 with addenda B31.1-1969. Design of liquefied hydrogen or cold (−20° F. or below) gas piping shall use Petroleum Refinery Piping ANSI B31.3-1966 or Refrigeration Piping ANSI B31.5-1966 with addenda B31.5a-1968 as a guide.

(c) Joints in piping and tubing shall preferably be made by welding or brazing; flanged, threaded, socket, or suitable compression fittings may be used.

(d) Means shall be provided to minimize exposure of personnel to piping operating at low temperatures and to prevent air condensate from contacting piping, structural members, and surfaces not suitable for cryogenic temperatures. Only those insulating materials which are rated nonburning in accordance with ASTM Procedures D1692-68 may be used. Other protective means may be used to protect personnel. The insulation shall be designed to have a vapor-tight seal in the outer covering to prevent the condensation of air and subsequent oxygen enrichment within the insulation. The insulation material and outside shield shall also be of adequate design to prevent attrition of the insulation due to normal operating conditions.

(e) Uninsulated piping and equipment which operate at liquefied-hydrogen temperature shall not be installed above asphalt surfaces or other combustible materials in order to prevent contact of liquid air with such materials. Drip pans may be installed under uninsulated piping and equipment to retain and vaporize condensed liquid air.

(vi) *Equipment assembly.* (a) Valves, gauges, regulators, and other accessories shall be suitable for liquefied hydrogen service and for the pressures and temperatures involved.

(b) Installation of liquefied hydrogen systems shall be supervised by personnel familiar with proper practices and with reference to their construction and use.

(c) Storage containers, piping, valves, regulating equipment, and other accessories shall be readily accessible and shall be protected against physical damage and against tampering. A shutoff valve shall be located in liquid product withdrawal lines as close to the container as practical. On containers of over 2,000 gallons capacity, this shutoff valve shall be of the remote control type with no connections, flanges, or other appurtenances (other than a welded manual shutoff valve) allowed in the piping between the shutoff valve and its connection to the inner container.

(d) Cabinets or housings containing hydrogen control equipment shall be ventilated to prevent any accumulation of hydrogen gas.

(vii) *Testing.* (a) After installation, all field-erected piping shall be tested and proved hydrogen gas-tight at operating pressure and temperature.

(b) Containers if out of service in excess of 1 year shall be inspected and tested as outlined in (a) of this subdivision. The safety relief devices shall be checked to determine if they are operable and properly set.

(viii) *Liquefied hydrogen vaporizers.* (a) The vaporizer shall be anchored and its connecting piping shall be sufficiently flexible to provide for the effect of expansion and contraction due to temperature changes.

(b) The vaporizer and its piping shall be adequately protected on the hydrogen and heating media sections with safety relief devices.

(c) Heat used in a liquefied hydrogen vaporizer shall be indirectly supplied utilizing media such as air, steam, water, or water solutions.

(d) A low temperature shutoff switch shall be provided in the vaporizer discharge piping to prevent flow of liquefied hydrogen in the event of the loss of the heat source.

(ix) *Electrical systems.* (a) Electrical wiring and equipment located within 3 feet of a point where connections are regularly made and disconnected, shall be in accordance with subpart S of this part, for Class I, Group B, Division 1 locations.

(b) Except as provided in (a) of this subdivision, electrical wiring and equipment located within 25 feet of a point where connections are regularly made and disconnected or within 25 feet of a liquid hydrogen storage container, shall be in accordance with subpart S of this part, for Class I, Group B, Division 2 locations. When equipment approved for class I, group B atmospheres is not commercially available, the equipment may be—

(1) Purged or ventilated in accordance with NFPA No. 496-1967, Standard for Purged Enclosures for Electrical Equipment in Hazardous Locations,

(2) Intrinsically safe, or

(3) Approved for Class I, Group C atmospheres. This requirement does not apply to electrical equipment which is installed on mobile supply trucks or tank cars from which the storage container is filled.

(x) *Bonding and grounding.* The liquefied hydrogen container and associated piping shall be electrically bonded and grounded.

(2) *Location of liquefied hydrogen storage*—(i) *General requirements.* (a) The storage containers shall be located so that they are readily accessible to mobile supply equipment at ground level and to authorized personnel.

(b) The containers shall not be exposed by electric power lines, flammable liquid lines, flammable gas lines, or lines carrying oxidizing materials.

(c) When locating liquified hydrogen storage containers near above-ground flammable liquid storage or liquid oxygen storage, it is advisable to locate the liquefied hydrogen container on ground higher than flammable liquid storage or liquid oxygen storage.

(d) Where it is necessary to locate the liquefied hydrogen container on ground that is level with or lower than adjacent flammable liquid storage or liquid oxygen storage, suitable protective means shall be taken (such as by diking, diversion curbs, grading), with respect to the adjacent flammable liquid storage or liquid oxygen storage, to prevent accumulation of liquids within 50 feet of the liquefied hydrogen container.

(e) Storage sites shall be fenced and posted to prevent entrance by unauthorized personnel. Sites shall also be placarded as follows: "Liquefied Hydrogen—Flammable Gas—No Smoking—No Open Flames."

(f) If liquified hydrogen is located in (as specified in Table H-3) a separate building, in a special room, or inside buildings when not in a special room and exposed to other occupancies, containers shall have the safety relief devices vented unobstructed to the outdoors at a minimum elevation of 25 feet above grade to a safe location as required in subparagraph (1)(iv)(b) of this paragraph.

(ii) *Specific requirements.* (a) The location of liquefied hydrogen storage, as determined by the maximum total quantity of liquified hydrogen, shall be in the order of preference as indicated by Roman numerals in the following Table H-3.

TABLE H-3—MAXIMUM TOTAL QUANTITY OF LIQUEFIED HYDROGEN STORAGE PERMITTED

Nature of location	Size of hydrogen storage (capacity in gallons): 20-60 (150 liters) to 50	51 to 500	501 to 600	In excess of 600
Outdoors	I	I	I	I
In a separate building	II	II	II	Not permitted.
In a special room	III	III	Not permitted	Not permitted.
Inside buildings not in a special room and exposed to other occupancies.	IV	Not permitted	Not permitted	Not permitted.

NOTE: This table does not apply to the storage in dewars of the type generally used in laboratories for experimental purposes.

(b) The minimum distance in feet from liquefied hydrogen systems of indicated storage capacity located outdoors, in a separate building, or in a special room to any specified exposure shall be in accordance with Table H-4.

TABLE H-4—MINIMUM DISTANCE (FEET) FROM LIQUEFIED HYDROGEN SYSTEMS TO EXPOSURE

Type of exposure	Liquefied hydrogen storage (capacity in gallons)		
	20 to 3 (150 liters) to 3,500	3,501 to 15,000	15,001 to 30,000
1. Fire-resistive building and fire walls*	5	5	5
2. Noncombustible building*	25	50	75
3. Other buildings*	50	75	100
4. Wall openings, air-compressor intakes, inlets for air-conditioning or ventilating equipment	75	75	75
5. Flammable liquids (above ground and vent or fill openings if below ground) (see 513 and 514)	50	75	100
6. Between stationary liquefied hydrogen containers	5	5	5
7. Flammable gas storage	50	75	100
8. Liquid oxygen storage and other oxidizers (see 513 and 514)	100	100	100
9. Combustible solids	50	75	100
10. Open flames, smoking and welding	50	50	50
11. Concentrations of people†	75	75	75
12. Public ways, railroads, and property lines	25	50	75

*Refer to Standard Types of Building Construction, NFPA No. 220-1969 for definitions of various types of construction.

†In congested areas such as offices, lunchrooms, locker rooms, time-clock areas, and places of public assembly.

NOTE 1: The distance in Nos. 2, 3, 5, 7, 9, and 12 in Table H-4 may be reduced where protective structures, such as firewalls equal to height of top of the container, to safeguard the liquefied hydrogen storage system, are located between the liquefied hydrogen storage installation and the exposure.

NOTE 2: Where protective structures are provided, ventilation and confinement of product should be considered. The 5-foot distance in Nos. 1 and 6 facilitates maintenance and enhances ventilation.

(iii) *Handling of liquefied hydrogen inside buildings other than separate buildings and special rooms.* Portable liquefied hydrogen containers of 50 gallons or less capacity as permitted in Table H-3 and in compliance with subdivision (i) (f) of this subparagraph when housed inside buildings not located in a special room and exposed to other occupancies shall comply with the following minimum requirements:

(a) Be located 20 feet from flammable liquids and readily combustible materials such as excelsior or paper.

(b) Be located 25 feet from ordinary electrical equipment and other sources of ignition including process or analytical equipment.

(c) Be located 25 feet from concentrations of people.

(d) Be located 50 feet from intakes of ventilation and air-conditioning equipment or intakes of compressors.

(e) Be located 50 feet from storage of other flammable gases or storage of oxidizing gases.

(f) Containers shall be protected against damage or injury due to falling objects or work activity in the area.

(g) Containers shall be firmly secured and stored in an upright position.

(h) Welding or cutting operations, and smoking shall be prohibited while hydrogen is in the room.

(i) The area shall be adequately ventilated. Safety relief devices on the containers shall be vented directly outdoors or to a suitable hood. See subparagraph (1) (iv) (b) of this paragraph and subdivision (i) (f) of this subparagraph.

(3) *Design considerations at specific locations*—(i) *Outdoor locations.* (a) Outdoor location shall mean outside of any building or structure, and includes locations under a weather shelter or canopy provided such locations are not enclosed by more than two walls set at right angles and are provided with ventspace between the walls and vented roof or canopy.

(b) Roadways and yard surfaces located below liquefied hydrogen piping, from which liquid air may drip, shall be constructed of noncombustible materials.

(c) If protective walls are provided, they shall be constructed of noncombustible materials and in accordance with the provisions of subdivision (a) of this subdivision as applicable.

(d) Electrical wiring and equipment shall comply with subparagraph (1) (ix) (a) and (b) of this paragraph.

(e) Adequate lighting shall be provided for nighttime transfer operation.

(ii) *Separate buildings.* (a) Separate buildings shall be of light noncombustible construction on a substantial frame. Walls and roofs shall be lightly fastened and designed to relieve at a maximum internal pressure of 25 pounds per square foot. Windows shall be of shatterproof glass or plastic in metal frames. Doors shall be located in such a manner that they will be readily accessible to personnel in an emergency.

(b) Adequate ventilation to the outdoors shall be provided. Inlet openings shall be located near the floor level in exterior walls only. Outlet openings shall be located at the high point of the room in exterior walls or roof. Both the inlet and outlet vent openings shall have a minimum total area of 1 square foot per 1,000 cubic feet of room volume. Discharge from outlet openings shall be directed or conducted to a safe location.

(c) There shall be no sources of ignition.

(d) Electrical wiring and equipment shall comply with subparagraph (1) (ix) (a) and (b) of this paragraph except that the provisions of subparagraph (1) (ix) (b) of this paragraph shall apply to all electrical wiring and equipment in the separate building.

(e) Heating, if provided, shall be by steam, hot water, or other indirect means.

(iii) *Special rooms.* (a) Floors, walls, and ceilings shall have a fire resistance rating of at least 2 hours. Walls or partitions shall be continuous from floor to ceiling and shall be securely anchored. At least one wall shall be an exterior wall. Openings to other parts of the building shall not be permitted. Windows and doors shall be in exterior walls and doors shall be located in such a manner that they will be accessible in an emergency. Windows shall be of shatterproof glass or plastic in metal frames.

(b) Ventilation shall be as provided in subdivision (ii) (b) of this subparagraph.

(c) Explosion venting shall be as provided in exterior walls or roof only. The venting area shall be equal to not less than 1 square foot per 30 cubic feet of room volume and may consist of any one or any combination of the following: walls of light noncombustible material; lightly fastened hatch covers; lightly fastened swinging doors opening outward in exterior walls; lightly fastened walls or roofs designed to relieve at a maximum pressure of 25 pounds per square foot.

(d) There shall be no sources of ignition.

(e) Electrical wiring and equipment shall comply with subparagraph (1) (ix) (a) and (b) of this paragraph except that the provision of subparagraph (1) (ix) (b) of this paragraph shall apply to all electrical wiring and equipment in the special room.

(f) Heating, if provided, shall be steam, hot water, or by other indirect means

(4) *Operating instructions*—(i) *Written instructions.* For installation which require any operation of equipment by the user, legible instructions shall be maintained at operating locations.

(ii) *Attendant.* A qualified person shall be in attendance at all times while the mobile hydrogen supply unit is being unloaded.

(iii) *Security.* Each mobile liquefied hydrogen supply unit used as part of a hydrogen system shall be adequately secured to prevent movement.

(iv) *Grounding.* The mobile liquefied hydrogen supply unit shall be grounded for static electricity.

(5) *Maintenance.* The equipment and functioning of each charged liquefied hydrogen system shall be maintained in a safe operating condition in accordance with the requirements of this section. Weeds or similar combustibles shall not be permitted within 25 feet of any liquefied hydrogen equipment.

§ 1910.104 Oxygen.

(a) *Scope.* This section applies to the installation of bulk oxygen systems on industrial and institutional consumer premises. This section does not apply to oxygen manufacturing plants or other establishments operated by the oxygen supplier or his agent for the purpose of storing oxygen and refilling portable containers, trailers, mobile supply trucks, or tank cars, nor to systems having capacities less than those stated in paragraph (b) (1) of this section.

(b) *Bulk oxygen systems.*—(1) *Definition.* As used in this section: A bulk oxygen system is an assembly of equipment, such as oxygen storage containers, pressure regulators, safety devices, vaporizers, manifolds, and interconnecting piping, which has storage capacity of more than 13,000 cubic feet of oxygen, Normal Temperature and Pressure (NTP), connected in service or ready for service, or more than 25,000 cubic feet of oxygen (NTP) including unconnected reserves on hand at the site. The bulk oxygen system terminates at the point where oxygen at service pressure first enters the supply line. The oxygen containers may be stationary or movable, and the oxygen may be stored as gas or liquid.

(2) *Location*—(i) *General.* Bulk oxygen storage systems shall be located above ground out of doors, or shall be installed in a building of noncombustible construction, adequately vented, and used for that purpose exclusively. The

location selected shall be such that containers and associated equipment shall not be exposed by electric power lines, flammable or combustible liquid lines, or flammable gas lines.

(ii) *Accessibility.* The system shall be located so that it is readily accessible to mobile supply equipment at ground level and to authorized personnel.

(iii) *Leakage.* Where oxygen is stored as a liquid, noncombustible surfacing shall be provided in an area in which any leakage of liquid oxygen might fall during operation of the system and filling of a storage container. For purposes of this paragraph, asphaltic or bituminous paving is considered to be combustible.

(iv) *Elevation.* When locating bulk oxygen systems near above-ground flammable or combustible liquid storage which may be either indoors or outdoors, it is advisable to locate the system on ground higher than the flammable or combustible liquid storage.

(v) *Dikes.* Where it is necessary to locate a bulk oxygen system on ground lower than adjacent flammable or combustible liquid storage suitable means shall be taken (such as by diking, diversion curbs, or grading) with respect to the adjacent flammable or combustible liquid storage to prevent accumulation of liquids under the bulk oxygen system.

(3) *Distance between systems and exposures*—(i) *General.* The minimum distance from any bulk oxygen storage container to exposures, measured in the most direct line except as indicated in subdivisions (vi) and (viii) of this subparagraph, shall be as indicated in subdivisions (ii) to (xviii) of this subparagraph inclusive.

(ii) *Combustible structures.* Fifty feet from any combustible structures.

(iii) *Fire resistive structures.* Twenty-five feet from any structures with fire-resistive exterior walls or sprinklered buildings of other construction, but not less than one-half the height of adjacent side wall of the structure.

(iv) *Openings.* At least 10 feet from any opening in adjacent walls of fire resistive structures. Spacing from such structures shall be adequate to permit maintenance, but shall not be less than 1 foot.

(v) *Flammable liquid storage aboveground.*

Distance (feet)	Capacity (gallons)
50	0–1000
90	1001 or more

(vi) *Flammable liquid storage belowground.*

Distance measured horizontally from oxygen storage container to flammable liquid tank (feet)	Distance from oxygen storage container to filling and vent connections or openings to flammable liquid tank (feet)	Capacity gallons
15	50	0–1000.
30	50	1001 or more

(vii) *Combustible liquid storage aboveground.*

Distance (feet)	Capacity (gallons)
25	0–1000
50	1001 or more

(viii) *Combustible liquid storage belowground.*

Distance measured horizontally from oxygen storage container to combustible liquid tank (feet)	Distance from oxygen storage container to filling and vent connections or openings to combustible liquid tank (feet)
15	40

(ix) *Flammable gas storage.* (Such as compressed flammable gases, liquefied flammable gases and flammable gases in low pressure gas holders):

Distance (feet)	Capacity (cu. ft. NTP)
50	Less than 5000
90	5000 or more

(x) *Highly combustible materials.* Fifty feet from solid materials which burn rapidly, such as excelsior or paper.

(xi) *Slow-burning materials.* Twenty-five feet from solid materials which burn slowly, such as coal and heavy timber.

(xii) *Ventilation.* Seventy-five feet in one direction and 35 feet in approximately 90° direction from confining walls (not including firewalls less than 20 feet high) to provide adequate ventilation in courtyards and similar confining areas.

(xiii) *Congested areas.* Twenty-five feet from congested areas such as offices, lunchrooms, locker rooms, time clock areas, and similar locations where people may congregate.

(xiv) *Public areas.* Fifty feet from places of public assembly.

(xv) *Patients.* Fifty feet from areas occupied by nonambulatory patients.

(xvi) *Sidewalks.* Ten feet from any public sidewalk.

(xvii) *Adjacent property.* Five feet from any line of adjoining property.

(xviii) *Exceptions.* The distances in subdivisions (ii), (iii), (v) to (xi) inclusive, (xvi), and (xvii) of this subparagraph do not apply where protective structures such as firewalls of adequate height to safeguard the oxygen storage systems are located between the bulk oxygen storage installation and the exposure. In such cases, the bulk oxygen storage installation may be a minimum distance of 1 foot from the firewall.

(4) *Storage containers*—(i) *Foundations and supports.* Permanently installed containers shall be provided with substantial noncombustible supports on firm noncombustible foundations.

(ii) *Construction—liquid.* Liquid oxygen storage containers shall be fabricated from materials meeting the impact test requirements of paragraph UG-84 of ASME Boiler and Pressure Vessel Code, Section VIII—Unfired Pressure Vessels—1968. Containers operating at pressures above 15 pounds per square inch gage (p.s.i.g.) shall be designed, constructed, and tested in accordance with appropriate requirements of ASME Boiler and Pressure Vessel Code, Section VII—Unfired Pressure Vessels—1968. Insulation surrounding the liquid oxygen container shall be noncombustible.

(iii) *Construction—gaseous.* High-pressure gaseous oxygen containers shall comply with one of the following:

(a) Designed, constructed, and tested in accordance with appropriate requirements of ASME Boiler and Pressure Vessel Code, Section VIII—Unfired Pressure Vessels—1968.

(b) Designed, constructed, tested, and maintained in accordance with DOT Specifications and Regulations.

(5) *Piping, tubing, and fittings*—(i) *Selection.* Piping, tubing, and fittings shall be suitable for oxygen service and for the pressures and temperatures involved.

(ii) *Specification.* Piping and tubing shall conform to Section 2—Gas and Air Piping Systems of Code for Pressure Piping, ANSI, B31.1-1967 with addenda B31.10a-1969.

(iii) *Fabrication.* Piping or tubing for operating temperatures below —20° F. shall be fabricated from materials meeting the impact test requirements of paragraph UG-84 of ASME Boiler and Pressure Vessel Code, Section VIII—Unfired Pressure Vessels—1968, when tested at the minimum operating temperature to which the piping may be subjected in service.

(6) *Safety relief devices*—(i) *General.* Bulk oxygen storage containers, regardless of design pressure shall be equipped with safety relief devices as required by the ASME code or the DOT specifications and regulations.

(ii) *DOT containers.* Bulk oxygen storage containers designed and constructed in accordance with DOT specification shall be equipped with safety relief devices as required thereby.

(iii) *ASME containers.* Bulk oxygen storage containers designed and constructed in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII—Unfired Pressure Vessel—1968 shall be equipped with safety relief devices meeting the provisions of the Compressed Gas Association Pamphlet "Safety Relief Device Standards for Compressed Gas Storage Containers," S-1, Part 3.

(iv) *Insulation.* Insulation casings on liquid oxygen containers shall be equipped with suitable safety relief devices.

(v) *Reliability.* All safety relief devices shall be so designed or located that moisture cannot collect and freeze in a manner which would interfere with proper operation of the device.

(7) *Liquid oxygen vaporizers*—(i) *Mounts and couplings.* The vaporizer shall be anchored and its connecting piping be sufficiently flexible to provide for the effect of expansion and contraction due to temperature changes.

(ii) *Relief devices.* The vaporizer and its piping shall be adequately protected on the oxygen and heating medium sections with safety relief devices.

(iii) *Heating.* Heat used in an oxygen vaporizer shall be indirectly supplied only through media such as steam, air, water, or water solutions which do not react with oxygen.

(iv) *Grounding.* If electric heaters are used to provide the primary source of heat, the vaporizing system shall be electrically grounded.

(8) *Equipment assembly and installation*—(i) *Cleaning.* Equipment making up a bulk oxygen system shall be cleaned in order to remove oil, grease or other readily oxidizable materials before placing the system in service.

(ii) *Joints.* Joints in piping and tubing may be made by welding or by use of flanged, threaded, slip, or compression fittings. Gaskets or thread sealants shall be suitable for oxygen service.

(iii) *Accessories.* Valves, gages, regulators, and other accessories shall be suitable for oxygen service

(iv) *Installation.* Installation of bulk oxygen systems shall be supervised by personnel familiar with proper practices with reference to their construction and use.

(v) *Testing.* After installation all field erected piping shall be tested and proved gas tight at maximum operating pressure. Any medium used for testing shall be oil free and nonflammable.

(vi) *Security.* Storage containers, piping, valves, regulating equipment, and other accessories shall be protected against physical damage and against tampering.

(vii) *Venting.* Any enclosure containing oxygen control or operating equipment shall be adequately vented.

(viii) *Placarding.* The bulk oxygen storage location shall be permanently placarded to indicate: "OXYGEN—NO SMOKING—NO OPEN FLAMES", or an equivalent warning.

(ix) *Electrical wiring.* Bulk oxygen installations are not hazardous locations as defined and covered in subpart S of this part. Therefore, general purpose or weatherproof types of electrical wiring and equipment are acceptable depending upon whether the installation is indoors or outdoors. Such equipment shall be installed in accordance with the applicable provisions of subpart S of this part.

(9) *Operating instructions.* For installations which require any operation of equipment by the user, legible instructions shall be maintained at operating locations.

(10) *Maintenance.* The equipment and functioning of each charged bulk oxygen system shall be maintained in a safe operating condition in accordance with the requirements of this section. Wood and long dry grass shall be cut back within 15 feet of any bulk oxygen storage container.

§ 1910.105 Nitrous oxide.

The piped systems for the in-plant transfer and distribution of nitrous oxide shall be designed, installed, maintained, and operated in accordance with Compressed Gas Association Pamphlet G-8.1–1964.

§ 1910.106 Flammable and combustible liquids.

(a) *Definitions.* As used in this section:

(1) Aerosol shall mean a material which is dispensed from its container as a mist, spray, or foam by a propellant under pressure.

(2) Atmospheric tank shall mean a storage tank which has been designed to operate at pressures from atmospheric through 0.5 p.s.i.g.

(3) Automotive service station shall mean that portion of property where flammable or combustible liquids used as motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles and shall include any facilities available for the sale and service of tires, batteries, and accessories, and for minor automotive maintenance work. Major automotive repairs, painting, body and fender work are excluded.

(4) Basement shall mean a story of a building or structure having one-half or more of its height below ground level and to which access for fire fighting purposes is unduly restricted.

(5) Boiling point shall mean the boiling point of a liquid at a pressure of 14.7 pounds per square inch absolute (p.s.i.a.) (760 mm.). Where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, for purposes of this section the 10 percent point of a distillation performed in accordance with the Standard Method of Test for Distillation of Petroleum Products, ASTM D–86–62, may be used as the boiling point of the liquid.

(6) Boilover shall mean the expulsion of crude oil (or certain other liquids) from a burning tank. The light fractions of the crude oil burnoff producing a heat wave in the residue, which on reaching a water strata may result in the expulsion of a portion of the contents of the tank in the form of froth.

(7) Bulk plant shall mean that portion of a property where flammable or combustible liquids are received by tank vessel, pipelines, tank car, or tank vehicle, and are stored or blended in bulk for the purpose of distributing such liquids by tank vessel, pipeline, tank car, tank vehicle, or container.

(8) Chemical plant shall mean a large integrated plant or that portion of such a plant other than a refinery or distillery where flammable or combustible liquids are produced by chemical reactions or used in chemical reactions.

(9) Closed container shall mean a container as herein defined, so sealed by means of a lid or other device that neither liquid nor vapor will escape from it at ordinary temperatures.

(10) Crude petroleum shall mean hydrocarbon mixtures that have a flash point below 150° F. and which have not been processed in a refinery.

(11) Distillery shall mean a plant or that portion of a plant where flammable or combustible liquids produced by fermentation are concentrated, and where the concentrated products may also be mixed, stored, or packaged.

(12) Fire area shall mean an area of a building separated from the remainder of the building by construction having a fire resistance of at least 1 hour and having all communicating openings properly protected by an assembly having a fire resistance rating of at least 1 hour.

(13) Flammable aerosol shall mean an aerosol which is required to be labeled "Flammable" under the Federal Hazardous Substances Labeling Act (15 U.S.C. 1261). For the purposes of paragraph (d) of this section, such aerosols are considered Class IA liquids.

(14) "Flashpoint" means the minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid, and shall be determined as follows:

(i) For a liquid which has a viscosity of less than 45 SUS at 100°F. (37.8°C.), does not contain suspended solids, and does not have a tendency to form a surface film while under test, the procedure specified in the Standard Method of Test for Flashpoint by Tag Closed Tester (ASTM D–56–70) shall be used.

(ii) For a liquid which has a viscosity of 45 SUS or more at 100°F. (37.8°C.), or contains suspended solids, or has a tendency to form a surface film while under test, the Standard Method of Test for Flashpoint by Pensky-Martens Closed Tester (ASTM D–93–71) shall be used, except that the methods specified in Note 1 to section 1.1 of ASTM D–93–71 may be used for the respective materials specified in the Note.

(iii) For a liquid that is a mixture of compounds that have different volatilities and flashpoints, its flashpoint shall be determined by using the procedure specified in paragraph (a) (14) (i) or (ii) of this section on the liquid in the form it is shipped. If the flashpoint, as determined by this test, is 100°F. (37.8°C.) or higher, an additional flashpoint determination shall be run on a sample of the liquid evaporated to 90 percent of its original volume, and the lower value of the two tests shall be considered the flashpoint of the material.

(iv) Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified in this subparagraph.

(15) Hotel shall mean buildings or groups of buildings under the same management in which there are sleeping accommodations for hire, primarily used by transients who are lodged with or without meals including but not limited to inns, clubs, motels, and apartment hotels.

(16) Institutional occupancy shall mean the occupancy or use of a building or structure or any portion thereof by persons harbored or detained to receive medical, charitable or other care or treatment, or by persons involuntarily detained.

(17) Liquid shall mean, for the purpose of this section, any material which has a fluidity greater than that of 300 penetration asphalt when tested in accordance with ASTM Test for Penetration for Bituminous Materials, D–5–65. When not otherwise identified, the term liquid shall include both flammable and combustible liquids.

(18) "Combustible liquid" means any liquid having a flashpoint at or above 100°F. (37.8°C.). Combustible liquids shall be divided into two classes as follows:

(i) "Class II liquids" shall include those with flashpoints at or above 100°F. (37.8°C.) and below 140°F. (60°C.), except any mixture having components with flashpoints of 200°F. (93.3°C.) or higher, the volume of which make up 99 percent or more of the total volume of the mixture.

(ii) "Class III liquids" shall include those with flashpoints at or above 140°F. (60°C.). Class III liquids are subdivided into two subclasses:

(a) "Class IIIA liquids" shall include those with flashpoints at or above 140°F. (60°C.) and below 200°F. (93.3°C.), except any mixture having components with flashpoints of 200°F. (93.3°C.), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

(b) "Class IIIB liquids" shall include those with flashpoints at or above 200°F. (93.3°C.). This section does not cover Class IIIB liquids. Where the term "Class III liquids" is used in this section, it shall mean only Class IIIA liquids.

(iii) When a combustible liquid is heated for use to within 30°F. (16.7°C.) of its flashpoint, it shall be handled in accordance with the requirements for the next lower class of liquids.

(19) "Flammable liquid" means any liquid having a flashpoint below 100°F. (37.8°C.), except any mixture having components with flashpoints of 100°F. (37.8°C.) or higher, the total of which make up 99 percent or more of the total volume of the mixture. Flammable liquids shall be known as Class I liquids. Class I liquids are divided into three classes as follows:

(i) Class IA shall include liquids having flashpoints below 73°F. (22.8°C.) and having a boiling point below 100°F. (37.8°C.).

(ii) Class IB shall include liquids having flashpoints below 73°F. (22.8°C.) and having a boiling point at or above 100°F. (37.8°C.).

(iii) Class IC shall include liquids having flashpoints at or above 73°F. (22.8°C.) and below 100°F. (37.8°C.).

(20) Unstable (reactive) liquid shall mean a liquid which in the pure state or as commercially produced or transported will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure, or temperature.

(21) Low-pressure tank shall mean a storage tank which has been designed to operate at pressures above 0.5 p.s.i.g. but not more than 15 p.s.i.g.

(22) Marine service station shall mean that portion of a property where flammable or combustible liquids used as fuels are stored and dispensed from fixed equipment on shore, piers, wharves, or floating docks into the fuel tanks of self-propelled craft, and shall include all facilities used in connection therewith.

(23) Mercantile occupancy shall mean the occupancy or use of a building or structure or any portion thereof for the displaying, selling, or buying of goods, wares, or merchandise.

(24) Office occupancy shall mean the occupancy or use of a building or structure or any portion thereof for the transaction of business, or the rendering or receiving of professional services.

(25) Portable tank shall mean a closed container having a liquid capacity over 60 U.S. gallons and not intended for fixed installation.

(26) Pressure vessel shall mean a storage tank or vessel which has been designed to operate at pressures above 15 p.s.i.g.

(27) Protection for exposure shall mean adequate fire protection for structures on property adjacent to tanks, where there are employees of the establishment.

(28) Refinery shall mean a plant in which flammable or combustible liquids are produced on a commercial scale from crude petroleum, natural gasoline, or other hydrocarbon sources.

(29) Safety can shall mean an approved container, of not more than 5 gallons capacity, having a spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure.

(30) Vapor pressure shall mean the pressure, measured in pounds per square inch (absolute) exerted by a volatile liquid as determined by the "Standard Method of Test for Vapor Pressure of Petroleum Products (Reid Method)," American Society for Testing and Materials ASTM D323–68.

(31) Ventilation as specified in this section is for the prevention of fire and explosion. It is considered adequate if it is sufficient to prevent accumulation of significant quantities of vapor-air mixtures in concentration over one-fourth of the lower flammable limit.

(32) Storage: Flammable or combustible liquids shall be stored in a tank or in a container that complies with paragraph (d) (2) of this section.

(33) Barrel shall mean a volume of 42 U.S. gallons.

(34) Container shall mean any can, barrel, or drum.

(35) Approved unless otherwise indicated, approved, or listed by at least one of the following nationally recognized testing laboratories: Underwriters Laboratories, Inc., Factory Mutual Engineering Corp.

(36) Listed see "approved" in § 1910.106(a) (35).

(37) "SUS" means Saybolt Universal Seconds as determined by the Standard Method of Test for Saybolt Viscosity (ASTM D–88–56), and may be determined by use of the SUS conversion tables specified in ASTM Method D2161–66 following determination of viscosity in accordance with the procedures specified in the Standard Method of Test for Viscosity of Transparent and Opaque Liquids (ASTM D445–65).

(38) "Viscous" means a viscosity of 45 SUS or more.

(b) *Tank storage.*—(1) *Design and construction of tanks.*—(i) *Materials.* (a) Tanks shall be built of steel except as provided in (b) through (e) of this subdivision.

(b) Tanks may be built of materials other than steel for installation underground or if required by the properties of the liquid stored. Tanks located above ground or inside buildings shall be of noncombustible construction.

(c) Tanks built of materials other than steel shall be designed to specifications embodying principles recognized as good engineering design for the material used.

(d) Unlined concrete tanks may be used for storing flammable or combustible liquids having a gravity of 40° API or heavier. Concrete tanks with special lining may be used for other services provided the design is in accordance with sound engineering practice.

(e) Tanks may have combustible or noncombustible linings.

(f) Special engineering consideration shall be required if the specific gravity of the liquid to be stored exceeds that of water or if the tanks are designed to contain flammable or combustible liquids at a liquid temperature below 0° F.

(ii) *Fabrication.* (a) Tanks may be of any shape or type consistent with sound engineering design.

(b) Metal tanks shall be welded, riveted, and caulked, brazed, or bolted, or constructed by use of a combination of these methods. Filler metal used in brazing shall be nonferrous metal or an alloy having a melting point above 1000° F and below that of the metal joined.

(iii) *Atmospheric tanks.* (a) Atmospheric tanks shall be built in accordance with acceptable good standards of design. Atmospheric tanks may be built in accordance with:

(*1*) Underwriters' Laboratories, Inc., Subjects No. 142, Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids, 1968, No. 58, Standard for Steel Underground Tanks for Flammable and Combustible Liquids, Fifth Edition, December 1961; or No. 80, Standard for Steel Inside Tanks for Oil-Burner Fuel, September 1963.

(*2*) American Petroleum Institute Standards No. 12A, Specification for Oil Storage Tanks with Riveted Shells, Seventh Edition, September 1951, or No. 650, Welded Steel Tanks for Oil Storage, Third Edition, 1966.

(*3*) American Petroleum Institute Standards No. 12B, Specification for Bolted Production Tanks, Eleventh Edition, May 1958, and Supplement 1, March 1962; No. 12D, Specification for Large Welded Production Tanks, Seventh Edition, August 1957; or No. 12F, Specification for Small Welded Production Tanks, Fifth Edition, March 1961. Tanks built in accordance with these standards shall be used only as production tanks for storage of crude petroleum in oil-producing areas.

(b) Tanks designed for underground service not exceeding 2,500 gallons capacity may be used aboveground.

(c) Low-pressure tanks and pressure vessels may be used as atmospheric tanks.

(d) Atmospheric tanks shall not be used for the storage of a flammable or combustible liquid at a temperature at or above its boiling point.

(iv) *Low pressure tanks.* (a) The normal operating pressure of the tank shall not exceed the design pressure of the tank.

(b) Low-pressure tanks shall be built in accordance with acceptable standards of design. Low-pressure tanks may be built in accordance with:

(*1*) American Petroleum Institute Standard No. 620, Recommended Rules for the Design and Construction of Large, Welded, Low-Pressure Storage Tanks, Third Edition, 1966.

(*2*) The principles of the Code for Unfired Pressure Vessels, Section VIII of the ASME Boiler and Pressure Vessels Code, 1968.

(c) Atmospheric tanks built according to Underwriters' Laboratories, Inc., requirements in subdivision (iii) (a) of and shall be limited to 2.5 p.s.i.g. under emergency venting conditions.

this subparagraph may be used for operating pressures not exceeding 1 p.s.i.g.

(d) Pressure vessels may be used as low-pressure tanks.

(v) *Pressure vessels.* (a) The normal operating pressure of the vessel shall not exceed the design pressure of the vessel.

(b) Pressure vessels shall be built in accordance with the Code for Unfired Pressure Vessels, Section VIII of the ASME Boiler and Pressure Vessel Code 1968.

(vi) *Provisions for internal corrosion.* When tanks are not designed in accordance with the American Petroleum Institute, American Society of Mechanical

Engineers, or the Underwriters' Laboratories, Inc.'s, standards, or if corrosion is anticipated beyond that provided for in the design formulas used, additional metal thickness or suitable protective coatings or linings shall be provided to compensate for the corrosion loss expected during the design life of the tank.

(2) *Installation of outside aboveground tanks.*—[(i)] *Location with respect to property lines and public ways.* (a) Every aboveground tank for the storage of flammable or combustible liquids, except those liquids with boil-over characteristics and unstable liquids, operating at pressures not in excess of 2.5 p.s.i.g and equipped with emergency venting which will not permit pressures to exceed 2.5 p.s.i.g. shall be located in accordance with Table H–5.

(b) Every aboveground tank for the storage of flammable or combustible liquids, except those liquids with boil-over characteristics and unstable flammable or combustible liquids, operating at pressures exceeding 2.5 p.s.i.g. or equipped with emergency venting which will permit pressures to exceed 2.5 p.s.i.g shall be located in accordance with Table H–6.

TABLE H-5

Type of tank	Protection	Minimum distance in feet from property line which may be built upon, including the opposite side of a public way	Minimum distance in feet from nearest side of any public way or from nearest important building shall be not less than 5 feet
Floating roof	Protection for exposures.	½ times diameter of tank but need not exceed 90 ft.	¼ times diameter of tank but need not exceed 30 ft.
	None	Diameter of tank but need not exceed 175 ft.	½ times diameter of tank but need not exceed 30 ft.
Vertical with weak roof to shell seam.	Approved foam or inerting system on the tank.	⅛ times diameter of tank but need not exceed 90 ft. and shall not be less than 5 ft.	⅛ times diameter of tank but need not exceed 30 ft.
	Protection for exposures.	Diameter of tank but need not exceed 175 ft.	⅛ times diameter of tank but need not exceed 60 ft.
	None	2 times diameter of tank but need not exceed 350 ft.	½ times diameter of tank but need not exceed 60 ft.
Horizontal and vertical, with emergency relief venting to limit pressures to 2.5 p.s.i.g.	Approved inerting system on the tank or approved foam system on vertical tanks.	⅛ times Table H–9 but shall not be less than 5 ft.	⅛ times Table H–9.
	Protection for exposures.	Table H–9	Table H–9.
	None	2 times Table H–9	Table H–9.

TABLE H-6

Type of tank	Protection	Minimum distance in feet from property line which may be built upon, including the opposite side of a public way	Minimum distance in feet from nearest side of any public way or from nearest important building
Any type	Protection for exposures.	½ times Table H–9 but shall not be less than 25 ft.	½ times Table H–9 but shall not be less than 25 ft.
	None	3 times Table H–9 but shall not be less than 50 ft.	1½ times Table H–9 but shall not be less than 25 ft.

(c) Every aboveground tank for the storage of flammable or combustible liquids with boil-over characteristics shall be located in accordance with Table H–7

TABLE H-7

Type of tank	Protection	Minimum distance in feet from property line which may be built upon, including the opposite side of a public way	Minimum distance in feet from nearest side of any public way or from nearest important building
Floating roof	Protection for exposures.	Diameter of tank but need not exceed 175 ft.	¼ times diameter of tank but need not exceed 60 ft.
	None	2 times diameter of tank but need not exceed 350 ft.	½ times diameter of tank but need not exceed 60 ft.
Fixed roof	Approved foam or inerting system.	Diameter of tank but need not exceed 175 ft.	¼ times diameter of tank but need not exceed 60 ft.
	Protection for exposures.	2 times diameter of tank but need not exceed 350 ft.	½ times diameter of tank but need not exceed 120 ft.
	None	4 times diameter of tank but need not exceed 350 ft.	½ times diameter of tank but need not exceed 120 ft.

(d) Every aboveground tank for the storage of unstable liquids shall be located in accordance with Table H–8.

TABLE H-8

Type of tank	Protection	Minimum distance in feet from property line which may be built upon, including the opposite side of a public way	Minimum distance in feet from nearest side of any public way or from nearest important building
Horizontal and vertical tanks with emergency relief venting to permit pressure not in excess of 2.5 p.s.i.g.	Tank protected with any one of the following: Approved water spray, approved inerting, approved insulation and refrigeration, approved barricade.	See table H–9, but the distance may be not less than 25 ft.	Not less than 25 ft.
	Protection for exposures	2½ times table H–9 but not less than 50 ft.	Not less than 50 ft.
	None	5 times table H–9 but not less than 100 ft.	Not less than 100 ft.
Horizontal and vertical tanks with emergency relief venting to permit pressure over 2.5 p.s.i.g.	Tank protected with any one of the following: Approved water spray, approved inerting, approved insulation and refrigeration, approved barricade.	2 times table H–9 but not less than 50 ft.	Not less than 50 ft.
	Protection for exposures	4 times table H–9 but not less than 100 ft.	Not less than 100 ft.
	None	8 times table H–9 but not less than 150 ft.	Not less than 150 ft.

(e) Reference minimum distances for use in Tables H–5 to H–8, inclusive.

TABLE H-9

Capacity tank gallons	Minimum distance in feet from property line which may be built upon, including the opposite side of a public way	Minimum distance in feet from nearest side of any public way or from nearest important building
275 or less	5	5
276 to 750	10	5
751 to 12,000	15	5
12,001 to 30,000	20	5
30,001 to 50,000	30	10
50,001 to 100,000	50	15
100,001 to 500,000	80	25
500,001 to 1,000,000	100	35
1,000,001 to 2,000,000	135	45
2,000,001 to 3,000,000	165	55
3,000,001 or more	175	60

(f) Where end failure of horizontal pressure tanks and vessels may expose property, the tank shall be placed with the longitudinal axis parallel to the nearest important exposure.

(ii) *Spacing (shell-to-shell) between aboveground tanks.* (a) The distance between any two flammable or combustible liquid storage tanks shall not be less than 3 feet.

(b) Except as provided in subdivision (c) of this subdivision, the distance between any two adjacent tanks shall not be less than one-sixth the sum of their diameters. When the diameter of one tank is less than one-half the diameter of the adjacent tank, the distance between the two tanks shall not be less than one-half the diameter of the smaller tank.

(c) Where crude petroleum in conjunction with production facilities are located in noncongested areas and have capacities not exceeding 126,000 gallons (3,000 barrels), the distance between such tanks shall not be less than 3 feet.

(d) Where unstable flammable or combustible liquids are stored, the distance between such tanks shall not be less than one-half the sum of their diameters.

(e) When tanks are compacted in three or more rows or in an irregular pattern, greater spacing or other means

shall be provided so that inside tanks are accessible for firefighting purposes.

(f) The minimum separation between a liquefied petroleum gas container and a flammable or combustible liquid storage tank shall be 20 feet, except in the case of flammable or combustible liquid tanks operating at pressures exceeding 2.5 p.s.i.g. or equipped with emergency venting which will permit pressures to exceed 2.5 p.s.i.g. in which case the provisions of subdivisions (a) and (b) of this subdivision shall apply. Suitable means shall be taken to prevent the accumulation of flammable or combustible liquids under adjacent liquefied petroleum gas containers such as by diversion curbs or grading. When flammable or combustible liquid storage tanks are within a diked area, the liquefied petroleum gas containers shall be outside the diked area and at least 10 feet away from the centerline of the wall of the diked area. The foregoing provisions shall not apply when liquefied petroleum gas containers of 125 gallons or less capacity are installed adjacent to fuel oil supply tanks of 550 gallons or less capacity.

(iii) *Location of outside aboveground tanks with respect to important buildings on same property.* Every outside aboveground tank shall be separated from important buildings on the same property by distances not less than those specified in subdivisions (i) (a), (b), (c), and (d) of this subparagraph, whichever is applicable. The appropriate distance column in Tables H–5, H–6, H–7, H–8, or H–9, that shall be used shall be the one reading: "Minimum Distance in Feet from Nearest Side of Any Public Way or From Nearest Important Building."

(iv) *Normal venting for aboveground tanks.* (a) Atmospheric storage tanks shall be adequately vented to prevent the development of vacuum or pressure sufficient to distort the roof of a cone roof tank or exceeding the design pressure in the case of other atmospheric tanks, as a result of filling or emptying, and atmospheric temperature changes.

(b) Normal vents shall be sized either in accordance with: (1) the American Petroleum Institute Standard 2000 (1968), Venting Atmospheric and Low-Pressure Storage Tanks; or (2) other accepted standard; or (3) shall be at least as large as the filling or withdrawal connection, whichever is larger but in no case less than 1¼ inch nominal inside diameter.

(c) Low-pressure tanks and pressure vessels shall be adequately vented to prevent development of pressure or vacuum, as a result of filling or emptying and atmospheric temperature changes, from exceeding the design pressure of the tank or vessel. Protection shall also be provided to prevent overpressure from any pump discharging into the tank or vessel when the pump discharge pressure can exceed the design pressure of the tank or vessel.

(d) If any tank or pressure vessel has more than one fill or withdrawal connection and simultaneous filling or withdrawal can be made, the vent size shall be based on the maximum anticipated simultaneous flow.

(e) Unless the vent is designed to limit the internal pressure 2.5 p.s.i. or less, the outlet of vents and vent drains shall be arranged to discharge in such a manner as to prevent localized overheating of any part of the tank in the event vapors from such vents are ignited.

(f) Tanks and pressure vessels storing Class IA liquids shall be equipped with venting devices which shall be normally closed except when venting to pressure or vacuum conditions. Tanks and pressure vessels storing Class IB and IC liquids shall be equipped with venting devices which shall be normally closed except when venting under pressure or vacuum conditions, or with approved flame arresters.

Exemption: Tanks of 3,000 bbls. capacity or less containing crude petroleum in crude-producing areas; and, outside aboveground atmospheric tanks under 1,000 gallons capacity containing other than Class IA flammable liquids may have open vents. (See subdivision (vi) (b) of this subparagraph.)

(g) Flame arresters or venting devices required in subdivision (f) of this subdivision may be omitted for Class IB and IC liquids where conditions are such that their use may, in case of obstruction, result in tank damage.

(v) *Emergency relief venting for fire exposure for aboveground tanks.* (a) Every aboveground storage tank shall have some form of construction or device that will relieve excessive internal pressure caused by exposure fires.

(b) In a vertical tank the construction referred to in subdivision (a) of this subdivision may take the form of a floating roof, lifter roof, a weak roof-to-shell seam, or other approved pressure relieving construction. The weak roof-to-shell

seam shall be constructed to fail preferential to any other seam.

(c) Where entire dependence for emergency relief is placed upon pressure relieving devices, the total venting capacity of both normal and emergency vents shall be enough to prevent rupture of the shell or bottom of the tank if vertical, or of the shell or heads if horizontal. If unstable liquids are stored, the effects of heat or gas resulting from polymerization, decomposition, condensation, or self-reactivity shall be taken into account. The total capacity of both normal and emergency venting devices shall be not less than that derived from Table H–10 except as provided in subdivision (g) or (f) of this subdivision. Such device may be a self-closing manhole cover, or one using long bolts that permit the cover to lift under internal pressure, or an additional or larger relief valve or valves. The wetted area of the tank shall be calculated on the basis of 55 percent of the total exposed area of a sphere or spheroid, 75 percent of the total exposed area of a horizontal tank and the first 30 feet above grade of the exposed shell area of a vertical tank.

TABLE H-10—WETTED AREA VERSUS CUBIC FEET FREE AIR PER HOUR

(14.7 psia and 60° F.)

Square feet	CFH	Square feet	CFH	Square feet	CFH
20	21,100	250	211,000	1,000	524,000
30	31,800	260	220,000	1,200	537,000
40	42,100	320	265,000	1,400	587,000
50	52,700	350	288,000	1,600	613,000
60	62,200	400	312,000	1,800	639,000
70	73,700	450	354,000	2,000	665,000
80	84,200	500	397,000	2,400	704,000
90	94,800	700	428,000	2,800	742,000
100	105,000	800	467,000	and	
120	126,000	900	459,000	over	
140	147,000	1,000	524,000		
160	168,000				
180	190,000				
200	211,000				

(d) For tanks and storage vessels designed for pressure over 1 p.s.i.g., the total rate of venting shall be determined in accordance with Table H–10, except that when the exposed wetted area of the surface is greater than 2,800 square feet, the total rate of venting shall be calculated by the following formula:

$$CFH = 1{,}107A^{0.58}$$

Where:

CFH = Venting requirement, in cubic feet of free air per hour.

A = Exposed wetted surface, in square feet.

NOTE: The foregoing formula is based on $Q = 21{,}000A^{0.58}$.

(e) The total emergency relief venting capacity for any specific stable liquid may be determined by the following formula:

$$V = \frac{1337}{L\sqrt{M}}$$

V = Cubic feet of free air per hour from Table H–10.

L = Latent heat of vaporization of specific liquid in B.t.u. per pound.

M = Molecular weight of specific liquids.

(f) The required airflow rate of subdivision (c) or (e) of this subdivision may be multiplied by the appropriate factor listed in the following schedule when protection is provided as indicated. Only one factor may be used for any one tank.

0.5 for drainage in accordance with subdivision (vii) (b) of this subparagraph for tanks over 200 square feet of wetted area.

0.3 for approved water spray.

0.3 for approved insulation.

0.15 for approved water spray with approved insulation.

(g) The outlet of all vents and vent drains on tanks equipped with emergency venting to permit pressures exceeding 2.5 p.s.i.g. shall be arranged to discharge in such a way as to prevent localized overheating of any part of the tank, in the event vapors from such vents are ignited.

(h) Each commercial tank venting device shall have stamped on it the opening pressure, the pressure at which the valve reaches the full open position, and the flow capacity at the latter pressure, expressed in cubic feet per hour of air at 60° F. and at a pressure of 14.7 p.s.i.a.

(i) The flow capacity of tank venting devices 12 inches and smaller in nominal pipe size shall be determined by actual test of each type and size of vent. These flow tests may be conducted by the manufacturer if certified by a qualified impartial observer, or may be conducted by an outside agency. The flow capacity of tank venting devices larger than 12 inches nominal pipe size, including manhole covers with long bolts or equivalent, may be calculated provided that the opening pressure is actually measured, the rating pressure and corresponding free orifice area are stated, the word "calculated" appears on the nameplate, and the computation is based on a flow coefficient of 0.5 applied to the rated orifice area.

(vi) *Vent piping for aboveground tanks.* (a) Vent piping shall be constructed in

accordance with paragraph (c) of this section.

(b) Where vent pipe outlets for tanks storing Class I liquids are adjacent to buildings or public ways, they shall be located so that the vapors are released at a safe point outside of buildings and not less than 12 feet above the adjacent ground level. In order to aid their dispersion, vapors shall be discharged upward or horizontally away from closely adjacent walls. Vent outlets shall be located so that flammable vapors will not be trapped by eaves or other obstructions and shall be at least five feet from building openings.

(c) When tank vent piping is manifolded, pipe sizes shall be such as to discharge, within the pressure limitations of the system, the vapors they may be required to handle when manifolded tanks are subject to the same fire exposure.

(vii) *Drainage, dikes, and walls for aboveground tanks*—(a) *Drainage and diked areas.* The area surrounding a tank or a group of tanks shall be provided with drainage as in subdivision (b) of this subdivision, or shall be diked as provided in subdivision (c) of this subdivision, to prevent accidental discharge of liquid from endangering adjoining property or reaching waterways.

(b) *Drainage.* Where protection of adjoining property or waterways is by means of a natural or manmade drainage system, such systems shall comply with the following:

(1) A slope of not less than 1 percent away from the tank toward the drainage system shall be provided.

(2) The drainage system shall terminate in vacant land or other area or in an impounding basin having a capacity not smaller than that of the largest tank served. This termination area and the route of the drainage system shall be so located that, if the flammable or combustible liquids in the drainage system are ignited, the fire will not seriously expose tanks or adjoining property.

(3) The drainage system, including automatic drainage pumps, shall not discharge to adjoining property, natural water courses, public sewers, or public drains unless the discharge of flammable or combustible liquids would not constitute a hazard, or the system is so designed that it will not permit flammable or combustible liquids to be released.

(c) *Diked areas.* Where protection of adjoining property or waterways is accomplished by retaining the liquid around the tank by means of a dike, the volume of the diked area shall comply with the following requirements:

(1) Except as provided in subdivision (2) of this subdivision, the volumetric capacity of the diked area shall not be less than the greatest amount of liquid that can be released from the largest tank within the diked area, assuming a full tank. The capacity of the diked area enclosing more than one tank shall be calculated by deducting the volume of the tanks other than the largest tank below the height of the dike.

(2) For a tank or group of tanks with fixed roofs containing crude petroleum with boilover characteristics, the volumetric capacity of the diked area shall be not less than the capacity of the largest tank served by the enclosure, assuming a full tank. The capacity of the diked enclosure shall be calculated by deducting the volume below the height of the dike of all tanks within the enclosure.

(3) Walls of the diked area shall be of earth, steel, concrete or solid masonry designed to be liquidtight and to withstand a full hydrostatic head. Earthen walls 3 feet or more in height shall have a flat section at the top not less than 2 feet wide. The slope of an earthen wall shall be consistent with the angle of repose of the material of which the wall is constructed.

(4) The walls of the diked area shall be restricted to an average height of 6 feet above interior grade.

(5) Where provision is made for draining water from diked areas, drainage shall be provided at a uniform slope of not less than 1 percent away from tanks toward a sump, drainbox, or other safe means of disposal located at the greatest practical distance from the tank. Such drains shall normally be controlled in a manner so as to prevent flammable or combustible liquids from entering natural water courses, public sewers, or public drains, if their presence would constitute a hazard. Control of drainage shall be accessible under fire conditions.

(6) No loose combustible material, empty or full drum or barrel, shall be permitted within the diked area.

(7) Each diked area containing two or more tanks shall be subdivided preferably by drainage channels or at least by intermediate curbs in order to prevent spills from endangering adjacent tanks within the diked area as follows:

(i) When storing normally stable liquids in vertical cone roof tanks constructed with weak roof-to-shell seam or approved floating roof tanks or when storing crude petroleum in producing areas in any type of tank, one subdivision for each tank in excess of 10,000 bbls and one subdivision for each group of tanks (no tank exceeding 10,000 bbls capacity) having an aggregate capacity not exceeding 15,000 bbls.

(ii) When storing normally stable flammable or combustible liquids in tanks not covered in subdivision (i) of this subdivision, one subdivision for each tank in excess of 100,000 gallons (2,500 bbls.) and one subdivision for each group of tanks (no tank exceeding 100,000 gallons capacity) having an aggregate capacity not exceeding 150,000 gallons (3,570 bbls.).

(iii) When storing unstable liquids in any type of tank, one subdivision for each tank except that tanks installed in accordance with the drainage requirements of NFPA 15–1969, Standard for Water Spray Fixed Systems for Fire Protection shall require no additional subdivision.

(iv) The drainage channels or intermediate curbs shall be located between tanks so as to take full advantage of the available space with due regard for the individual tank capacities. Intermediate curbs, where used, shall be not less than 18 inches in height.

(viii) *Tank openings other than vents for aboveground tanks.* (a) Connections for all tank openings shall be vaportight and liquidtight. Vents are covered in subdivisions (iv) through (vi) of this subparagraph.

(b) Each connection to an aboveground tank through which liquid can normally flow shall be provided with an internal or an external valve located as close as practical to the shell of the tank. Such valves, when external, and their connections to the tank shall be of steel except when the chemical characteristics of the liquid stored are incompatible with steel. When materials other than steel are necessary, they shall be suitable for the pressures, structural stresses, and temperatures involved, including fire exposures.

(c) Each connection below the liquid level through which liquid does not normally flow shall be provided with a liquid-tight closure. This may be a valve, plug, or blind, or a combination of these.

(d) Openings for gaging shall be provided with a vaportight cap or cover.

(e) For Class IB and Class IC liquids other than crude oils, gasolines, and asphalts, the fill pipe shall be so designed and installed as to minimize the possibility of generating static electricity. A fill pipe entering the top of a tank shall terminate within 6 inches of the bottom of the tank and shall be installed to avoid excessive vibration.

(f) Filling and emptying connections which are made and broken shall be located outside of buildings at a location free from any source of ignition and not less than 5 feet away from any building opening. Such connection shall be closed and liquidtight when not in use. The connection shall be properly identified.

(3) *Installation of underground tanks*—(i) *Location.* Excavation for underground storage tanks shall be made with due care to avoid undermining of foundations of existing structures. Underground tanks or tanks under buildings shall be so located with respect to existing building foundations and supports that the loads carried by the latter cannot be transmitted to the tank. The distance from any part of a tank storing Class I liquids to the nearest wall of any basement or pit shall be not less than 1 foot, and to any property line that may be built upon, not less than 3 feet. The distance from any part of a tank storing Class II or Class III liquids to the nearest wall of any basement, pit or property line shall be not less than 1 foot.

(ii) *Depth and cover.* Underground tanks shall be set on firm foundations and surrounded with at least 6 inches of noncorrosive, inert materials such as clean sand, earth, or gravel well tamped in place. The tank shall be placed in the hole with care since dropping or rolling the tank into the hole can break a weld, puncture or damage the tank, or scrape off the protective coating of coated tanks. Tanks shall be covered with a minimum of 2 feet of earth, or shall be covered with not less than 1 foot of earth, on top of which shall be placed a slab of reinforced concrete not less than 4 inches thick. When underground tanks are, or are likely to be, subject to traffic, they shall be protected against damage from vehicles passing over them by at least 3 feet of earth cover, or 18 inches of well-tamped earth, plus 6 inches of reinforced concrete or 8 inches of asphaltic concrete. When asphaltic or reinforced concrete paving is used as part of the

protection, it shall extend at least 1 foot horizontally beyond the outline of the tank in all directions.

(iii) *Corrosion protection.* Corrosion protection for the tank and its piping shall be provided by one or more of the following methods:

(a) Use of protective coatings or wrappings;

(b) Cathodic protection; or,

(c) Corrosion resistant materials of construction.

(iv) *Vents.* (a) Location and arrangement of vents for Class I liquids. Vent pipes from tanks storing Class I liquids shall be so located that the discharge point is outside of buildings, higher than the fill pipe opening, and not less than 12 feet above the adjacent ground level. Vent pipes shall discharge only upward in order to disperse vapors. Vent pipes 2 inches or less in nominal inside diameter shall not be obstructed by devices that will cause excessive back pressure. Vent pipe outlets shall be so located that flammable vapors will not enter building openings, or be trapped under eaves or other obstructions. If the vent pipe is less than 10 feet in length, or greater than 2 inches in nominal inside diameter, the outlet shall be provided with a vacuum and pressure relief device or there shall be an approved flame arrester located in the vent line at the outlet or within the approved distance from the outlet.

(b) Size of vents. Each tank shall be vented through piping adequate in size to prevent blow-back of vapor or liquid at the fill opening while the tank is being filled. Vent pipes shall be not less than 1¼ inch nominal inside diameter.

TABLE H-11—VENT LINE DIAMETERS

Maximum flow GPM	Pipe length*		
	50 feet	100 feet	200 feet
	Inches	Inches	Inches
100	1¼	1¼	1¼
200	1¼	1¼	1½
300	1¼	1½	1½
400	1½	1½	2
500	1½	1½	2
600	1½	2	2
700	2	2	2
800	2	2	2
900	2	2	2
1,000	2	2	2

*Vent lines of 50 ft., 100 ft., and 200 ft. of pipe plus 7 ells.

(c) Location and arrangement of vents for Class II or Class III liquids. Vent pipes from tanks storing Class II or Class III flammable liquids shall terminate outside of the building and higher than the fill pipe opening. Vent outlets shall be above normal snow level. They may be fitted with return bends, coarse screens or other devices to minimize ingress of foreign material.

(d) Vent piping shall be constructed in accordance with paragraph (c) of this section. Vent pipes shall be so laid as to drain toward the tank without sags or traps in which liquid can collect. They shall be located so that they will not be subjected to physical damage. The tank end of the vent pipe shall enter the tank through the top.

(e) When tank vent piping is manifolded, pipe sizes shall be such as to discharge, within the pressure limitations of the system, the vapors they may be required to handle when manifolded tanks are filled simultaneously.

(v) *Tank openings other than vents.* (a) Connections for all tank openings shall be vapor or liquid tight.

(b) Openings for manual gaging, if independent of the fill pipe, shall be provided with a liquid-tight cap or cover. If inside a building, each such opening shall be protected against liquid overflow and possible vapor release by means of a spring loaded check valve or other approved device.

(c) Fill and discharge lines shall enter tanks only through the top. Fill lines shall be sloped toward the tank.

(d) For Class IB and Class IC liquids other than crude oils, gasolines, and asphalts, the fill pipe shall be so designed and installed as to minimize the possibility of generating static electricity by terminating within 6 inches of the bottom of the tank.

(e) Filling and emptying connections which are made and broken shall be located outside of buildings at a location free from any source of ignition and not less than 5 feet away from any building opening. Such connection shall be closed and liquidtight when not in use. The connection shall be properly identified.

(4) *Installation of tanks inside of buildings*—(i) *Location.* Tanks shall not be permitted inside of buildings except as provided in paragraphs (a), (g), (h), or (i) of this section.

(ii) *Vents.* Vents for tanks inside of buildings shall be as provided in subparagraphs (2) (iv), (v), (vi) (b), and (3) (iv) of this paragraph, except that emergency venting by the use of weak roof seams on tanks shall not be permitted. Vents shall discharge vapors outside the buildings.

(iii) *Vent piping.* Vent piping shall be constructed in accordance with paragraph (c) of this section.

(iv) *Tank openings other than vents.* (a) Connections for all tank openings shall be vapor or liquidtight. Vents are covered in subdivision (ii) of this subparagraph.

(b) Each connection to a tank inside of buildings through which liquid can normally flow shall be provided with an internal or an external valve located as close as practical to the shell of the tank. Such valves, when external, and their connections to the tank shall be of steel except when the chemical characteristics of the liquid stored are incompatible with steel. When materials other than steel are necessary, they shall be suitable for the pressures, structural stresses, and temperatures involved, including fire exposures.

(c) Flammable or combustible liquid tanks located inside of buildings, except in one-story buildings designed and protected for flammable or combustible liquid storage, shall be provided with an automatic-closing heat-actuated valve on each withdrawal connection below the liquid level, except for connections used for emergency disposal, to prevent continued flow in the event of fire in the vicinity of the tank. This function may be incorporated in the valve required in (b) of this subdivision, and if a separate valve, shall be located adjacent to the valve required in (b) of this subdivision.

(d) Openings for manual gaging, if independent of the fill pipe (see (f) of this subdivision), shall be provided with a vaportight cap or cover. Each such opening shall be protected against liquid overflow and possible vapor release by means of a spring loaded check valve or other approved device.

(e) For Class IB and Class IC liquids other than crude oils, gasolines, and asphalts, the fill pipe shall be so designed and installed as to minimize the possibility of generating static electricity by terminating within 6 inches of the bottom of the tank.

(f) The fill pipe inside of the tank shall be installed to avoid excessive vibration of the pipe.

(g) The inlet of the fill pipe shall be located outside of buildings at a location free from any source of ignition and not less than 5 feet away from any building opening. The inlet of the fill pipe shall be closed and liquidtight when not in use. The fill connection shall be properly identified.

(h) Tanks inside buildings shall be equipped with a device, or other means shall be provided, to prevent overflow into the building.

(5) *Supports, foundations, and anchorage for all tank locations*—(i) *General.* Tank supports shall be installed on firm foundations. Tank supports shall be of concrete, masonry, or protected steel. Single wood timber supports (not cribbing) laid horizontally may be used for outside aboveground tanks if not more than 12 inches high at their lowest point.

(ii) *Fire resistance.* Steel supports or exposed piling shall be protected by materials having a fire resistance rating of not less than 2 hours, except that steel saddles need not be protected if less than 12 inches high at their lowest point. Water spray protection or its equivalent may be used in lieu of fire-resistive materials to protect supports.

(iii) *Spheres.* The design of the supporting structure for tanks such as spheres shall receive special engineering consideration.

(iv) *Load distribution.* Every tank shall be so supported as to prevent the excessive concentration of loads on the supporting portion of the shell.

(v) *Foundations.* Tanks shall rest on the ground or on foundations made of concrete, masonry, piling, or steel. Tank foundations shall be designed to minimize the possibility of uneven settling of the tank and to minimize corrosion in any part of the tank resting on the foundation.

(vi) *Flood areas.* Where a tank is located in an area that may be subjected to flooding, the applicable precautions outlined in this subdivision shall be observed.

(a) No aboveground vertical storage tank containing a flammable or combustible liquid shall be located so that the allowable liquid level within the tank is below the established maximum flood stage, unless the tank is provided with a guiding structure such as described in (m), (n), and (o) of this subdivision.

(b) Independent water supply facilities shall be provided at locations where

there is no ample and dependable public water supply available for loading partially empty tanks with water.

(c) In addition to the preceding requirements, each tank so located that more than 70 percent, but less than 100 percent, of its allowable liquid storage capacity will be submerged at the established maximum flood stage, shall be safeguarded by one of the following methods: Tank shall be raised, or its height shall be increased, until its top extends above the maximum flood stage a distance equivalent to 30 percent or more of its allowable liquid storage capacity: *Provided, however*, That the submerged part of the tank shall not exceed two and one-half times the diameter. Or, as an alternative to the foregoing, adequate noncombustible structural guides, designed to permit the tank to float vertically without loss of product, shall be provided.

(d) Each horizontal tank so located that more than 70 percent of its storage capacity will be submerged at the established flood stage, shall be anchored, attached to a foundation of concrete or of steel and concrete, of sufficient weight to provide adequate load for the tank when filled with flammable or combustible liquid and submerged by flood waters to the established flood stage, or adequately secured by other means.

(e) Spherical and spheroidal tanks shall be protected by applicable methods as specified for either vertical or horizontal tanks.

(f) At locations where there is no ample and dependable water supply, or where filling of underground tanks with liquids is impracticable because of the character of their contents, their use, or for other reasons, each tank shall be safeguarded against movement when empty and submerged by high ground water or flood waters by anchoring, weighting with concrete or other approved solid loading material, or securing by other means. Each such tank shall be so constructed and installed that it will safely resist external pressures due to high ground water or flood waters.

(g) At locations where there is an ample and dependable water supply available, underground tanks containing flammable or combustible liquids, so installed that more than 70 percent of their storage capacity will be submerged at the maximum flood stage, shall be so anchored, weighted, or secured by other means, as to prevent movement of such tanks when filled with flammable or combustible liquids, and submerged by flood waters to the established flood stage.

(h) Pipe connections below the allowable liquid level in a tank shall be provided with valves or cocks located as closely as practicable to the tank shell. Such valves and their connections to tanks shall be of steel or other material suitable for use with the liquid being stored. Cast iron shall not be permitted.

(i) At locations where an independent water supply is required, it shall be entirely independent of public power and water supply. Independent source of water shall be available when flood waters reach a level not less than 10 feet below the bottom of the lowest tank on a property.

(j) The self-contained power and pumping unit shall be so located or so designed that pumping into tanks may be carried on continuously throughout the rise in flood waters from a level 10 feet below the lowest tank to the level of the potential flood stage.

(k) Capacity of the pumping unit shall be such that the rate of rise of water in all tanks shall be equivalent to the established potential average rate of rise of flood waters at any stage.

(l) Each independent pumping unit shall be tested periodically to insure that it is in satisfactory operating condition.

(m) Structural guides for holding floating tanks above their foundations shall be so designed that there will be no resistance to the free rise of a tank, and shall be constructed of noncombustible material.

(n) The strength of the structure shall be adequate to resist lateral movement of a tank subject to a horizontal force in any direction equivalent to not less than 25 pounds per square foot acting on the projected vertical cross-sectional area of the tank.

(o) Where tanks are situated on exposed points or bends in a shoreline where swift currents in flood waters will be present, the structures shall be designed to withstand a unit force of not less than 50 pounds per square foot.

(p) The filling of a tank to be protected by water loading shall be started as soon as flood waters reach a dangerous flood stage. The rate of filling shall be at least equal to the rate of rise of the floodwaters (or the established average potential rate of rise).

(q) Sufficient fuel to operate the water pumps shall be available at all times to insure adequate power to fill all tankage with water.

(r) All valves on connecting pipelines shall be closed and locked in closed position when water loading has been completed.

(s) Where structural guides are provided for the protection of floating tanks, all rigid connections between tanks and pipelines shall be disconnected and blanked off or blinded before the floodwaters reach the bottom of the tank, unless control valves and their connections to the tank are of a type designed to prevent breakage between the valve and the tank shell.

(t) All valves attached to tanks other than those used in connection with water loading operations shall be closed and locked.

(u) If a tank is equipped with a swing line, the swing pipe shall be raised to and secured at its highest position.

(v) Inspections. The Assistant Secretary or his designated representative shall make periodic inspections of all plants where the storage of flammable or combustible liquids is such as to require compliance with the foregoing requirements, in order to assure the following:

(1) That all flammable or combustible liquid storage tanks are in compliance with these requirements and so maintained.

(2) That detailed printed instructions of what to do in flood emergencies are properly posted.

(3) That station operators and other employees depended upon to carry out such instructions are thoroughly informed as to the location and operation of such valves and other equipment necessary to effect these requirements.

(vii) *Earthquake areas.* In areas subject to earthquakes, the tank supports and connections shall be designed to resist damage as a result of such shocks.

(6) *Sources of ignition.* In locations where flammable vapors may be present, precautions shall be taken to prevent ignition by eliminating or controlling sources of ignition. Sources of ignition may include open flames, lightning, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, and mechanical), spontaneous ignition, chemical and physical-chemical reactions, and radiant heat.

(7) *Testing*—(i) *General.* All tanks, whether shop built or field erected, shall be strength tested before they are placed in service in accordance with the applicable paragraphs of the code under which they were built. The American Society of Mechanical Engineers (ASME) code stamp, American Petroleum Institute (API) monogram, or the label of the Underwriters' Laboratories, Inc., on a tank shall be evidence of compliance with this strength test. Tanks not marked in accordance with the above codes shall be strength tested before they are placed in service in accordance with good engineering principles and reference shall be made to the sections on testing in the codes listed in subparagraphs (1) (iii) (a), (iv) (b), or (v) (b) of this paragraph.

(ii) *Strength.* When the vertical length of the fill and vent pipes is such that when filled with liquid the static head imposed upon the bottom of the tank exceeds 10 pounds per square inch, the tank and related piping shall be tested hydrostatically to a pressure equal to the static head thus imposed.

(iii) *Tightness.* In addition to the strength test called for in subdivisions (i) and (ii) of this subparagraph, all tanks and connections shall be tested for tightness. Except for underground tanks, this tightness test shall be made at operating pressure with air, inert gas, or water prior to placing the tank in service. In the case of field-erected tanks the strength test may be considered to be the test for tank tightness. Underground tanks and piping, before being covered, enclosed, or placed in use, shall be tested for tightness hydrostatically, or with air pressure at not less than 3 pounds per square inch and not more than 5 pounds per square inch.

(iv) *Repairs.* All leaks or deformations shall be corrected in an acceptable manner before the tank is placed in service. Mechanical caulking is not permitted for correcting leaks in welded tanks except pinhole leaks in the roof.

(v) *Derated operations.* Tanks to be operated at pressures below their design pressure may be tested by the applicable provisions of subdivisions (i) or (ii) of this subparagraph, based upon the pressure developed under full emergency venting of the tank.

(c) *Piping, valves, and fittings*—(1) *General*—(i) *Design.* The design (including selection of materials) fabrication, assembly, test, and inspection of piping systems containing flammable or combustible liquids shall be suitable for the expected working pressures and structural stresses. Conformity with the

applicable provisions of Pressure Piping, ANSI B31 series and the provisions of this paragraph, shall be considered prima facie evidence of compliance with the foregoing provisions.

(ii) *Exceptions.* This paragraph does not apply to any of the following:

(a) Tubing or casing on any oil or gas wells and any piping connected directly thereto.

(b) Motor vehicle, aircraft, boat, or portable or stationary engines.

(c) Piping within the scope of any applicable boiler and pressures vessel code.

(iii) *Definitions.* As used in this paragraph, piping systems consist of pipe, tubing, flanges, bolting, gaskets, valves, fittings, the pressure containing parts of other components such as expansion joints and strainers, and devices which serve such purposes as mixing, separating, snubbing, distributing, metering, or controlling flow.

(2) *Materials for piping, valves, and fittings*—(i) *Required materials.* Materials for piping, valves, or fittings shall be steel, nodular iron, or malleable iron, except as provided in paragraph (c) (2) (ii), (iii) and (iv) of this section.

(ii) *Exceptions.* Materials other than steel, nodular iron, or malleable iron may be used underground, or if required by the properties of the flammable or combustible liquid handled. Material other than steel, nodular iron, or malleable iron shall be designed to specifications embodying principles recognized as good engineering practices for the material used.

(iii) *Linings.* Piping, valves, and fittings may have combustible or noncombustible linings.

(iv) *Low-melting materials.* When low-melting point materials such as aluminum and brass or materials that soften on fire exposure such as plastics, or nonductile materials such as cast iron, are necessary, special consideration shall be given to their behavior on fire exposure. If such materials are used in aboveground piping systems or inside buildings, they shall be suitably protected against fire exposure or so located that any spill resulting from the failure of these materials could not unduly expose persons, important buildings or structures or can be readily controlled by remote valves.

(3) *Pipe joints.* Joints shall be made liquid tight. Welded or screwed joints or approved connectors shall be used. Threaded joints and connections shall be made up tight with a suitable lubricant or piping compound. Pipe joints dependent upon the friction characteristics of combustible materials for mechanical continuity of piping shall not be used inside buildings. They may be used outside of buildings above or below ground. If used aboveground, the piping shall either be secured to prevent disengagement at the fitting or the piping system shall be so designed that any spill resulting from such disengagement could not unduly expose persons, important buildings or structures, and could be readily controlled by remote valves.

(4) *Supports.* Piping systems shall be substantially supported and protected against physical damage and excessive stresses arising from settlement, vibration, expansion, or contraction.

(5) *Protection against corrosion.* All piping for flammable or combustible liquids, both aboveground and underground, where subject to external corrosion, shall be painted or otherwise protected.

(6) *Valves.* Piping systems shall contain a sufficient number of valves to operate the system properly and to protect the plant. Piping systems in connection with pumps shall contain a sufficient number of valves to control properly the flow of liquid in normal operation and in the event of physical damage. Each connection to pipelines, by which equipments such as tankcars or tank vehicles discharge liquids by means of pumps into storage tanks, shall be provided with a check valve for automatic protection against backflow if the piping arrangement is such that backflow from the system is possible.

(7) *Testing.* All piping before being covered, enclosed, or placed in use shall be hydrostatically tested to 150 percent of the maximum anticipated pressure of the system, or pneumatically tested to 110 percent of the maximum anticipated pressure of the system, but not less than 5 pounds per square inch gage at the highest point of the system. This test shall be maintained for a sufficient time to complete visual inspection of all joints and connections, but for at least 10 minutes.

(d) *Container and portable tank storage*—(1) *Scope*—(i) *General.* This paragraph shall apply only to the storage of flammable or combustible liquids in drums or other containers (including flammable aerosols) not exceeding 60 gallons individual capacity and those portable tanks not exceeding 660 gallons individual capacity.

(ii) *Exceptions.* This paragraph shall not apply to the following:

(a) Storage of containers in bulk plants, service stations, refineries, chemical plants, and distilleries;

(b) Class I or Class II liquids in the fuel tank of a motor vehicle, aircraft, boat, or portable or stationary engine;

(c) Flammable or combustible paints, oils, varnishes, and similar mixtures used for painting or maintenance when not kept for a period in excess of 30 days;

(d) Beverages when packaged in individual containers not exceeding 1 gallon in size.

(2) *Design, construction, and capacity of containers*—(i) *General.* Only approved containers and portable tanks shall be used. Metal containers and portable tanks meeting the requirements of and containing products authorized by Chapter I, Title 49 of the Code of Federal Regulations (regulations issued by the Hazardous Materials Regulations Board, Department of Transportation), shall be deemed to be acceptable.

(ii) *Emergency venting.* Each portable tank shall be provided with one or more devices installed in the top with sufficient emergency venting capacity to limit internal pressure under fire exposure conditions to 10 p.s.i.g., or 30 percent of the bursting pressure of the tank, whichever is greater. The total venting capacity shall be not less than that specified in paragraphs (b) (2) (v) (c) or (e) of this section. At least one pressure-activated vent having a minimum capacity of 6,000 cubic feet of free air (14.7 p.s.i.a. and 60° F.) shall be used. It shall be set to open at not less than 5 p.s.i.g. If fusible vents are used, they shall be actuated by elements that operate at a temperature not exceeding 300° F.

(iii) *Size.* Flammable and combustible liquid containers shall be in accordance with Table H-12, except that glass or plastic containers of no more than 1-gallon capacity may be used for a Class IA or IB flammable liquid if:

(a) (1) Such liquid either would be rendered unfit for its intended use by contact with metal or would excessively corrode a metal container so as to create a leakage hazard; and

(2) The user's process either would require more than 1 pint of a Class IA liquid or more than 1 quart of a Class IB liquid of a single assay lot to be used at one time, or would require the maintenance of an analytical standard liquid of a quality which is not met by the specified standards of liquids available, and the quantity of the analytical standard liquid required to be used in any one control process exceeds one-sixteenth the capacity of the container allowed under Table H-12 for the class of liquid; or

(b) The containers are intended for direct export outside the United States.

TABLE H-12.—*Maximum allowable size of containers and portable tanks*

Container type	Flammable liquids			Combustible liquids	
	Class IA	Class IB	Class IC	Class II	Class III
Glass or approved plastic	1 pt.	1 qt.	1 gal.	1 gal.	1 gal.
Metal (other than DOT drums)	1 gal.	5 gal.	5 gal.	5 gal.	5 gal.
Safety cans	2 gal.	5 gal.	5 gal.	5 gal.	5 gal.
Metal drums (DOT specifications)	60 gal.	60 gal.	60 gal.	60 gal.	60 gal.
Approved portable tanks	660 gal.	660 gal.	660 gal.	660 gal.	660 gal.

NOTE.—Container exemptions: (a) Medicines, beverages, foodstuffs, cosmetics, and other common consumer items, when packaged according to commonly accepted practices, shall be exempt from the requirements of § 1910.106(d)(2)(i) and (iii).

(3) *Design, construction, and capacity of storage cabinets*—(i) *Maximum capacity.* Not more than 60 gallons of Class I or Class II liquids, nor more than 120 gallons of Class III liquids may be stored in a storage cabinet.

(ii) *Fire resistance.* Storage cabinets shall be designed and constructed to limit the internal temperature to not more than 325° F. when subjected to a 10-minute fire test using the standard time-temperature curve as set forth in Standard Methods of Fire Tests of Building Construction and Materials, NFPA 251-1969. All joints and seams shall remain tight and the door shall remain securely closed during the fire test. Cabinets shall be labeled in conspicuous lettering, "Flammable—Keep Fire Away."

(a) Metal cabinets constructed in the following manner shall be deemed to be in compliance. The bottom, top, door, and sides of cabinet shall be at least No. 18 gage sheet iron and double walled with 1½-inch air space. Joints shall be riveted, welded or made tight by some equally effective means. The door shall be provided with a three-point lock, and the door sill shall be raised at least 2 inches above the bottom of the cabinet.

(b) Wooden cabinets constructed in the following manner shall be deemed in compliance. The bottom, sides, and top shall be constructed of an approved grade of plywood at least 1 inch in thickness, which shall not break down or delaminate under fire conditions. All joints shall be rabbetted and shall be fastened in two directions with flathead woodscrews. When more than one door is used, there shall be a rabbetted overlap of not less than 1 inch. Hinges shall be mounted in such a manner as not to lose their holding capacity due to loosening or burning out of the screws when subjected to the fire test.

(4) *Design and construction of inside storage rooms.*—(i) *Construction.* Inside storage rooms shall be constructed to meet the required fire-resistive rating for their use. Such construction shall comply with the test specifications set forth in Standard Methods of Fire Tests of Building Construction and Materials, NFPA 251–1969. Where an automatic sprinkler system is provided, the system shall be designed and installed in an acceptable manner. Openings to other rooms or buildings shall be provided with noncombustible liquid-tight raised sills or ramps at least 4 inches in height, or the floor in the storage area shall be at least 4 inches below the surrounding floor. Openings shall be provided with approved self-closing fire doors. The room shall be liquid-tight where the walls join the floor. A permissible alternate to the sill or ramp is an open-grated trench inside of the room which drains to a safe location. Where other portions of the building or other properties are exposed, windows shall be protected as set forth in the Standard for Fire Doors and Windows, NFPA No. 80–1968, for Class E or F openings. Wood at least 1 inch nominal thickness may be used for shelving, racks, dunnage, scuffboards, floor overlay, and similar installations.

(ii) *Rating and capacity.* Storage in inside storage rooms shall comply with Table H–13.

TABLE H–13—STORAGE IN INSIDE ROOMS

Fire protection* provided	Fire resistance	Maximum size	Total allowable quantities (gals./sq. ft./floor area)
Yes	2 hours	500 sq. ft.	10
No	2 hours	500 sq. ft.	4
Yes	1 hour	150 sq. ft.	5
No	1 hour	150 sq. ft.	2

*Fire protection system shall be sprinkler, water spray, carbon dioxide, or other system.

(iii) *Wiring.* Electrical wiring and equipment located in inside storage rooms used for Class I liquids shall be approved under subpart S of this part for Class I, Division 2 Hazardous Locations; for Class II and Class III liquids, shall be approved for general use.

(iv) *Ventilation.* Every inside storage room shall be provided with either a gravity or a mechanical exhaust ventilation system. Such system shall be designed to provide for a complete change of air within the room at least six times per hour. If a mechanical exhaust system is used, it shall be controlled by a switch located outside of the door. The ventilating equipment and any lighting fixtures shall be operated by the same switch. A pilot light shall be installed adjacent to the switch if Class I flammable liquids are dispensed within the room. Where gravity ventilation is provided, the fresh air intake, as well as the exhaust outlet from the room, shall be on the exterior of the building in which the room is located.

(v) *Storage in inside storage rooms.* In every inside storage room there shall be maintained one clear aisle at least 3 feet wide. Containers over 30 gallons capacity shall not be stacked one upon the other. Dispensing shall be by approved pump or self-closing faucet only.

(5) *Storage inside building.*—(i) *Egress.* Flammable or combustible liquids, including stock for sale, shall not be stored so as to limit use of exits, stairways, or areas normally used for the safe egress of people.

(ii) *Containers.* The storage of flammable or combustible liquids in containers or portable tanks shall comply with subdivisions (iii) through (v) of this subparagraph.

(iii) *Office occupancies.* Storage shall be prohibited except that which is required for maintenance and operation of building and operation of equipment. Such storage shall be kept in closed metal containers stored in a storage cabinet or in safety cans or in an inside storage room not having a door that opens into that portion of the building used by the public.

(iv) *Mercantile occupancies and other retail stores.*

(a) In rooms or areas accessible to the public, storage shall be limited to quantities needed for display and normal merchandising purposes but shall not exceed 2 gallons per square foot of gross floor area. The gross floor area used for computing the maximum quantity permitted shall be considered as that portion of the store actually being used for merchandising flammable and combustible liquids.

(b) Where the aggregate quantity of additional stock exceeds 60 gallons of Class IA, or 120 gallons of Class IB, or 180 gallons of Class IC, or 240 gallons of Class II, or 500 gallons of Class III liquids, or any combination of Class I and Class II liquids exceeding 240 gallons, it shall be stored in a room or portion of the building that complies with the construction provisions for an inside storage room as prescribed in subparagraph (4) of this paragraph. For water miscible liquids, these quantities may be doubled.

(b) Where the aggregate quantity of additional stock exceeds 60 gallons of Class IA, 120 gallons of Class IB, 180 gallons of Class IC, 240 gallons of Class II, or 500 gallons of combustible liquids, or any combination of flammable liquids exceeding 240 gallons, it shall be stored in a room or portion of the building that complies with the construction provisions for an inside storage room as prescribed in subparagraph (4) of this paragraph. For water miscible liquids, these quantities may be doubled.

(c) Containers in a display area shall not be stacked more than 3 feet or two containers high, whichever is the greater, unless the stacking is done on fixed shelving or is otherwise satisfactorily secured.

(d) Shelving shall be of stable construction, of sufficient depth and arrangement such that containers displayed thereon shall not be easily displaced.

(e) Leaking containers shall be removed to a storage room or taken to a safe location outside the building and the contents transferred to an undamaged container.

(v) *General purpose public warehouses.* Storage shall be in accordance with Table H–14 or H–15 and in buildings or in portions of such buildings cut off by standard firewalls. Material creating no fire exposure hazard to the flammable or combustible liquids may be stored in the same area.

TABLE H–14—INDOOR CONTAINER STORAGE

Class liquid	Storage level	Protected storage maximum per pile		Unprotected storage maximum per pile	
		Gallons	Height	Gallons	Height
A	Ground and upper floors	2,750 (50)	3 ft. (1)	600 (12)	3 ft. (1)
	Basement	Not permitted		Not permitted	
B	Ground and upper floors	5,500 (100)	6 ft. (2)	1,375 (25)	3 ft. (1)
	Basement	Not permitted		Not permitted	
C	Ground and upper floors	16,500 (300)	6 ft. (2)	4,125 (75)	3 ft. (1)
	Basement	Not permitted		Not permitted	
II	Ground and upper floors	16,500 (300)	9 ft. (3)	4,125 (75)	9 ft. (3)
	Basement	5,500 (100)	9 ft. (2)	Not permitted	
III	Ground and upper floors	38,000 (1,000)	15 ft. (5)	13,750 (250)	12 ft. (4)
	Basement	8,250 (450)	9 ft. (3)	Not permitted	

NOTE 1: When 2 or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile shall be the smallest of the 2 or more separate maximum gallonages.

NOTE 2: Aisles shall be provided so that no container is more than 12 ft. from an aisle. Main aisles shall be at least 8 ft. wide and side aisles at least 4 ft. wide.

(Numbers in parentheses indicate corresponding number of 55-gal. drums.)

Each pile shall be separated from each other by at least 4 ft.

TABLE H–15—INDOOR PORTABLE TANK STORAGE

Class liquid	Storage level	Protected storage maximum per pile		Unprotected storage maximum per pile	
		Gallons	Height	Gallons	Height
IA	Ground and upper floors	Not permitted		Not permitted	
	Basement	Not permitted		Not permitted	
IB	Ground and upper floors	20,000	7 ft.	2,000	7 ft.
	Basement	Not permitted		Not permitted	
IC	Ground and upper floors	40,000	14 ft.	5,500	7 ft.
	Basement	Not permitted		Not permitted	
II	Ground and upper floors	40,000	14 ft.	5,500	7 ft.
	Basement	20,000	7 ft.	Not permitted	
III	Ground and upper floors	60,000	14 ft.	22,000	7 ft.
	Basement	20,000	7 ft.	Not permitted	

NOTE 1: When 2 or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile shall be the smallest of the 2 or more separate maximum gallonages.

NOTE 2: Aisles shall be provided so that no portable tank is more than 12 ft. from an aisle. Main aisles shall be at least 8 ft. wide and side aisles at least 4 ft. wide.

NOTE 3: Each pile shall be separated from each other by at least 4 ft.

(vi) *Flammable and combustible liquid warehouses or storage buildings.*

(a) If the storage building is located 50 feet or less from a building or line of adjoining property that may be built upon, the exposing wall shall be a blank wall having a fire-resistance rating of at least 2 hours.

(b) The total quantity of liquids within a building shall not be restricted, but the arrangement of storage shall comply with Table H–14 or H–15.

(c) Containers in piles shall be separated by pallets or dunnage where necessary to provide stability and to prevent excessive stress on container walls.

(d) Portable tanks stored over one tier high shall be designed to nest securely, without dunnage, and adequate materials handling equipment shall be available to handle tanks safely at the upper tier level.

(e) No pile shall be closer than 3 feet to the nearest beam, chord, girder, or other obstruction, and shall be 3 feet below sprinkler deflectors or discharge orifices of water spray, or other overhead fire protection systems.

(f) Aisles of at least 3 feet wide shall be provided where necessary for reasons of access to doors, windows or standpipe connections.

(6) *Storage outside buildings.*—(i) *General.* Storage outside buildings shall be in accordance with Table H–16 or H–17, and subdivisions (ii) and (iv) of this subparagraph.

TABLE H–16—OUTDOOR CONTAINER STORAGE

1 Class	2 Maximum per pile (see note 1)	3 Distance between piles (see note 2)	4 Distance to property line that can be built upon (see notes 3 and 4)	5 Distance to street, alley, public way (see note 4)
	gal.	ft.	ft.	ft.
IA	1,100	3	20	10
IB	2,200	3	20	10
IC	4,400	3	20	10
II	8,800	3	10	5
III	22,000	3	10	5

NOTE 1: When 2 or more classes of materials are stored in a single pile, the maximum gallonage in that pile must be the smallest of the 2 or more separate gallonages.

NOTE 2: Within 200 ft. of each container, there shall be a 12-ft. wide access way to permit approach of fire control apparatus.

NOTE 3: The distances listed apply to properties that have protection for exposures as defined. If there are exposures, and such protection for exposures does not exist, the distances in column 4 shall be doubled.

NOTE 4: When total quantity stored does not exceed 20 percent of maximum per pile, the distances in columns 4 and 5 may be reduced 50 percent, but not less than 3 ft.

(ii) *Maximum storage.* A maximum of 1,100 gallons of flammable or combustible liquids may be located adjacent to buildings located on the same premises and under the same management provided the provisions of subdivisions (iii) and (b) of this subdivision are complied with.

(a) The building shall be a one-story building devoted principally to the handling and storing of flammable or combustible liquids or the building shall have 2-hour fire-resistive exterior walls having no opening within 10 feet of such storage.

(b) Where quantity stored exceeds 1,100 gallons, or provisions of subdivision (a) of this subdivision cannot be met, a minimum distance of 10 feet between buildings and nearest container of flammable or combustible liquid shall be maintained.

(iii) *Spill containment.* The storage area shall be graded in a manner to divert possible spills away from buildings or other exposures or shall be surrounded by a curb at least 6 inches high. When curbs are used, provisions shall be made for draining of accumulations of ground or rain water or spills of flammable or combustible liquids. Drains shall terminate at a safe location and shall be accessible to operation under fire conditions.

(iv) *Security.* The storage area shall be protected against tampering or trespassers where necessary and shall be kept free of weeds, debris and other combustible material not necessary to the storage.

(7) *Fire control.*—(i) *Extinguishers.* Suitable fire control devices, such as small hose or portable fire extinguishers, shall be available at locations where flammable or combustible liquids are stored.

TABLE H–17—OUTDOOR PORTABLE TANK STORAGE

1 Class	2 Maximum per pile	3 Distance between piles	4 Distance to property line that can be built upon	5 Distance to street, alley, public way
	gal.	ft.	ft.	ft.
IA	2,200	3	20	10
IB	4,400	3	20	10
IC	8,800	3	20	10
II	17,600	3	10	5
III	44,000	3	10	5

NOTE 1: When 2 or more classes of materials are stored in a single pile, the maximum gallonage in that pile shall be the smallest of the 2 or more separate gallonages.

NOTE 2: Within 200 ft. of each portable tank, there shall be a 12-ft. wide access way to permit approach of fire control apparatus.

NOTE 3: The distances listed apply to properties that have protection for exposures as defined. If there are exposures, and such protection for exposures does not exist, the distances in column 4 shall be doubled.

NOTE 4: When total quantity stored does not exceed 20 percent of maximum per pile, the distances in columns 4 and 5 may be reduced 50 percent, but not less than 3 ft.

(a) At least one portable fire extinguisher having a rating of not less than 12–B units shall be located outside of, but not more than 10 feet from, the door opening into any room used for storage.

(b) At least one portable fire extinguisher having a rating of not less than 12–B units must be located not less than 10 feet, nor more than 25 feet, from any Class I or Class II liquid storage area located outside of a storage room but inside a building.

(ii) *Sprinklers.* When sprinklers are provided, they shall be installed in accordance with § 1910.159.

(iii) *Open flames and smoking.* Open flames and smoking shall not be permitted in flammable or combustible liquid storage areas.

(iv) *Water reactive materials.* Materials which will react with water shall not be stored in the same room with flammable or combustible liquids.

(c) *Industrial plants.*—(1) *Scope.*—(i) *Application.* This paragraph shall apply to those industrial plants where:

(a) The use of flammable or combustible liquids is incidental to the principal business, or

(b) Where flammable or combustible liquids are handled or used only in unit physical operations such as mixing, drying, evaporating, filtering, distillation, and similar operations which do not involve chemical reaction. This paragraph shall not apply to chemical plants, refineries or distilleries.

(ii) *Exceptions.* Where portions of such plants involve chemical reactions such as oxidation, reduction, halogenation, hydrogenation, alkylation, polymerization, and other chemical processes, those portions of the plant shall be in accordance with paragraph (b) of this section.

(2) *Incidental storage or use of flammable and combustible liquids.*—(i) *Application.* This subparagraph shall be applicable to those portions of an industrial plant where the use and handling

of flammable or combustible liquids is only incidental to the principal business, such as automobile assembly, construction of electronic equipment, furniture manufacturing, or other similar activities.

(ii) *Containers.* Flammable or combustible liquids shall be stored in tanks or closed containers.

(a) Except as provided in subdivisions (b) and (c) of this subdivision, all storage shall comply with paragraph (d) (3) or (4) of this section.

(b) The quantity of liquid that may be located outside of an inside storage room or storage cabinet in a building or in any one fire area of a building shall not exceed:

(1) 25 gallons of Class IA liquids in containers

(2) 120 gallons of Class IB, IC, II, or III liquids in containers

(3) 660 gallons of Class IB, IC, II, or III liquids in a single portable tank.

(c) Where large quantities of flammable or combustible liquids are necessary, storage may be in tanks which shall comply with the applicable requirements of paragraph (b) of this section.

(iii) *Separation and protection.* Areas in which flammable or combustible liquids are transferred from one tank or container to another container shall be separated from other operations in the building by adequate distance or by construction having adequate fire resistance. Drainage or other means shall be provided to control spills. Adequate natural or mechanical ventilation shall be provided.

(iv) *Handling liquids at point of final use.* (a) Flammable liquids shall be kept in covered containers when not actually in use.

(b) Where flammable or combustible liquids are used or handled, except in closed containers, means shall be provided to dispose promptly and safely of leakage or spills.

(c) Class I liquids may be used only where there are no open flames or other sources of ignition within the possible path of vapor travel.

(d) Flammable or combustible liquids shall be drawn from or transferred into vessels, containers, or portable tanks within a building only through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container or portable tanks by gravity through an approved self-closing valve. Transferring by means of air pressure on the container or portable tanks shall be prohibited.

(3) *Unit physical operations.*—(i) *Application.* This subparagraph shall be applicable in those portions of industrial plants where flammable or combustible liquids are handled or used in unit physical operations such as mixing, drying, evaporating, filtering, distillation, and similar operations which do not involve chemical change. Examples are plants compounding cosmetics, pharmaceuticals, solvents, cleaning fluids, insecticides, and similar types of activities.

(ii) *Location.* Industrial plants shall be located so that each building or unit of equipment is accessible from at least one side for firefighting and fire control purposes. Buildings shall be located with respect to lines of adjoining property which may be built upon as set forth in paragraph (h) (2) (i) and (ii) of this section except that the blank wall referred to in paragraph (h) (2) (ii) of this section shall have a fire resistance rating of at least 2 hours.

(iii) *Chemical processes.* Areas where unstable liquids are handled or small scale unit chemical processes are carried on shall be separated from the remainder of the plant by a fire wall of 2-hour minimum fire resistance rating.

(iv) *Drainage.* (a) Emergency drainage systems shall be provided to direct flammable or combustible liquid leakage and fire protection water to a safe location. This may require curbs, scuppers, or special drainage systems to control the spread of fire; see paragraph (b) (2) (vii) (b) of this section.

(b) Emergency drainage systems, if connected to public sewers or discharged into public waterways, shall be equipped with traps or separators.

(c) The industrial plant shall be designed and operated to prevent the normal discharge of flammable or combustible liquids into public waterways, public sewers, or adjoining property.

(v) *Ventilation.* (a) Areas as defined in subdivision (i) of this subparagraph using Class I liquids shall be ventilated at a rate of not less than 1 cubic foot per minute per square foot of solid floor area. This shall be accomplished by natural or mechanical ventilation with discharge or exhaust to a safe location outside of the building. Provision shall be made for introduction of makeup air in such a manner as not to short circuit the ventilation. Ventilation shall be arranged to include all floor areas or pits where flammable vapors may collect.

(b) Equipment used in a building and the ventilation of the building shall be designed so as to limit flammable vapor-air mixtures under normal operating conditions to the interior of equipment, and to not more than 5 feet from equipment which exposes Class I liquids to the air. Examples of such equipment are dispensing stations, open centrifuges, plate and frame filters, open vacuum filters, and surfaces of open equipment.

(vi) *Storage and handling.* The storage, transfer, and handling of liquid shall comply with paragraph (h) (4) of this section.

(4) *Tank vehicle and tank car loading and unloading.* (i) Tank vehicle and tank car loading or unloading facilities shall be separated from aboveground tanks, warehouses, other plant buildings or nearest line of adjoining property which may be built upon by a distance of 25 feet for Class I liquids and 15 feet for Class II and Class III liquids measured from the nearest position of any fill stem. Buildings for pumps or shelters for personnel may be a part of the facility. Operations of the facility shall comply with the appropriate portions of paragraph (f) (3) of this section.

(5) *Fire control.*—(i) *Portable and special equipment.* Portable fire extinguishment and control equipment shall be provided in such quantities and types as are needed for the special hazards of operation and storage.

(ii) *Water supply.* Water shall be available in volume and at adequate pressure to supply water hose streams, foam-producing equipment, automatic sprinklers, or water spray systems as the need is indicated by the special hazards of operation, dispensing and storage.

(iii) *Special extinguishers.* Special extinguishing equipment such as that utilizing foam, inert gas, or dry chemical shall be provided as the need is indicated by the special hazards of operation dispensing and storage.

(iv) *Special hazards.* Where the need is indicated by special hazards of operation, flammable or combustible liquid processing equipment, major piping, and supporting steel shall be protected by approved water spray systems, deluge systems, approved fire-resistant coatings, insulation, or any combination of these.

(v) *Maintenance.* All plant fire protection facilities shall be adequately maintained and periodically inspected and tested to make sure they are always in satisfactory operating condition, and they will serve their purpose in time of emergency.

(6) *Sources of ignition.*—(i) *General.* Adequate precautions shall be taken to prevent the ignition of flammable vapors. Sources of ignition include but are not limited to open flames; lightning; smoking; cutting and welding; hot surfaces; frictional heat; static, electrical, and mechanical sparks; spontaneous ignition, including heat producing chemical reactions; and radiant heat.

(ii) *Grounding.* Class I liquids shall not be dispensed into containers unless the nozzle and container are electrically interconnected. Where the metallic floorplate on which the container stands while filling is electrically connected to the fill stem or where the fill stem is bonded to the container during filling operations by means of a bond wire, the provisions of this section shall be deemed to have been complied with.

(7) *Electrical.*—(i) *Equipment.* (a) All electrical wiring and equipment shall be installed according to the requirements of Subpart S of this part.

(b) Locations where flammable vapor-air mixtures may exist under normal operations shall be classified Class I, Division 1 according to the requirements of Subpart S of this part. For those pieces of equipment installed in accordance with subparagraph (3) (v) (b) of this paragraph, the Division 1 area shall extend 5 feet in all directions from all points of vapor liberation. All areas within pits shall be classified Division 1 if any part of the pit is within a Division 1 or 2 classified area, unless the pit is provided with mechanical ventilation.

(c) Locations where flammable vapor-air mixtures may exist under abnormal conditions and for a distance beyond Division 1 locations shall be classified Division 2 according to the requirements of Subpart S of this part. These locations include an area within 20 feet horizontally, 3 feet vertically beyond a Division 1 area, and up to 3 feet above floor or grade level within 25 feet, if indoors, or 10 feet if outdoors, from any pump, bleeder, withdrawal fitting, meter, or similar device handling Class I liquids. Pits provided with adequate mechanical ventilation within a Division 1 or 2 area shall be classified Division 2. If Class II or Class III liquids only are handled, then ordinary electrical equipment is

satisfactory though care shall be used in locating electrical apparatus to prevent hot metal from falling into open equipment.

(d) Where the provisions of subdivisions (a), (b), and (c), of this subdivision require the installation of electrical equipment suitable for Class I, Division 1 or Division 2 locations, ordinary electrical equipment including switchgear may be used if installed in a room or enclosure which is maintained under positive pressure with respect to the hazardous area. Ventilation makeup air shall be uncontaminated by flammable vapors.

(8) *Repairs to equipment.* Hot work, such as welding or cutting operations, use of spark-producing power tools, and chipping operations shall be permitted only under supervision of an individual in responsible charge. The individual in responsible charge shall make an inspection of the area to be sure that it is safe for the work to be done and that safe procedures will be followed for the work specified.

(9) *Housekeeping.*—(i) *General.* Maintenance and operating practices shall be in accordance with established procedures which will tend to control leakage and prevent the accidental escape of flammable or combustible liquids. Spills shall be cleaned up promptly.

(ii) *Access.* Adequate aisles shall be maintained for unobstructed movement of personnel and so that fire protection equipment can be brought to bear on any part of flammable or combustible liquid storage, use, or any unit physical operation.

(iii) *Waste and residue.* Combustible waste material and residues in a building or unit operating area shall be kept to a minimum, stored in covered metal receptacles and disposed of daily.

(iv) *Clear zone.* Ground area around buildings and unit operating areas shall be kept free of weeds, trash, or other unnecessary combustible materials.

(f) *Bulk plants.*—(1) *Storage.*—(i) *Class I liquids.* Class I liquids shall be stored in closed containers, or in storage tanks above ground outside of buildings, or underground in accordance with paragraph (b) of this section.

(ii) *Class II and III liquids.* Class II and Class III liquids shall be stored in containers, or in tanks within buildings or above ground outside of buildings, or underground in accordance with paragraph (b) of this section.

(iii) *Piling containers.* Containers of flammable or combustible liquids when piled one upon the other shall be separated by dunnage sufficient to provide stability and to prevent excessive stress on container walls. The height of the pile shall be consistent with the stability and strength of containers.

(2) *Buildings.*—(i) *Exits.* Rooms in which flammable or combustible liquids are stored or handled by pumps shall have exit facilities arranged to prevent occupants from being trapped in the event of fire.

(ii) *Heating.* Rooms in which Class I liquids are stored or handled shall be heated only by means not constituting a source of ignition, such as steam or hot water. Rooms containing heating appliances involving sources of ignition shall be located and arranged to prevent entry of flammable vapors.

(iii) *Ventilation.* (a) Ventilation shall be provided for all rooms, buildings, or enclosures in which Class I liquids are pumped or dispensed. Design of ventilation systems shall take into account the relatively high specific gravity of the vapors. Ventilation may be provided by adequate openings in outside walls at floor level unobstructed except by louvers or coarse screens. Where natural ventilation is inadequate, mechanical ventilation shall be provided.

(b) Class I liquids shall not be stored or handled within a building having a basement or pit into which flammable vapors may travel, unless such area is provided with ventilation designed to prevent the accumulation of flammable vapors therein.

(c) Containers of Class I liquids shall not be drawn from or filled within buildings unless provision is made to prevent the accumulation of flammable vapors in hazardous concentrations. Where mechanical ventilation is required, it shall be kept in operation while flammable liquids are being handled.

(3) *Loading and unloading facilities.*—(i) *Separation.* Tank vehicle and tank car loading or unloading facilities shall be separated from aboveground tanks, warehouses, other plant buildings or nearest line of adjoining property that may be built upon by a distance of 25 feet for Class I liquids and 15 feet for Class II and Class III liquids measured from the nearest position of any fill spout. Buildings for pumps or shelters for personnel may be a part of the facility

(ii) *Class restriction.* Equipment such as piping, pumps, and meters used for the transfer of Class I liquids between storage tanks and the fill stem of the loading rack shall not be used for the transfer of Class II or Class III liquids.

(iii) *Valves.* Valves used for the final control for filling tank vehicles shall be of the self-closing type and manually held open except where automatic means are provided for shutting off the flow when the vehicle is full or after filling of a preset amount.

(iv) *Static protection.* (a) Bonding facilities for protection against static sparks during the loading of tank vehicles through open domes shall be provided:

(1) Where Class I liquids are loaded, or

(2) Where Class II or Class III liquids are loaded into vehicles which may contain vapors from previous cargoes of Class I liquids.

(b) Protection as required in (a) of this subdivision (iv) shall consist of a metallic bond wire permanently electrically connected to the fill stem or to some part of the rack structure in electrical contact with the fill stem. The free end of such wire shall be provided with a clamp or equivalent device for convenient attachment to some metallic part in electrical contact with the cargo tank of the tank vehicle.

(c) Such bonding connection shall be made fast to the vehicle or tank before dome covers are raised and shall remain in place until filling is completed and all dome covers have been closed and secured.

(d) Bonding as specified in (a), (b), and (c) of this subdivision is not required:

(1) Where vehicles are loaded exclusively with products not having a static accumulating tendency, such as asphalt, most crude oils, residual oils, and water soluble liquids;

(2) Where no Class I liquids are handled at the loading facility and the tank vehicles loaded are used exclusively for Class II and Class III liquids; and

(3) Where vehicles are loaded or unloaded through closed bottom or top connections.

(e) Filling through open domes into the tanks of tank vehicles or tank cars, that contain vapor-air mixtures within the flammable range or where the liquid being filled can form such a mixture, shall be by means of a downspout which extends near the bottom of the tank. This precaution is not required when loading liquids which are nonaccumulators of static charges.

(v) *Stray currents.* Tank car loading facilities where Class I liquids are loaded through open domes shall be protected against stray currents by bonding the pipe to at least one rail and to the rack structure if of metal. Multiple lines entering the rack area shall be electrically bonded together. In addition, in areas where excessive stray currents are known to exist, all pipe entering the rack area shall be provided with insulating sections to electrically isolate the rack piping from the pipelines. No bonding between the tank car and the rack or piping is required during either loading or unloading of Class II or III liquids.

(vi) *Container filling facilities.* Class I liquids shall not be dispensed into containers unless the nozzle and container are electrically interconnected. Where the metallic floorplate on which the container stands while filling is electrically connected to the fill stem or where the fill stem is bonded to the container during filling operations by means of a bond wire, the provisions of this section shall be deemed to have been complied with.

(4) *Wharves.*—(i) *Definition, application.* The term wharf shall mean any wharf, pier, bulkhead, or other structure over or contiguous to navigable water used in conjunction with a bulk plant, the primary function of which is the transfer of flammable or combustible liquid cargo in bulk between the bulk plant and any tank vessel, ship, barge, lighter boat, or other mobile floating craft; and this subparagraph shall apply to all such installations except Marine Service Stations as covered in paragraph (g) of this section.

(ii) *Package cargo.* Package cargo of flammable and combustible liquids, including full and empty drums, bulk fuel, and stores may be handled over a wharf and at such times and places as may be agreed upon by the wharf superintendent and the senior deck officer on duty.

(iii) *Location.* Wharves at which flammable or combustible liquid cargoes are to be transferred in bulk quantities to or from tank vessels shall be at least 100 feet from any bridge over a navigable waterway, or from an entrance to or superstructure of any vehicular or railroad tunnel under a waterway. The termination of the wharf loading or un-

loading fixed piping shall be at least 200 feet from a bridge or from an entrance to or superstructure of a tunnel.

(iv) *Design and construction.* Substructure and deck shall be substantially designed for the use intended. Deck may employ any material which will afford the desired combination of flexibility, resistance to shock, durability, strength, and fire resistance. Heavy timber construction is acceptable.

(v) *Tanks.* Tanks used exclusively for ballast water or Class II or Class III liquids may be installed on suitably designed wharves.

(vi) *Pumps.* Loading pumps capable of building up pressures in excess of the safe working pressure of cargo hose or loading arms shall be provided with bypasses, relief valves, or other arrangement to protect the loading facilities against excessive pressure. Relief devices shall be tested at not more than yearly intervals to determine that they function satisfactorily at the pressure at which they are set.

(vii) *Hoses and couplings.* All pressure hoses and couplings shall be inspected at intervals appropriate to the service. The hose and couplings shall be tested with the hose extended and using the "in-service maximum operating pressures." Any hose showing material deteriorations, signs of leakage, or weakness in its carcass or at the couplings shall be withdrawn from service and repaired or discarded.

(viii) *Piping and fittings.* Piping, valves, and fittings shall be in accordance with paragraph (c) of this section, with the following exceptions and additions:

(a) Flexibility of piping shall be assured by appropriate layout and arrangement of piping supports so that motion of the wharf structure resulting from wave action, currents, tides, or the mooring of vessels will not subject the pipe to repeated strain beyond the elastic limit.

(b) Pipe joints depending upon the friction characteristics of combustible materials or grooving of pipe ends for mechanical continuity of piping shall not be used.

(c) Swivel joints may be used in piping to which hoses are connected, and for articulated swivel-joint transfer systems, provided that the design is such that the mechanical strength of the joint will not be impaired if the packing material should fail, as by exposure to fire.

(d) Piping systems shall contain a sufficient number of valves to operate the system properly and to control the flow of liquid in normal operation and in the event of physical damage.

(e) In addition to the requirements of subdivision (d) of this subdivision, each line conveying flammable liquids leading to a wharf shall be provided with a readily accessible block valve located on shore near the approach to the wharf and outside of any diked area. Where more than one line is involved, the valves shall be grouped in one location.

(f) Means of easy access shall be provided for cargo line valves located below the wharf deck.

(g) Pipelines on flammable or combustible liquids wharves shall be adequately bonded and grounded. If excessive stray currents are encountered, insulating joints shall be installed. Bonding and grounding connections on all pipelines shall be located on wharfside of hose-riser insulating flanges, if used, and shall be accessible for inspection.

(h) Hose or articulated swivel-joint pipe connections used for cargo transfer shall be capable of accommodating the combined effects of change in draft and maximum tidal range, and mooring lines shall be kept adjusted to prevent the surge of the vessel from placing stress on the cargo transfer system.

(i) Hose shall be supported so as to avoid kinking and damage from chafing.

(ix) *Fire protection.* Suitable portable fire extinguishers with a rating of not less than 12-BC shall be located within 75 feet of those portions of the facility where fires are likely to occur, such as hose connections, pumps, and separator tanks.

(a) Where piped water is available, ready-connected fire hose in size appropriate for the water supply shall be provided so that manifolds where connections are made and broken can be reached by at least one hose stream.

(b) Material shall not be placed on wharves in such a manner as to obstruct access to firefighting equipment, or important pipeline control valves.

(c) Where the wharf is accessible to vehicle traffic, an unobstructed roadway to the shore end of the wharf shall be maintained for access of firefighting apparatus.

(x) *Operations control.* Loading or discharging shall not commence until the wharf superintendent and officer in charge of the tank vessel agree that the tank vessel is properly moored and all connections are properly made. Mechanical work shall not be performed on the wharf during cargo transfer, except under special authorization based on a review of the area involved, methods to be employed, and precautions necessary.

(5) *Electrical equipment*—(i) *Application.* This subparagraph shall apply to areas where Class I liquids are stored or handled. For areas where Class II or Class III liquids only are stored or handled, the electrical equipment may be installed in accordance with the provisions of subpart S of this part, for ordinary locations.

(ii) *Conformance.* All electrical equipment and wiring shall be of a type specified by and shall be installed in accordance with subpart S of this part.

(iii) *Classification.* So far as it applies Table H–18 shall be used to delineate and classify hazardous areas for the purpose of installation of electrical equipment under normal circumstances. In Table H–18 a classified area shall not extend beyond an unpierced wall, roof, or other solid partition. The area classifications listed shall be based on the premise that the installation meets the applicable requirements of this section in all respects.

(6) *Sources of ignition.* Class I liquids shall not be handled, drawn, or dispensed where flammable vapors may reach a source of ignition. Smoking shall be prohibited except in designated localities. "No Smoking" signs shall be conspicuously posted where hazard from flammable liquid vapors is normally present.

(7) *Drainage and waste disposal.* Provision shall be made to prevent flammable or combustible liquids which may be spilled at loading or unloading points from entering public sewers and drainage systems, or natural waterways. Connection to such sewers drains, or waterways by which flammable or combustible liquids might enter shall be provided with separator boxes or other approved means whereby such entry is precluded. Crankcase drainings and flammable or combustible liquids shall not be dumped into sewers, but shall be stored in tanks or tight drums outside of any building until removed from the premises.

(8) *Fire control.* Suitable fire-control devices, such as small hose or portable fire extinguishers, shall be available to locations where fires are likely to occur. Additional fire-control equipment may be required where a tank of more than 50,000 gallons individual capacity contains Class I liquids and where an unusual exposure hazard exists from surrounding property. Such additional fire-control equipment shall be sufficient to extinguish a fire in the largest tank. The design and amount of such equipment shall be in accordance with approved engineering standards.

(g) *Service stations*—(1) *Storage and handling*—(i) *General provisions.* (a) Liquids shall be stored in approved closed containers not exceeding 60 gallons capacity, in tanks located underground, in tanks in special enclosures as described in subdivision (ii) of this subparagraph, or in aboveground tanks as provided for in subparagraphs (4) (ii), (b), (c) and (d) of this paragraph.

(b) Aboveground tanks, located in an adjoining bulk plant, may be connected by piping to service station underground tanks if, in addition to valves at aboveground tanks, a valve is also installed within control of service station personnel.

(c) Apparatus dispensing Class I liquids into the fuel tanks of motor vehicles of the public shall not be located at a bulk plant unless separated by a fence or similar barrier from the area in which bulk operations are conducted.

(d) [Revoked]

(e) The provisions of (a) of this subdivision shall not prohibit the dispensing of flammable liquids in the open from a tank vehicle to a motor vehicle. Such dispensing shall be permitted provided:

(1) The tank vehicle complies with the requirements covered in the Standard on Tank Vehicles for Flammable Liquids, NFPA 385–1966.

(2) The dispensing is done on premises not open to the public.

(3) [Revoked]

(4) The dispensing hose does not exceed 50 feet in length.

(5) The dispensing nozzle is a listed automatic-closing type without a latch-open device.

(f) Class I liquids shall not be stored or handled within a building having a basement or pit into which flammable vapors may travel, unless such area is provided with ventilation designed to prevent the accumulation of flammable vapors therein.

(g) Accurate inventory records shall be maintained and reconciled on all Class I liquid storage tanks for possible indication of leakage from tanks or piping.

TABLE H–18—ELECTRICAL EQUIPMENT HAZARDOUS AREAS—BULK PLANTS

Location	NEC Class I Group D division	Extent of classified area
Tank vehicle and tank car:[1]		
Loading through open dome	1	Within 3 feet of edge of dome, extending in all directions.
	2	Area between 3 feet and 5 feet from edge of dome, extending in all directions.
Loading through bottom connections with atmospheric venting.	1	Within 3 feet of point of venting to atmosphere extending in all directions.
	2	Area between 3 feet and 5 feet from point of venting to atmosphere, extending in all directions. Also up to 18 inches above grade within a horizontal radius of 10 feet from point of loading connection.
Loading through closed dome with atmospheric venting.	1	Within 3 feet of open end of vent, extending in all directions.
	2	Area between 3 feet and 5 feet from open end of vent, extending in all directions. Also within 3 feet of edge of dome, extending in all directions.
Loading through closed dome with vapor recovery.	2	Within 3 feet of point of connection of both fill and vapor lines, extending in all directions.
Bottom loading with vapor recovery or any bottom unloading.	2	Within 3 feet of point of connections extending in all directions. Also up to 18 inches above grade within a horizontal radius of 10 feet from point of connection.
Drum and container filling:		
Outdoors, or indoors with adequate ventilation.	1	Within 3 feet of vent and fill opening, extending in all directions.
	2	Area between 3 feet and 5 feet from vent or fill opening, extending in all directions. Also up to 18 inches above floor or grade level within a horizontal radius of 10 feet from vent or fill opening.
Outdoors, or indoors with adequate ventilation.	1	Within 3 feet of vent and fill opening, extending in all directions.
	2	Area between 3 feet and 5 feet from vent or fill opening, extending in all directions. Also up to 18 inches above floor or grade level within a horizontal radius of 10 feet from vent or fill opening.
Tank—Aboveground:		
Shell, ends, or roof and dike area	2	Within 10 feet from shell, ends, or roof of tank. Area inside dikes to level of top of dike.
Vent	1	Within 5 feet of open end of vent, extending in all directions.
	2	Area between 5 feet and 10 feet from open end of vent, extending in all directions.
Floating roof	1	Area above the roof and within the shell.
Pits:		
Without mechanical ventilation	1	Entire area within pit if any part is within a Division 1 or 2 classified area.
With mechanical ventilation	2	Entire area within pit if any part is within a Division 1 or 2 classified area.
Containing valves, fittings or piping, and not within a Division 1 or 2 classified area.	2	Entire pit.
Pumps, bleeders, withdrawal fittings, meters and similar devices:		
Indoors	2	Within 5 feet of any edge of such devices, extending in all directions. Also up to 2 feet above floor or grade level within 25 feet horizontally from any edge of such devices.
Outdoors	2	Within 3 feet of any edge of such device, extending in all directions. Also up to 18 inches above grade level within 10 feet horizontally from any edge of such devices.
Storage and repair garage for tank vehicles	1	All pits or spaces below floor level.
	2	Area up to 18 inches above floor or grade level for entire storage or repair garage.
Drainage ditches, separators, impounding basins.	2	Area up to 18 inches above ditch, separator or basin. Also up to 18 inches above grade within 15 feet horizontally from any edge.
Garages for other than tank vehicles	Ordinary	If there is any opening to these rooms within the extent of an outdoor classified area, the entire room shall be classified the same as the area classification at the point of the opening.
Outdoor drum storage	Ordinary	
Indoor warehousing where there is no flammable liquid transfer.	Ordinary	If there is any opening to these rooms within the extent of an indoor classified area, the room shall be classified the same as if the wall, curb or partition did not exist.
Office and rest rooms	Ordinary	

[1] When classifying the extent of the area, consideration shall be given to the fact that tank cars or tank vehicles may be spotted at varying points. Therefore, the extremities of the loading or unloading positions shall be used.

(ii) *Special enclosures.* (a) When installation of tanks in accordance with paragraph (b) (3) of this section is impractical because of property or building limitations, tanks for flammable or combustible liquids may be installed in buildings if properly enclosed.

(b) The enclosure shall be substantially liquid and vaportight without backfill. Sides, top, and bottom of the enclosure shall be of reinforced concrete at least 6 inches thick, with openings for inspection through the top only. Tank connections shall be so piped or closed that neither vapors nor liquid can escape into the enclosed space. Means shall be provided whereby portable equipment may be employed to discharge to the outside any liquid or vapors which might accumulate should leakage occur.

(c) At automotive service stations provided in connection with tenant or customer parking facilities at or below grade level in large buildings of commercial, mercantile, or residential occupancy, tanks containing Class I liquids, installed of necessity in accordance with (b) of this subdivision, shall not exceed 6,000 gallons individual or 18,000 gallons aggregate capacity.

(iii) *Inside buildings.* (a) Except where stored in tanks as provided in subdivision (ii) of this subparagraph, no Class I liquids shall be stored within any service station building except in closed containers of aggregate capacity not exceeding 60 gallons. One container not exceeding 60 gallons capacity equipped with an approved pump is permitted.

(b) Class I liquids may be transferred from one container to another in lubrication or service rooms of a service station building provided the electrical installation complies with Table H–19 and provided that any heating equipment complies with subparagraph (6) of this paragraph.

(c) Class II and Class III liquids may be stored and dispensed inside service station buildings from tanks of not more than 120 gallons capacity each.

(iv) *Labeling.* No sale or purchase of any Class I, II, or III liquids shall be made in containers unless such containers are clearly marked with the name of the product contained therein.

(v) *Dispensing into portable containers.* No delivery of any Class I liquids shall be made into portable containers unless the container is constructed of metal, has a tight closure with screwed or spring cover, and is fitted with a spout or so designed that the contents can be poured without spilling.

(2) *Private stations.* Service stations not accessible to or open to the public do not require an attendant or supervisor. Such stations may be used by commercial, industrial, governmental, or manufacturing establishments.

(3) *Dispensing systems*—(i) *Location.* Dispensing devices at automotive service stations shall be so located that all parts of the vehicle being served will be on the premises of the service station.

(ii) *Inside location.* Approved dispensing units may be located inside of buildings. The dispensing area shall be separated from other areas in an approved manner. The dispensing unit and its piping shall be mounted either on a concrete island or protected against collision damage by suitable means and shall be located in a position where it cannot be struck by a vehicle descending a ramp or other slope out of control. The dispensing area shall be provided with an approved mechanical or gravity ventilation system. When dispensing units are located below grade, only approved mechanical ventilation shall be used and the entire dispensing area shall be protected by an approved automatic sprinkler system. Ventilating systems shall be electrically interlocked with gasoline dispensing units so that the dispensing units cannot be operated unless the ventilating fan motors are energized.

(iii) *Emergency power cutoff.* A clearly identified and easily accessible switch(es) or a circuit breaker(s) shall be provided at a location remote from dispensing devices, including remote pumping systems, to shut off the power to all dispensing devices in the event of an emergency.

(iv) *Dispensing units.* (a) Class I liquids shall be transferred from tanks by means of fixed pumps so designed and equipped as to allow control of the flow and to prevent leakage or accidental discharge.

(b) (1) Only listed devices may be used for dispensing Class I liquids. No such device may be used if it shows evidence of having been dismantled.

(2) Every dispensing device for Class I liquids installed after December 31, 1978, shall contain evidence of listing so placed that any attempt to dismantle the device will result in damage to such evidence, visible without disassembly or dismounting of the nozzle.

(c) Class I liquids shall not be dispensed by pressure from drums, barrels, and similar containers. Approved pumps taking suction through the top of the container or approved self-closing faucets shall be used.

(d) The dispensing units, except those attached to containers, shall be mounted either on a concrete island or protected against collision damage by suitable means.

(v) *Remote pumping systems.*

(*a*) This subdivision shall apply to systems for dispensing Class I liquids where such liquids are transferred from storage to individual or multiple dispensing units by pumps located elsewhere than at the dispensing units.

(*b*) Pumps shall be designed or equipped so that no part of the system will be subjected to pressures above its allowable working pressure. Pumps installed above grade, outside of buildings, shall be located not less than 10 feet from lines of adjoining property which may be built upon, and not less than 5 feet from any building opening. When an outside pump location is impractical, pumps may be installed inside of buildings, as provided for dispensers in subdivision (ii) of this subparagraph, or in pits as provided in subdivision (*c*) of this subdivision. Pumps shall be substantially anchored and protected against physical damage by vehicles.

(*c*) Pits for subsurface pumps or piping manifolds of submersible pumps shall withstand the external forces to which they may be subjected without damage to the pump, tank, or piping. The pit shall be no larger than necessary for inspection and maintenance and shall be provided with a fitted cover.

(*d*) A control shall be provided that will permit the pump to operate only when a dispensing nozzle is removed from its bracket on the dispensing unit and the switch on this dispensing unit is manually actuated. This control shall also stop the pump when all nozzles have been returned to their brackets.

(*e*) An approved impact valve, incorporating a fusible link, designed to close automatically in the event of severe impact or fire exposure shall be properly installed in the dispensing supply line at the base of each individual dispensing device.

(*f*) Testing. After the completion of the installation, including any paving, that section of the pressure piping system between the pump discharge and the connection for the dispensing facility shall be tested for at least 30 minutes at the maximum operating pressure of the system. Such tests shall be repeated at 5-year intervals thereafter.

(vi) *Delivery nozzles.* (*a*) Hose-nozzle valves of either the manual or automatic-closing type for dispensing Class I liquids into a fuel tank or into a container shall be manually held open during the dispensing operation except as provided in subdivision (*b*) of this subdivision.

(*b*) On any service station dispenser accessible to the public a listed automatic type nozzle with hold-open latch is permitted only when all dispensing of Class I liquids is to be done by the service station attendant.

(*c*) If the dispensing of Class I liquids at a service station available and open to the public is to be done by a person other than the service station attendant, the nozzle shall be a listed automatic-closing type without a hold-open latch.

(vii) [Revoked]

(4) *Marine service stations*—(i) *Dispensing.* (*a*) The dispensing area shall be located away from other structures so as to provide room for safe ingress and egress of craft to be fueled. Dispensing units shall in all cases be at least 20 feet from any activity involving fixed sources of ignition.

(*b*) Dispensing shall be by approved dispensing units with or without integral pumps and may be located on open piers, wharves, or floating docks or on shore or on piers of the solid fill type.

(*c*) Dispensing nozzles shall be automatic-closing without a hold-open latch.

(ii) *Tanks and pumps.* (*a*) Tanks, and pumps not integral with the dispensing unit, shall be on shore or on a pier of the solid fill type, except as provided in subdivisions (*b*) and (*c*) of this subdivision.

(*b*) Where shore location would require excessively long supply lines to dispensers, tanks may be installed on a pier provided that applicable portions of paragraph (b) of this section relative to spacing, diking, and piping are complied with and the quantity so stored does not exceed 1,100 gallons aggregate capacity.

(*c*) Shore tanks supplying marine service stations may be located above ground, where rock ledges or high water table make underground tanks impractical.

(*d*) Where tanks are at an elevation which would produce gravity head on the dispensing unit, the tank outlet shall be equipped with a pressure control valve positioned adjacent to and outside the tank block valve specified in paragraph (b) (2) (ix) (*b*) of this section, so adjusted that liquid cannot flow by gravity from the tank in case of piping or hose failure.

(iii) *Piping.* (*a*) Piping between shore tanks and dispensing units shall be as described in paragraph (*c*) of this section, except that, where dispensing is from a floating structure, suitable lengths of oil-resistant flexible hose may be employed between the shore piping and the piping on the floating structure as made necessary by change in water level or shoreline.

(*b*) A readily accessible valve to shut off the supply from shore shall be provided in each pipeline at or near the approach to the pier and at the shore end of each pipeline adjacent to the point where flexible hose is attached.

(*c*) Piping shall be located so as to be protected from physical damage.

(*d*) Piping handling Class I liquids shall be grounded to control stray currents.

(5) *Electrical equipment*—(i) *Application.* This subparagraph shall apply to areas where Class I liquids are stored or handled. For areas where Class II or Class III liquids are stored or handled the electrical equipment may be installed in accordance with the provisions of Subpart S of this part, for ordinary locations.

(ii) All electrical equipment and wiring shall be of a type specified by and shall be installed in accordance with Subpart S of this part.

(iii) So far as it applies, Table H–19 shall be used to delineate and classify hazardous areas for the purpose of installation of electrical equipment under normal circumstances. A classified area shall not extend beyond an unpierced wall, roof, or other solid partition.

(iv) The area classifications listed shall be based on the assumption that the installation meets the applicable requirements of this section in all respects.

(6) *Heating equipment*—(i) *Conformance.* Heating equipment shall be installed as provided in subdivisions (ii) through (v) of this subparagraph.

(ii) *Application.* Heating equipment may be installed in the conventional manner in an area except as provided in subdivisions (iii), (iv), or (v) of this subparagraph.

(iii) *Special room.* Heating equipment may be installed in a special room separated from an area classified by Table H–19 by walls having a fire resistance rating of at least 1 hour and without any openings in the walls within 8 feet of the floor into an area classified in Table H–19. This room shall not be used for combustible storage and all air for combustion purposes shall come from outside the building.

TABLE H–19—ELECTRICAL EQUIPMENT HAZARDOUS AREAS—SERVICE STATIONS

Location	NEC Class I Group D division	Extent of classified area
Underground tank:		
Fill opening	1	Any pit, box or space below grade level, any part of which is within the Division 1 or 2 classified area.
	2	Up to 18 inches above grade level within a horizontal radius of 10 feet from a loose fill connection and within a horizontal radius of 5 feet from a tight fill connection.
Vent—Discharging upward	1	Within 3 feet of open end of vent, extending in all directions.
	2	Area between 3 feet and 5 feet of open end of vent, extending in all directions.
Dispenser:		
Pits	1	Any pit, box or space below grade level, any part of which is within the Division 1 or 2 classified area.
Dispenser enclosure	1	The area 4 feet vertically above base within the enclosure and 18 inches horizontally in all directions.
Outdoor	2	Up to 18 inches above grade level within 20 feet horizontally of any edge of enclosure.
Indoor:		
With mechanical ventilation	2	Up to 18 inches above grade or floor level within 20 feet horizontally of any edge of enclosure.
With gravity ventilation	2	Up to 18 inches above grade or floor level within 25 feet horizontally of any edge of enclosure.
Remote pump—Outdoor	1	Any pit, box or space below grade level if any part is within a horizontal distance of 10 feet from any edge of pump.
	2	Within 3 feet of any edge of pump, extending in all directions. Also up to 18 inches above grade level within 10 feet horizontally from any edge of pump.
Remote pump—Indoor	1	Entire area within any pit.
	2	Within 5 feet of any edge of pump, extending in all directions. Also up to 3 feet above floor or grade level within 25 feet horizontally from any edge of pump.
Lubrication or service room	1	Entire area within any pit.
	2	Area up to 18 inches above floor or grade level within entire lubrication room.
Dispenser for Class I liquids	2	Within 2 feet of any fill or dispensing point, extending in all directions.
Special enclosure inside building per § 1910.-106 (d) (1) (iii).	1	Entire enclosure.
Sales, storage and rest rooms	Ordinary	If there is any opening to these rooms within the extent of a Division 1 area, the entire room shall be classified as Division 1.

(iv) *Work areas.* Heating equipment using gas or oil fuel may be installed in the lubrication, sales, or service room where there is no dispensing or transferring of Class I liquids provided the bottom of the combustion chamber is at least 18 inches above the floor and the heating equipment is protected from physical damage by vehicles. Heating equipment using gas or oil fuel listed for use in garages may be installed in the lubrication or service room where Class I liquids are dispensed provided the equipment is installed at least 8 feet above the floor.

(v) *Electric heat.* Electrical heating equipment shall conform to subparagraph (5) of this paragraph.

(7) *Drainage and waste disposal.* Provision shall be made in the area where Class I liquids are dispensed to prevent spilled liquids from flowing into the interior of service station buildings. Such provision may be by grading driveways, raising door sills, or other equally effective means. Crankcase drainings and flammable or combustible liquids shall not be dumped into sewers but shall be stored in tanks or drums outside of any building until removed from the premises.

(8) *Sources of ignition.* In addition to the previous restrictions of this paragraph, the following shall apply: There shall be no smoking or open flames in the areas used for fueling, servicing fuel systems for internal combustion engines, receiving or dispensing of flammable or combustible liquids. Conspicuous and legible signs prohibiting smoking shall be posted within sight of the customer being served. The motors of all equipment being fueled shall be shut off during the fueling operation.

(9) *Fire control.* Each service station shall be provided with at least one fire extinguisher having a minimum approved classification of 6 B, C located so that an extinguisher will be within 75 feet of each pump, dispenser, underground fill pipe opening, and lubrication or service room.

(h) *Processing plants*—(1) *Scope.* This paragraph shall apply to those plants or buildings which contain chemical operations such as oxidation, reduction, halogenation, hydrogenation, alkylation, polymerization, and other chemical processes but shall not apply to chemical plants, refineries or distilleries.

(2) *Location*—(i) *Classification.* The location of each processing vessel shall be based upon its flammable or combustible liquid capacity. Processing vessels shall be located, with respect to distances to lines of adjoining property which may be built upon, in accordance with Table H–20, except when the processing plant is designed in accordance with subdivision (ii) of this subparagraph.

TABLE H–20

Processing vessels with emergency relief venting to permit pressure	Stable liquids	Unstable liquids
Not in excess of 2.5 p.s.i.g.	Table H–9	2½ times Table H–9
Over 2.5 p.s.i.g.	1½ times Table H–9	4 times Table H–9

(ii) *Exception.* The distances required in subdivision (i) of this subparagraph may be waived when the vessels are housed within a building and the exterior wall facing the line of adjoining property which may be built upon is a blank wall having a fire-resistance rating of not less than 4 hours. When Class IA or unstable liquids are handled, the blank wall shall have explosion resistance in accordance with good engineering practice, see subparagraph (3) (iv) of this paragraph.

(3) *Processing building*—(i) *Construction.* (*a*) Processing buildings shall be of fire-resistance or noncombustible construction, except heavy timber construction with load-bearing walls may be permitted for plants utilizing only stable Class II or Class III liquids. Except as provided in subparagraph (2) (ii) of this paragraph or in the case of explosion resistant walls used in conjunction with explosion relieving facilities, see subparagraph (3) (iv) of this paragraph, load-bearing walls are prohibited. Buildings shall be without basements or covered pits.

(*b*) Areas shall have adequate exit facilities arranged to prevent occupants from being trapped in the event of fire. Exits shall not be exposed by the drainage facilities described in subdivision (ii) of this subparagraph.

(ii) *Drainage.* (*a*) Emergency drainage systems shall be provided to direct flammable or combustible liquid leakage and fire protection water to a safe location. This may require curbs, scuppers, or special drainage systems to control the spread of fire, see paragraph (*b*) (2) (vii) (*b*) of this section.

(*b*) Emergency drainage systems, if connected to public sewers or discharged into public waterways, shall be equipped with traps or separators.

(*c*) The processing plant shall be designed and operated to prevent the normal discharge of flammable or combustible liquids to public waterways, public sewers, or adjoining property.

(iii) *Ventilation.* (*a*) Enclosed processing buildings shall be ventilated at a rate of not less than 1 cubic foot per minute per square foot of solid floor area. This shall be accomplished by natural or mechanical ventilation with discharge or exhaust to a safe location outside of the building. Provision shall be made for introduction of makeup air in such a manner as not to short circuit the ventilation. Ventilation shall be arranged to include all floor areas or pits where flammable vapors may collect.

(*b*) Equipment used in a building and the ventilation of the building shall be designed so as to limit flammable vapor-air mixtures under normal operating conditions to the interior of equipment, and to not more than 5 feet from equipment which exposes Class I liquids to the air. Examples of such equipment are dispensing stations, open centrifuges, plate and frame filters, open vacuum filters, and surfaces of open equipment.

(iv) *Explosion relief.* Areas where Class IA or unstable liquids are processed shall have explosion venting through one or more of the following methods:

(*a*) Open air construction.

(*b*) Lightweight walls and roof.

(*c*) Lightweight wall panels and roof hatches.

(*d*) Windows of explosion venting type.

(4) *Liquid handling*—(i) *Storage.* (*a*) The storage of flammable or combustible liquids in tanks shall be in accordance with the applicable provisions of paragraph (b) of this section.

(*b*) If the storage of flammable or combustible liquids in outside aboveground or underground tanks is not practical because of temperature or production considerations, tanks may be permitted inside of buildings or structures in accordance with the applicable provisions of paragraph (b) of this section.

(*c*) Storage tanks inside of buildings shall be permitted only in areas at or above grade which have adequate drainage and are separated from the processing area by construction having a fire resistance rating of at least 2 hours.

(*d*) The storage of flammable or combustible liquids in containers shall be in accordance with the applicable provisions of paragraph (d) of this section.

(ii) *Piping, valves, and fittings.* (*a*) Piping, valves, and fittings shall be in accordance with paragraph (c) of this section.

(*b*) Approved flexible connectors may be used where vibration exists or where frequent movement is necessary. Approved hose may be used at transfer stations.

(c) Piping containing flammable or combustible liquids shall be identified.

(iii) *Transfer.* (*a*) The transfer of large quantities of flammable or combustible liquids shall be through piping by means of pumps or water displacement. Except as required in process equipment, gravity flow shall not be used. The use of compressed air as a transferring medium is prohibited.

(*b*) Positive displacement pumps shall be provided with pressure relief discharging back to the tank or to pump suction.

(iv) *Equipment.* (*a*) Equipment shall be designed and arranged to prevent the unintentional escape of liquids and vapors and to minimize the quantity escaping in the event of accidental release.

(*b*) Where the vapor space of equipment is usually within the flammable range, the probability of explosion damage to the equipment can be limited by inerting, by providing an explosion suppression system, or by designing the equipment to contain the peak explosion pressure which may be modified by explosion relief. Where the special hazards of operation, sources of ignition, or exposures indicate a need, consideration shall be given to providing protection by one or more of the above means.

(5) *Tank vehicle and tank car loading and unloading.* Tank vehicle and tank car loading or unloading facilities shall be separated from aboveground tanks, warehouses, other plant buildings, or nearest line of adjoining property which may be built upon by a distance of 25 feet for Class I liquids and 15 feet for Class II and Class III liquids measured

from the nearest position of any fill stem. Buildings for pumps or shelters for personnel may be a part of the facility. Operations of the facility shall comply with the appropriate portions of paragraph (f)(3) of this section.

(6) *Fire control*—(i) *Portable extinguishers.* Approved portable fire extinguishers of appropriate size, type, and number shall be provided.

(ii) *Other controls.* Where the special hazards of operation or exposure indicate a need, the following fire control provision shall be provided.

(a) A reliable water supply shall be available in pressure and quantity adequate to meet the probable fire demands.

(b) Hydrants shall be provided in accordance with accepted good practice.

(c) Hose connected to a source of water shall be installed so that all vessels, pumps, and other equipment containing flammable or combustible liquids can be reached with at least one hose stream. Nozzles that are capable of discharging a water spray shall be provided.

(d) Processing plants shall be protected by an approved automatic sprinkler system or equivalent extinguishing system. If special extinguishing systems including but not limited to those employing foam, carbon dioxide, or dry chemical are provided, approved equipment shall be used and installed in an approved manner.

(iii) *Alarm systems.* An approved means for prompt notification of fire to those within the plant and any public fire department available shall be provided. It may be advisable to connect the plant system with the public system where public fire alarm system is available.

(iv) *Maintenance.* All plant fire protection facilities shall be adequately maintained and periodically inspected and tested to make sure they are always in satisfactory operating condition and that they will serve their purpose in time of emergency.

(7) *Sources of ignition*—(i) *General.* (a) Precautions shall be taken to prevent the ignition of flammable vapors. Sources of ignition include but are not limited to open flames; lightning; smoking; cutting and welding; hot surfaces; frictional heat; static, electrical, and mechanical sparks; spontaneous ignition, including heat-producing chemical reactions; and radiant heat.

(b) Class I liquids shall not be dispensed into containers unless the nozzle and container are electrically interconnected. Where the metallic floorplate on which the container stands while filling is electrically connected to the fill stem or where the fill stem is bonded to the container during filling operations by means of a bond wire, the provisions of this section shall be deemed to have been complied with.

(ii) *Maintenance and repair.* (a) When necessary to do maintenance work in a flammable or combustible liquid processing area, the work shall be authorized by a responsible representative of the employer.

(b) Hot work, such as welding or cutting operations, use of spark-producing power tools, and chipping operations shall be permitted only under supervision of an individual in responsible charge who shall make an inspection of the area to be sure that it is safe for the work to be done and that safe procedures will be followed for the work specified.

(iii) *Electrical.* (a) All electrical wiring and equipment within storage or processing areas shall be installed in accordance with nationally recognized good practice.

(b) Locations where flammable vapor-air mixtures may exist under normal operations shall be classified Class I, Division 1 according to the requirements of Subpart S of this part. For those pieces of equipment installed in accordance with subparagraph (3)(iii)(b) of this paragraph, the Division 1 area shall extend 5 feet in all directions from all points of vapor liberation. All areas within pits shall be classified Division 1 if any part of the pit is within a Division 1 or 2 classified area, unless the pit is provided with mechanical ventilation.

(c) Locations where flammable vapor-air mixtures may exist under abnormal conditions and for a distance beyond Division 1 locations shall be classified Division 2 according to the requirements of Subpart S of this Part. These locations include an area within 20 feet horizontally, 3 feet vertically beyond a Division 1 area, and up to 3 feet above floor or grade level within 25 feet, if indoors, or 10 feet if outdoors, from any pump, bleeder, withdrawal fitting, meter, or similar device handling Class I liquids. Pits provided with adequate mechanical ventilation within a Division 1 or 2 area shall be classified Division 2. If Class II or Class III liquids only are handled, then ordinary electrical equipment is satisfactory though care shall be used in locating electrical apparatus to prevent hot metal from falling into open equipment.

(d) Where the provisions of (a), (b), and (c), of this subdivision (iii) require the installation of explosion-proof equipment, ordinary electrical equipment including switchgear may be used if installed in a room or enclosure which is maintained under positive pressure with respect to the hazardous area. Ventilation makeup air shall be uncontaminated by flammable vapors.

(8) *Housekeeping*—(i) *General.* Maintenance and operating practices shall be in accordance with established procedures which will tend to control leakage and prevent the accidental escape of flammable or combustible liquids. Spills shall be cleaned up promptly.

(ii) *Access.* Adequate aisles shall be maintained for unobstructed movement of personnel and so that fire protection equipment can be brought to bear on any part of the processing equipment.

(iii) *Waste and residues.* Combustible waste material and residues in a building or operating area shall be kept to a minimum, stored in closed metal waste cans, and disposed of daily.

(iv) *Clear zone.* Ground area around buildings and operating areas shall be kept free of tall grass, weeds, trash, or other combustible materials.

(j) *Refineries, chemical plants, and distilleries*—(1) *Storage tanks.* Flammable or combustible liquids shall be stored in tanks, in containers, or in portable tanks. Tanks shall be installed in accordance with paragraph (b) of this section. Tanks for the storage of flammable or combustible liquids in tank farms and in locations other than process areas shall be located in accordance with paragraph (b)(2)(i) and (ii) of this section.

(2) *Wharves.* Wharves handling flammable or combustible liquids shall be in accordance with paragraph (f)(4) of this section.

(3) *Fired and unfired pressure vessels*—(i) *Fired vessels.* Fired pressure vessels shall be constructed in accordance with the Code for Fired Pressure Vessels, Section I of the ASME Boiler and Pressure Vessel Code—1968.

(ii) Unfired vessels shall be constructed in accordance with the Code for Unfired Pressure Vessels, Section VIII of the ASME Boiler and Pressure Vessel Code—1968.

(4) *Location of process units.* Process units shall be located so that they are accessible from at least one side for the purpose of fire control. Where topographical conditions are such that flammable or combustible liquids may flow from a processing area so as to constitute a fire hazard to property of others, provision shall be made to divert or impound the flow by curbs, drains, or other suitable means.

(5) *Fire control*—(i) *Portable equipment.* Portable fire extinguishment and control equipment shall be provided in such quantities and types as are needed for the special hazards of operation and storage.

(ii) *Water supply.* Water shall be available in volume and at adequate pressure to supply water hose streams, foam producing equipment, automatic sprinklers, or water spray systems as the need is indicated by the special hazards of operation and storage.

(iii) *Special equipment.* Special extinguishing equipment such as that utilizing foam, inert gas, or dry chemical shall be provided as the need is indicated by the special hazards of operation and storage.

(j) *Scope.* This section applies to the handling, storage, and use of flammable and combustible liquids with a flash point below 200° F. This section does not apply to:

(1) Bulk transportation of flammable and combustible liquids;

(2) Storage, handling, and use of fuel oil tanks and containers connected with oil burning equipment;

(3) Storage of flammable and combustible liquids on farms;

(4) Liquids without flashpoints that may be flammable under some conditions, such as certain halogenated hydrocarbons and mixtures containing halogenated hydrocarbons;

(5) Mists, sprays, or foams, except flammable aerosols covered in paragraph (d) of this section; or

(6) Installations made in accordance with requirements of the following standards:

(i) National Fire Protection Association Standard for Drycleaning Plants, NFPA No. 32–1970;

(ii) National Fire Protection Association Standard for the Manufacture of Organic Coatings, NFPA No. 35–1970;

(iii) National Fire Protection Association Standard for Solvent Extraction Plants, NFPA No. 36–1967; or

(iv) National Fire Protection Association Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines, NFPA No. 37–1970.

[39 FR 23502, June 27, 1974, as amended at 40 FR 3982, Jan. 27, 1975; 40 FR 23745, June 2, 1975]

§ 1910.107 Spray finishing using flammable and combustible materials.

(a) *Definitions applicable to this section*—(1) *Aerated solid powders.* Aerated powders shall mean any powdered material used as a coating material which shall be fluidized within a container by passing air uniformly from below. It is common practice to fluidize such materials to form a fluidized powder bed and then dip the part to be coated into the bed in a manner similar to that used in liquid dipping. Such beds are also used as sources for powder spray operations.

(2) *Spraying area.* Any area in which dangerous quantities of flammable vapors or mists, or combustible residues, dusts, or deposits are present due to the operation of spraying processes.

(3) *Spray booth.* A power-ventilated structure provided to enclose or accommodate a spraying operation to confine and limit the escape of spray, vapor, and residue, and to safely conduct or direct them to an exhaust system.

(4) *Waterwash spray booth.* A spray booth equipped with a water washing system designed to minimize dusts or residues entering exhaust ducts and to permit the recovery of overspray finishing material.

(5) *Dry spray booth.* A spray booth not equipped with a water washing system as described in subparagraph (4) of this paragraph. A dry spray booth may be equipped with (i) distribution or baffle plates to promote an even flow of air through the booth or cause the deposit of overspray before it enters the exhaust duct; or (ii) overspray dry filters to minimize dusts or residues entering exhaust ducts; or (iii) overspray dry filters to minimize dusts or residues entering exhaust ducts; or (iv) overspray dry filter rolls designed to minimize dusts or residues entering exhaust ducts; or (v) where dry powders are being sprayed, with powder collection systems so arranged in the exhaust to capture oversprayed material.

(6) *Fluidized bed.* A container holding powder coating material which is aerated from below so as to form an air-supported expanded cloud of such material through which the preheated object to be coated is immersed and transported.

(7) *Electrostatic fluidized bed.* A container holding powder coating material which is aerated from below so as to form an air-supported expanded cloud of such material which is electrically charged with a charge opposite to the charge of the object to be coated; such object is transported, through the container immediately above the charged and aerated materials in order to be coated.

(8) *Approved.* Shall mean approved and listed by the following nationally recognized testing laboratories: Underwriters' Laboratories, Inc.; Factory Mutual Engineering Corp.

(9) *Listed.* See "approved" in § 1910.107(a)(8).

(b) *Spray booths*—(1) *Construction.* Spray booths shall be substantially constructed of steel, securely and rigidly supported, or of concrete or masonry except that aluminum or other substantial noncombustible material may be used for intermittent or low volume spraying. Spray booths shall be designed to sweep air currents toward the exhaust outlet.

(2) *Interiors.* The interior surfaces of spray booths shall be smooth and continuous without edges and otherwise designed to prevent pocketing of residues and facilitate cleaning and washing without injury.

(3) *Floors.* The floor surface of a spray booth and operator's working area, if combustible, shall be covered with noncombustible material of such character as to facilitate the safe cleaning and removal of residues.

(4) *Distribution or baffle plates.* Distribution or baffle plates, if installed to promote an even flow of air through the booth or cause the deposit of overspray before it enters the exhaust duct, shall be of noncombustible material and readily removable or accessible on both sides for cleaning. Such plates shall not be located in exhaust ducts.

(5) *Dry type overspray collectors—(exhaust air filters).* In conventional dry type spray booths, overspray dry filters or filter rolls, if installed, shall conform to the following:

(i) The spraying operations except electrostatic spraying operations shall be so designed, installed and maintained that the average air velocity over the open face of the booth (or booth cross section during spraying operations) shall be not less than 100 linear feet per minute. Electrostatic spraying operations may be conducted with an air velocity over the open face of the booth of not less than 60 linear feet per minute, or more, depending on the volume of the finishing material being applied and its flammability and explosion characteristics. Visable gauges or audible alarm or pressure activated devices shall be installed to indicate or insure that the required air velocity is maintained. Dry spray booths equipped with a filter roll which is automatically advanced when the air velocity is reduced to that specified in this subdivision should be arranged to cause shutdown of spraying operations if the filter roll fails to advance automatically. Maintenance procedures should be established to assure replacing filter pads before excessive restriction to airflow occurs. Filter pads should be inspected after each period of use and clogged filter pads discarded and replaced. Filter rolls shall be inspected to insure proper replacement of filter media.

(ii) All discarded filter pads and filter rolls shall be immediately removed to a safe, well-detached location or placed in a water-filled metal container and disposed of at the close of the day's operation unless maintained completely in water.

(iii) The location of filters in a spray booth shall be so as to not reduce the effective booth enclosure of the articles being sprayed.

(iv) Space within the spray booth on the downstream and upstream sides of filters shall be protected with approved automatic sprinklers.

(v) Filters or filter rolls shall not be used when applying a spray material know to be highly susceptible to spontaneous heating and ignition.

(vi) Clean filters or filter rolls shall be noncombustible or of a type having a combustibility not in excess of class 2 filters as listed by Underwriters' Laboratories, Inc. Filters and filter rolls shall not be alternately used for different types of coating materials, where the combination of materials may be conducive to spontaneous ignition. See also paragraph (g)(6) of this section.

(6) *Frontal area.* Each spray booth having a frontal area larger than 9 square feet shall have a metal deflector or curtain not less than 2½ inches deep installed at the upper outer edge of the booth over the opening.

(7) *Conveyors.* Where conveyors are arranged to carry work into or out of spray booths, the openings therefor shall be as small as practical.

(8) *Separation of operations.* Each spray booth shall be separated from other operations by not less than 3 feet, or by a greater distance, or by such partition or wall as to reduce the danger from juxtaposition of hazardous operations. See also paragraph (c)(1) of this section.

(9) *Cleaning.* Spray booths shall be so installed that all portions are readily accessible for cleaning. A clear space of not less than 3 feet on all sides shall be kept free from storage or combustible construction.

(10) *Illumination.* When spraying areas are illuminated through glass panels or other transparent materials, only fixed lighting units shall be used as a source of illumination. Panels shall effectively isolate the spraying area from the area in which the lighting unit is located, and shall be of a noncombustible material of such a nature or so protected that breakage will be unlikely. Panels shall be so arranged that normal accumulations of residue on the exposed surface of the panel will not be raised to a dangerous temperature by radiation or conduction from the source of illumination.

(c) *Electrical and other sources of ignition*—(1) *Conformance.* All electrical equipment, open flames and other sources of ignition shall conform to the requirements of this paragraph, except as follows:

(i) Electrostatic apparatus shall conform to the requirements of paragraphs (h) and (i) of this section;

(ii) Drying, curing, and fusion apparatus shall conform to the requirements of paragraph (j) of this section;

(iii) Automobile undercoating spray operations in garages shall conform to the requirements of paragraph (k) of this section.

(iv) Powder coating equipment shall conform to the requirements of paragraph (l) of this section.

(2) *Minimum separation.* There shall be no open flame or spark producing equipment in any spraying area nor within 20 feet thereof, unless separated by a partition.

(3) *Hot surfaces.* Space-heating appliances, steampipes, or hot surfaces shall not be located in a spraying area where deposits of combustible residues may readily accumulate.

(4) *Wiring conformance.* Electrical wiring and equipment shall conform to the provisions of this paragraph and shall otherwise be in accordance with subpart S of this part.

(5) *Combustible residues, areas.* Unless specifically approved for locations containing both deposits of readily ignitable residue and explosive vapors, there shall be no electrical equipment in any spraying area, whereon deposits of combustible residues may readily accumulate, except wiring in rigid conduit or in boxes or fittings containing no taps, splices, or terminal connections.

(6) *Wiring type approved.* Electrical wiring and equipment not subject to deposits of combustible residues but located in a spraying area as herein defined shall be of explosion-proof type approved for Class I, group D locations and shall otherwise conform to the provisions of subpart S of this part, for Class I, Division 1, Hazardous Locations. Electrical wiring, motors, and other equipment outside of but within twenty (20) feet of any spraying area, and not separated therefrom by partitions, shall not produce sparks under normal operating conditions and shall otherwise conform to the provisions of subpart S of this part for Class I, Division 2 Hazardous Locations.

(7) *Lamps.* Electric lamps outside of, but within twenty (20) feet of any spraying area, and not separated therefrom by a partition, shall be totally enclosed to prevent the falling of hot particles and shall be protected from mechanical injury by suitable guards or by location.

(8) *Portable lamps.* Portable electric lamps shall not be used in any spraying area during spraying operations. Portable electric lamps, if used during cleaning or repairing operations, shall be of the type approved for hazardous Class I locations.

(9) *Grounding.* (i) All metal parts of spray booths, exhaust ducts, and piping systems conveying flammable or combustible liquids or aerated solids shall be properly electrically grounded in an effective and permanent manner.

(ii) "Airless" high-fluid pressure spray guns and any conductive object being sprayed should be properly electrically grounded.

(d) *Ventilation*—(1) *Conformance.* Ventilating and exhaust systems shall be in accordance with the Standard for Blower and Exhaust Systems for Vapor Removal, NFPA No. 91-1961, where applicable and shall also conform to the provisions of this section.

(2) *General.* All spraying areas shall be provided with mechanical ventilation adequate to remove flammable vapors, mists, or powders to a safe location and to confine and control combustible residues so that life is not endangered. Mechanical ventilation shall be kept in operation at all times while spraying operations are being conducted and for a sufficient time thereafter to allow vapors from drying coated articles and drying finishing material residue to be exhausted.

(3) *Independent exhaust.* Each spray booth shall have an independent exhaust duct system discharging to the exterior of the building, except that multiple cabinet spray booths in which identical spray finishing material is used with a combined frontal area of not more than 18 square feet may have a common exhaust. If more than one fan serves one booth, all fans shall be so interconnected that one fan cannot operate without all fans being operated.

(4) *Fan-rotating element.* The fan-rotating element shall be nonferrous or nonsparking or that casing shall consist of or be lined with such material. There shall be ample clearance between the fan-rotating element and the fan casing to avoid a fire by friction, necessary allowance being made for ordinary expansion and loading to prevent contact between moving parts and the duct or fan housing. Fan blades shall be mounted on a shaft sufficiently heavy to maintain perfect alignment even when the blades of the fan are heavily loaded, the shaft preferably to have bearings outside the duct and booth. All bearings shall be of the self-lubricating type, or lubricated from the outside duct.

(5) *Electric motors.* Electric motors driving exhaust fans shall not be placed inside booths or ducts. See also paragraph (c) of this section.

(6) *Belts.* Belts shall not enter the duct or booth unless the belt and pulley within the duct or booth are thoroughly enclosed.

(7) *Exhaust ducts.* Exhaust ducts shall be constructed of steel and shall be substantially supported. Exhaust ducts without dampers are preferred; however, if dampers are installed, they shall be maintained so that they will be in a full open position at all times the ventilating system is in operation.

(i) Exhaust ducts shall be protected against mechanical damage and have a clearance from unprotected combustible construction or other combustible material of not less than 18 inches.

(ii) If combustible construction is provided with the following protection applied to all surfaces within 18 inches, clearances may be reduced to the distances indicated:

(a) 28-gage sheet metal on ¼-inch asbestos mill board.	12 inches.
(b) 28-gage sheet metal on ¼-inch asbestos mill board spaced out 1 inch on noncombustible spacers.	9 inches.
(c) 22-gage sheet metal on 1-inch rockwool batts reinforced with wire mesh or the equivalent.	6 inches.

(d) Where ducts are protected with an approved automatic sprinkler system, properly maintained, the clearance required in subdivision (i) of this subparagraph may be reduced to 6 inches.

(8) *Discharge clearance.* Unless the spray booth exhaust duct terminal is from a water-wash spray booth, the terminal discharge point shall be not less than 6 feet from any combustible exterior wall or roof nor discharge in the direction of any combustible construction or unprotected opening in any noncombustible exterior wall within 25 feet.

(9) *Air exhaust.* Air exhaust from spray operations shall not be directed so that it will contaminate makeup air being introduced into the spraying area or other ventilating intakes, nor directed so as to create a nuisance. Air exhausted from spray operations shall not be recirculated.

(10) *Access doors.* When necessary to facilitate cleaning, exhaust ducts shall be provided with an ample number of access doors.

(11) *Room intakes.* Air intake openings to rooms containing spray finishing operations shall be adequate for the efficient operation of exhaust fans and shall be so located as to minimize the creation of dead air pockets.

(12) *Drying spaces.* Freshly sprayed articles shall be dried only in spaces provided with adequate ventilation to prevent the formation of explosive vapors. In the event adequate and reliable ventilation is not provided such drying spaces shall be considered a spraying area. See also paragraph (j) of this section.

(e) *Flammable and combustible liquids—storage and handling*—(1) *Conformance.* The storage of flammable or combustible liquids in connection with spraying operations shall conform to the requirements of § 1910.106, where applicable.

(2) *Quantity.* The quantity of flammable or combustible liquids kept in the vicinity of spraying operations shall be the minimum required for operations and should ordinarily not exceed a supply for 1 day or one shift. Bulk storage of portable containers of flammable or combustible liquids shall be in a separate, constructed building detached from other important buildings or cut off in a standard manner.

(3) *Containers.* Original closed containers, approved portable tanks, approved safety cans or a properly arranged system of piping shall be used for bringing flammable or combustible liquids into spray finishing room. Open or glass containers shall not be used.

(4) *Transferring liquids.* Except as provided in subparagraph (5) of this paragraph the withdrawal of flammable and combustible liquids from containers having a capacity of greater than 60 gallons shall be by approved pumps. The withdrawal of flammable or combustible liquids from containers and the filling of containers, including portable mixing tanks, shall be done only in a suitable mixing room or in a spraying area when the ventilating system is in operation. Adequate precautions shall be taken to protect against liquid spillage and sources of ignition.

(5) *Spraying containers.* Containers supplying spray nozzles shall be of closed type or provided with metal covers kept closed. Containers not resting on floors shall be on metal supports or suspended by wire cables. Containers supplying spray nozzles by gravity flow shall not exceed 10 gallons capacity. Original shipping containers shall not be subject to air pressure for supplying spray nozzles. Containers under air pressure supplying spray nozzles shall be of limited capacity, not exceeding that necessary for 1 day's operation; shall be designed and approved for such use; shall be provided with a visible pressure gage; and shall be provided with a relief valve set to operate in conformance with the requirements of the Code for Unfired Pressure Vessels, Section VIII of the ASME Boiler and Pressure Vessel Code—1968. Containers under air pressure supplying

spray nozzles, air-storage tanks and coolers shall conform to the standards of the Code for Unfired Pressure Vessels, Section VIII of the ASME Boiler and Pressure Vessel Code—1968 for construction, tests, and maintenance.

(6) *Pipes and hoses.* (i) All containers or piping to which is attached a hose or flexible connection shall be provided with a shutoff valve at the connection. Such valves shall be kept shut when spraying operations are not being conducted.

(ii) When a pump is used to deliver products, automatic means shall be provided to prevent pressure in excess of the design working pressure of accessories, piping, and hose.

(iii) All pressure hose and couplings shall be inspected at regular intervals appropriate to this service. The hose and couplings shall be tested with the hose extended, and using the "inservice maximum operating pressures." Any hose showing material deterioration, signs of leakage, or weakness in its carcass or at the couplings, shall be withdrawn from service and repaired or discarded.

(iv) Piping systems conveying flammable or combustible liquids shall be of steel or other material having comparable properties of resistance to heat and physical damage. Piping systems shall be properly bonded and grounded.

(7) *Spray liquid heaters.* Electrically powered spray liquid heaters shall be approved and listed for the specific location in which used (see paragraph (c) of this section). Heaters shall not be located in spray booths nor other locations subject to the accumulation of deposits or combustible residue. Agitators, if used, should preferably be driven by compressed air, water, or low-pressure steam. If an electric motor is used, see paragraph (c) of this section.

(8) *Pump relief.* If flammable or combustible liquids are supplied to spray nozzles by positive displacement pumps, the pump discharge line shall be provided with an approved relief valve discharging to a pump suction or a safe detached location, or a device provided to stop the prime mover if the discharge pressure exceeds the safe operating pressure of the system.

(9) *Grounding.* Whenever flammable or combustible liquids are transferred from one container to another, both containers shall be effectively bonded and grounded to prevent discharge sparks of static electricity.

(f) *Protection*—(1) *Conformance.* In sprinklered buildings, the automatic sprinkler system in rooms containing spray finishing operations shall conform to the Standard for the Installation of Sprinkler Systems, NFPA 13-1969, provisions for Extra Hazard Occupancy, and in unsprinklered buildings where sprinklers are installed only to protect spraying areas, the installation shall conform to such standards insofar as they may be applicable. Sprinkler installations shall also conform to the provisions of this paragraph. Sprinkler heads shall be located to effect water distribution throughout the entire booth.

(2) *Valve access.* Automatic sprinklers protecting each spray booth (together with its connecting exhaust) shall be under an accessibly located separate outside stem and yoke (OS&Y) subcontrol valve.

(3) *Cleaning of heads.* Sprinklers protecting spraying areas shall be kept as free from deposits as practical by cleaning daily if necessary. (See also paragraph (g) of this section.)

(4) *Portable extinguishers.* An adequate supply of suitable portable fire extinguishers shall be installed near all spraying areas.

(g) *Operations and maintenance.*—(1) *Spraying.* Spraying shall not be conducted outside of predetermined spraying areas.

(2) *Cleaning.* All spraying areas shall be kept as free from the accumulation of deposits of combustible residues as practical, with cleaning conducted daily if necessary. Scrapers, spuds, or other such tools used for cleaning purposes shall be of nonsparking material.

(3) *Residue disposal.* Residue scrapings and debris contaminated with residue shall be immediately removed from the premises and properly disposed of. Approved metal waste cans shall be provided wherever rags or waste are impregnated with finishing material and all such rags or waste deposited therein immediately after use. The contents of waste cans shall be properly disposed of at least once daily or at the end of each shift.

(4) *Clothing storage.* Spray finishing employees' clothing shall not be left on the premises overnight unless kept in metal lockers.

(5) *Cleaning solvents.* The use of solvents for cleaning operations shall be restricted to those having flashpoints not less than 70° F.; however, for cleaning spray nozzles and auxiliary equipment, solvents having flashpoints not less than those normally used in spray operations may be used. Such cleaning shall be conducted inside spray booths and ventilating equipment operated during cleaning.

(6) *Hazardous materials combinations.* Spray booths shall not be alternately used for different types of coating materials, where the combination of the materials may be conducive to spontaneous ignition, unless all deposits of the first used material are removed from the booth and exhaust ducts prior to spraying with the second used material.

(7) *"No Smoking" signs.* "No smoking" signs in large letters on contrasting color background shall be conspicuously posted at all spraying areas and paint storage rooms.

(h) *Fixed electrostatic apparatus*—(1) *Conformance.* Where installation and use of electrostatic spraying equipment is used, such installation and use shall conform to all other paragraphs of this section, and shall also conform to the requirements of this paragraph.

(2) *Type approval.* Electrostatic apparatus and devices used in connection with coating operations shall be of approved types.

(3) *Location.* Transformers, power packs, control apparatus, and all other electrical portions of the equipment, with the exception of high-voltage grids, electrodes, and electrostatic atomizing heads and their connections, shall be located outside of the spraying area, or shall otherwise conform to the requirements of paragraph (c) of this section.

(4) *Support.* Electrodes and electrostatic atomizing heads shall be adequately supported in permanent locations and shall be effectively insulated from the ground. Electrodes and electrostatic atomizing heads which are permanently attached to their bases, supports, or reciprocators, shall be deemed to comply with this section. Insulators shall be nonporous and noncombustible.

(5) *Insulators, grounding.* High-voltage leads to electrodes shall be properly insulated and protected from mechanical injury or exposure to destructive chemicals. Electrostatic atomizing heads shall be effectively and permanently supported on suitable insulators and shall be effectively guarded against accidental contact or grounding. An automatic means shall be provided for grounding the electrode system when it is electrically deenergized for any reason. All insulators shall be kept clean and dry.

(6) *Safe distance.* A safe distance shall be maintained between goods being painted and electrodes or electrostatic atomizing heads or conductors of at least twice the sparking distance. A suitable sign indicating this safe distance shall be conspicuously posted near the assembly.

(7) *Conveyors required.* Goods being painted using this process are to be supported on conveyors. The conveyors shall be so arranged as to maintain safe distances between the goods and the electrodes or electrostatic atomizing heads at all times. Any irregularly shaped or other goods subject to possible swinging or movement shall be rigidly supported to prevent such swinging or movement which would reduce the clearance to less than that specified in subparagraph (6) of this paragraph.

(8) *Prohibition.* This process is not acceptable where goods being coated are manipulated by hand. When finishing materials are applied by electrostatic equipment which is manipulated by hand, see paragraph (i) of this section for applicable requirements.

(9) *Fail-safe controls.* Electrostatic apparatus shall be equipped with automatic controls which will operate without time delay to disconnect the power supply to the high voltage transformer and to signal the operator under any of the following conditions:

(i) Stoppage of ventilating fans or failure of ventilating equipment from any cause.

(ii) Stoppage of the conveyor carrying goods through the high voltage field.

(iii) Occurrence of a ground or of an imminent ground at any point on the high voltage system.

(iv) Reduction of clearance below that specified in subparagraph (6) of this paragraph.

(10) *Guarding.* Adequate booths, fencing, railings, or guards shall be so placed about the equipment that they, either by their location or character or both, assure that a safe isolation of the process is maintained from plant storage or personnel. Such railings, fencing, and guards shall be of conducting material, adequately grounded.

(11) *Ventilation.* Where electrostatic atomization is used the spraying area shall be so ventilated as to insure safe conditions from a fire and health standpoint.

(12) *Fire protection.* All areas used for spraying, including the interior of the booth, shall be protected by automatic sprinklers where this protection is available. Where this protection is not available, other approved automatic extinguishing equipment shall be provided.

(i) *Electrostatic hand spraying equipment*—(1) *Application.* This paragraph shall apply to any equipment using electrostatically charged elements for the atomization and/or, precipitation of materials for coatings on articles, or for other similar purposes in which the atomizing device is hand held and manipulated during the spraying operation.

(2) *Conformance.* Electrostatic hand spraying equipment shall conform with the other provisions of this section.

(3) *Equipment approval and specifications.* Electrostatic hand spray apparatus and devices used in connection with coating operations shall be of approved types. The equipment should be so designed that the maximum surface temperature of the equipment in the spraying area shall not exceed 150° F. under any condition. The high voltage circuits shall be designed so as to not produce a spark of sufficient intensity to ignite any vapor-air mixtures nor result in appreciable shock hazard upon coming in contact with a grounded object under all normal operating conditions. The electrostatically charged exposed elements of the handgun shall be capable of being energized only by a switch which also controls the coating material supply.

(4) *Electrical support equipment.* Transformers, powerpacks, control apparatus, and all other electrical portions of the equipment, with the exception of the handgun itself and its connections to the power supply shall be located outside of the spraying area or shall otherwise conform to the requirements of paragraph (c) of this section.

(5) *Spray gun ground.* The handle of the spraying gun shall be electrically connected to ground by a metallic connection and to be so constructed that the operator in normal operating position is in intimate electrical contact with the grounded handle.

(6) *Grounding—general.* All electrically conductive objects in the spraying area shall be adequately grounded. This requirement shall apply to paint containers, wash cans, and any other objects or devices in the area. The equipment shall carry a prominent permanently installed warning regarding the necessity for this grounding feature.

(7) *Maintenance of grounds.* Objects being painted or coated shall be maintained in metallic contact with the conveyor or other grounded support. Hooks shall be regularly cleaned to insure this contact and areas of contact shall be sharp points or knife edges where possible. Points of support of the object shall be concealed from random spray where feasible and where the objects being sprayed are supported from a conveyor, the point of attachment to the conveyor shall be so located as to not collect spray material during normal operation.

(8) *Interlocks.* The electrical equipment shall be so interlocked with the ventilation of the spraying area that the equipment cannot be operated unless the ventilation fans are in operation.

(9) *Ventilation.* The spraying operation shall take place within a spray area which is adequately ventilated to remove solvent vapors released from the operation.

(j) *Drying, curing, or fusion apparatus*—(1) *Conformance.* Drying, curing, or fusion apparatus in connection with spray application of flammable and combustible finishes shall conform to the Standard for Ovens and Furnaces, NFPA 86A-1969, where applicable and shall also conform with the following requirements of this subparagraph.

(2) *Alternate use prohibited.* Spray booths, rooms, or other enclosures used for spraying operations shall not alternately be used for the purpose of drying by any arrangement which will cause a material increase in the surface temperature of the spray booth, room, or enclosure.

(3) *Adjacent system interlocked.* Except as specifically provided in subparagraph (4) of this paragraph, drying, curing, or fusion units utilizing a heating system having open flames or which may produce sparks shall not be installed in a spraying area, but may be installed adjacent thereto when equipped with an interlocked ventilating system arranged to:

(i) Thoroughly ventilate the drying space before the heating system can be started;

(ii) Maintain a safe atmosphere at any source of ignition;

(iii) Automatically shut down the heating system in the event of failure of the ventilating system.

(4) *Alternate use permitted.* Automobile refinishing spray booths or enclosures, otherwise installed and maintained in full conformity with this section, may alternately be used for drying with portable electrical infrared drying apparatus when conforming with the following:

(i) Interior (especially floors) of spray enclosures shall be kept free of overspray deposits.

(ii) During spray operations, the drying apparatus and electrical connections and wiring thereto shall not be located within spray enclosure nor in any other location where spray residues may be deposited thereon.

(iii) The spraying apparatus, the drying apparatus, and the ventilating system of the spray enclosure shall be equipped with suitable interlocks so arranged that:

(a) The spraying apparatus cannot be operated while the drying apparatus is inside the spray enclosure.

(b) The spray enclosure will be purged of spray vapors for a period of not less than 3 minutes before the drying apparatus can be energized.

(c) The ventilating system will maintain a safe atmosphere within the enclosure during the drying process and the drying apparatus will automatically shut off in the event of failure of the ventilating system.

(iv) All electrical wiring and equipment of the drying apparatus shall conform with the applicable sections of Subpart S of this Part. Only equipment of a type approved for Class I, Division 2 hazardous locations shall be located within 18 inches of floor level. All metallic parts of the drying apparatus shall be properly electrically bonded and grounded.

(v) The drying apparatus shall contain a prominently located, permanently attached warning sign indicating that ventilation should be maintained during the drying period and that spraying should not be conducted in the vicinity that spray will deposit on apparatus.

(k) *Automobile undercoating in garages.* Automobile undercoating spray operations in garages, conducted in areas having adequate natural or mechanical ventilation, are exempt from the requirements pertaining to spray finishing operations, when using undercoating materials not more hazardous than kerosene (as listed by Underwriters' Laboratories in respect to fire hazard rating 30-40) or undercoating materials using only solvents listed as having a flash point in excess of 100° F. Undercoating spray operations not conforming to these provisions are subject to all requirements of this section pertaining to spray finishing operations.

(l) *Powder coating*—(1) *Electrical and other sources of ignition.* Electrical equipment and other sources of ignition shall conform to the requirements of paragraph (c) (1) (i)–(iv), (8) and (9) (i) of this section and Subpart S of this Part.

(2) *Ventilation.* (i) In addition to the provisions of paragraph (d) of this section, where applicable, exhaust ventilation shall be sufficient to maintain the atmosphere below the lowest explosive limits for the materials being applied. All nondeposited air-suspended powders shall be safely removed via exhaust ducts to the powder recovery cyclone or receptacle. Each installation shall be designed and operated to meet the foregoing performance specification.

(ii) Powders shall not be released to the outside atmosphere.

(3) *Drying, curing, or fusion equipment.* The provisions of the Standard for oven, and furnaces, NFPA No. 86A–1969 shall apply where applicable.

(4) *Operation and maintenance.* (i) All areas shall be kept free of the accumulation of powder coating dusts, particularly such horizontal surfaces as ledges, beams, pipes, hoods, booths, and floors.

(ii) Surfaces shall be cleaned in such manner as to avoid scattering dust to other places or creating dust clouds.

(iii) "No Smoking" signs in large letters on contrasting color background shall be conspicuously posted at all powder coating areas and powder storage rooms.

(5) *Fixed electrostatic spraying equipment.* The provisions of paragraph (h) of this section and other subparagraphs of this paragraph shall apply to fixed electrostatic equipment, except that electrical equipment not covered therein shall conform to subparagraph (1) of this paragraph.

(6) *Electrostatic hand spraying equipment.* The provisions of paragraph (i) of this section and other subparagraphs of this paragraph, shall apply to electrostatic handguns when used in powder coating, except that electrical equipment not covered therein shall conform to subparagraph (1) of this paragraph.

(7) *Electrostatic fluidized beds.* (i) Electrostatic fluidized beds and associated equipment shall be of approved types. The maximum surface temperature of this equipment in the coating area shall not exceed 150° F. The high voltage circuits shall be so designed as to not produce a spark of sufficient intensity to ignite any powder-air mixtures nor result in appreciable shock hazard upon coming in contact with a grounded object under normal operating conditions.

(ii) Transformers, powerpacks, control apparatus, and all other electrical portions of the equipment, with the exception of the charging electrodes and their connections to the power supply shall be located outside of the powder coating area or shall otherwise conform to the requirements of subparagraph (1) of this paragraph.

(iii) All electrically conductive objects within the charging influence of the electrodes shall be adequately grounded. The powder coating equipment shall carry a prominent, permanently installed warning regarding the necessity for grounding these objects.

(iv) Objects being coated shall be maintained in contact with the conveyor or other support in order to insure proper grounding. Hangers shall be regularly cleaned to insure effective contact and areas of contact shall be sharp points or knife edges where possible.

(v) The electrical equipment shall be so interlocked with the ventilation system that the equipment cannot be operated unless the ventilation fans are in operation.

(m) *Organic peroxides and dual component coatings*—(1) *Conformance.* All spraying operations involving the use of organic peroxides and other dual component coatings shall be conducted in approved sprinklered spray booths meeting the requirements of this section.

(2) *Smoking.* Smoking shall be prohibited and "No Smoking" signs shall be prominently displayed and only nonsparking tools shall be used in any area where organic peroxides are stored, mixed or applied.

(n) *Scope.* This section applies to flammable and combustible finishing materials when applied as a spray by compressed air "airless" or "hydraulic atomization," steam, electrostatic methods, or by any other means in continuous or intermittent processes. The section also covers the application of combustible powders by powder spray guns, electrostatic powder spray guns, fluidized beds, or electrostatic fluidized beds. The section does not apply to outdoor spray application of buildings, tanks, or other similar structures, nor to small portable spraying apparatus not used repeatedly in the same location.

§ 1910.108 Dip tanks containing flammable or combustible liquids.

(a) *Definitions applicable to this section*—(1) *Dip tank.* Shall mean a tank, vat, or container of flammable or combustible liquid in which articles or materials are immersed for the purpose of coating, finishing, treating, or similar processes.

(2) *Vapor area.* Shall mean any area containing dangerous quantities of flammable vapors in the vicinity of dip tanks, their drainboards or associated drying conveying, or other equipment, during operation or shutdown periods.

(3) *Approved.* Unless otherwise indicated, approval or listing by at least one of the following nationally recognized testing laboratories: Underwriters' Laboratories, Inc.; Factor Mutual Engineering Corp.

(4) *Listed.* See "approved" in paragraph (a) (3) of this section.

(b) *Ventilation*—(1) *Vapor area ventilation.* Vapor areas as defined in paragraph (a) (2) of this section shall be limited to the smallest practical space by maintaining a properly designed system of mechanical ventilation arranged to move air from all directions towards the vapor area origin and thence to a safe outside location. Ventilating systems shall conform to the Standards for Blower and Exhaust Systems (NFPA Pamphlet No. 91–1969). Required ventilating systems shall be so arranged that the failure of any ventilating fan shall automatically stop any dipping conveyor system. See also paragraph (c) (6) of this section.

(2) *Ventilation combined with drying.* When a required ventilating system serves associated drying operations utilizing a heating system which may be a source of ignition, means shall be provided for preventilation before the heating system can be started; the failure of any ventilating fan shall automatically shut down the heating system; and the installation shall otherwise conform to the Standard for Ovens and Furnaces (NFPA No. 86A–1969).

(c) *Construction of dip tanks*—(1) *General.* Dip tanks, including drainboards if provided, shall be constructed of substantial noncombustible material, and their supports shall be of heavy metal, reinforced concrete, or masonry. Where dip tanks extend through a floor to the story below or where the weakening of the tank supports by fire may result in the tank collapse, supports should be of material having not less than 1-hour fire resistance.

(2) *Overflow pipes.* (i) Dip tanks of over 150 gallons in capacity or 10 square feet in liquid surface area shall be equipped with a properly trapped overflow pipe leading to a safe location outside buildings. Smaller dip tanks should also be so equipped, where practical. The discharge of the overflow pipe should be so located and arranged that if the entire combustible contents of the dip tank is overflowed through overflow pipe by the application of water during fire fighting, property will not be endangered. The size of the overflow pipe should be sufficient to conduct the maximum rate of flow of water expected to be applied to the liquid surface of the dip tank from automatic sprinklers or from other sources in the event of fire.

(ii) Overflow pipes shall be of sufficient capacity to overflow the maximum delivery of dip tank liquid fill pipes but shall not be less than 3 inches in diameter and shall be increased in size depending upon the area of the liquid surface and the length and pitch of pipe.

(iii) Piping connections on drains and overflow lines shall be designed so as to permit ready access for inspection and cleaning of the interior.

(iv) The bottom of the overflow connection shall be not less than 6 inches below the top of the tank. See also subparagraph (6) of this paragraph and paragraph (g) (3) (ii) of this section.

(3) *Bottom drains.* (i) Dip tanks over 500 gallons in liquid capacity shall be equipped with bottom drains automatically and manually arranged to quickly drain the tank in the event of fire, unless the viscosity of the liquid at normal atmospheric temperature makes this impractical. Manual operation shall be from a safely accessible location. Where gravity flow is not practicable, automatic pumps shall be required.

(ii) Such drain shall be trapped and discharge to a closed properly vented salvage tank or to a safe location outside which will not endanger property.

(iii) According to tank capacity the diameter of bottom drainpipe shall be not less than the following:

Gallons:	Inches
500 to 750	3
750 to 1,000	4
1,000 to 2,500	5
2,500 to 4,000	6
Over 4,000	8

(4) *Salvage tanks.* The capacity of the salvage tank shall be greater than the capacity of the dip tank or tanks to which they are connected.

(5) *Automatic extinguishing facilities.* Except as noted in paragraph (h) (1) (v) of this section (applying to hardening and tempering tanks), all dip tanks exceeding 150 gallons liquid capacity or having a liquid surface area exceeding 4 square feet shall be protected with at least one of the automatic extinguishing facilities conforming to paragraph (g) (2), (3), (4), (5), or (6) of this section.

(6) *Conveyor systems.* Dip tanks utilizing a conveyor system shall be so arranged that in the event of fire, the conveyor system shall automatically cease motion and required bottom drains shall open. Conveyor systems shall automatically cease motion unless required ventilation is in full operation. See also paragraph (b) (1) of this section.

(7) *Heating dip tank liquids.* When dip tank liquids are artificially heated, either by the dipping of heated articles, or by other application of heat to the liquid, provision shall be made to prevent a temperature rise greater than 50° F. below the flashpoint of the liquid. See also paragraph (h) (1) of this section.

(d) *Liquids used in dip tanks, storage and handling.* The storage of flammable and combustible liquids in connection with dipping operation shall conform to the requirements of section 1910.106, where applicable. Where portable containers are used for the replenishment of flammable and combustible liquids, provision shall be made so that both the container and tank shall be positively grounded and electrically bonded to prevent static electric sparks.

(e) *Electrical and other sources of ignition*—(1) *Vapor areas.* (i) There shall be no open flames, spark producing devices, or heated surfaces having a temperature sufficient to ignite vapors in any vapor area. Except as specifically permitted in paragraph (h) (3) of this section, relating to electrostatic apparatus, electrical wiring and equipment in any vapor area (as defined in paragraph (a)

(2) of this section) shall be explosion proof type according to the requirements of Subpart S of this part for Class I, Group D locations and shall otherwise conform to Subpart S of this part.

(ii) Unless specifically approved for locations containing both deposits of readily ignitable residues and explosive vapors, there shall be no electrical equipment in the vicinity of dip tanks or associated drainboards or drying operations which are subject to splashing or dripping of dip tank liquids, except wiring in rigid conduit or in threaded boxes or fittings containing no taps, splices, or terminal connections, and except as specifically permitted in paragraph (h) (3) of this section.

(2) *Adjacent areas.* In any floorspace outside a vapor area but within 20 feet therefrom, and not separated by tight partitions, there shall be no open flames or spark producing devices except as specifically permitted in NFPA Standard No. 86A–1969, Ovens and Furnaces, paragraph 200–7, and electrical wiring and equipment shall conform to the provisions of Subpart S of this part.

(f) *Operations and maintenance*—(1) *General.* Areas in the vicinity of dip tanks shall be kept as clear of combustible stock as practical and shall be kept entirely free of combustible debris.

(2) *Waste cans.* When waste or rags are used in connection with dipping operations, approved metal waste cans shall be provided and all impregnated rags or waste deposited therein immediately after use. The contents of waste cans shall be properly disposed of at least once daily at the end of each shift.

(3) *Inspection.* Periodic inspection or tests of all dip tank facilities shall be made, including covers, overflow pipe inlets and discharge, bottom drains and valves, electrical wiring and equipment and grounding connections, ventilating facilities, and all extinguishing equipment. Any defects found shall be promptly corrected.

(4) *Warning signs.* "No Smoking" signs in large letters on contrasting color background shall be conspicuously posted in the vicinity of dip tanks.

(g) *Extinguishment*—(1) *Extinguishers.* Areas in the vicinity of dip tanks shall be provided with manual fire extinguishers suitable for flammable and combustible liquid fires, conforming to Standard for Portable Fire Extinguishers NFPA No. 10–1970.

(2) *Automatic water spray extinguishing systems.* Such systems shall conform to NFPA Standard for Water Spray Systems for Fire Protection NFPA No. 15–1969 and shall be arranged to protect tanks, drainboards, and stock over drainboards.

(3) *Automatic foam extinguishing systems.* Automatic foam extinguishing systems shall conform to NFPA Standard for Foam Extinguishing Systems, NFPA No. 11–1970 and:

(i) Foam producing material selected shall be suitable for intended use, taking into account characteristics of the dip tank liquid;

(ii) Overflow pipe shall be arranged to prevent the floating away of foam and clogging overflow pipe. This may be accomplished by either of the following:

(a) Overflow pipe may be extended through tank wall and terminated in an ell pointing downward. The bottom of the overflow pipe at the point it pierces tank wall should not be over 2 inches above the opening or face of the ell.

(b) Overflow pipe inlet may be provided with a removable screen of ¼-inch mesh having an area at least twice the cross-sectional area of overflow pipe. Screens which may be clogged by dip tank ingredients shall be inspected and cleaned periodically.

(4) *Automatic carbon dioxide systems.* Automatic carbon dioxide systems shall conform to NFPA Standard for Carbon Dioxide Extinguishing Systems, NFPA No. 12–1968, and shall be arranged to protect both dip tanks and drainboards and unless stock over drainboards is otherwise protected with automatic extinguishing facilities, shall also be arranged to protect such stock.

(5) *Dry chemical extinguishing systems.* Dry chemical extinguishing systems shall conform to NFPA Standard for Dry Chemical Extinguishing Systems NFPA No. 17–1969 and shall be arranged to protect both dip tanks and drainboards, and unless stock over drainboards is otherwise protected with automatic extinguishing facilities, shall also be arranged to protect such stock.

(6) *Dip tank covers.* (i) Covers arranged to close automatically in the event of fire shall be actuated by approved automatic devices and shall also be arranged for manual operation.

(ii) Covers shall be of substantial noncombustible material or of tin-clad type with enclosing metal applied with locked joints.

(iii) Chains or wire rope shall be used for cover support or operating mechanism where the burning of a cord would interfere with the action of a device.

(iv) Covers shall be kept closed when tanks are not in use.

(h) *Special dip tank applications*—(1) *Hardening and tempering tanks.* (i) Tanks shall be located as far as practicable from furnaces and shall not be located on or near combustible floors.

(ii) Tanks shall be provided with a noncombustible hood and vent or other equally effective means of venting to the outside of the building to serve as a vent in case of fire. All such vent ducts shall be treated as flues and be kept well away from combustible roofs or materials.

(iii) Tanks shall be so designed that the maximum workload is incapable of raising the temperature of the cooling medium to within 50° below its flashpoint, or such tanks shall be equipped with circulating cooling systems which will accomplish the same result.

(iv) Tanks shall be equipped with a high temperature limit switch arranged to sound an alarm when the temperature of the quenching medium reaches within 50° F. below the flashpoint. If practical from an operating standpoint, such limit switches shall also shut down conveying equipment supplying work to the tank.

(v) The provisions of paragraph (c) (5) of this section shall apply to tanks having a liquid surface area of 25 square feet or more or a capacity of 500 gallons or more.

(vi) Air under pressure shall not be used to fill or to agitate oil tanks.

(vii) Drain facilities from the bottom of the tank may be combined with the oil circulating system or arranged independently to drain the oil to a safe location. The drain valve shall be operated automatically with approved heat actuated devices or manually, and if the latter, the valve shall be operated from a safe distance.

(2) *Flow coat: general.* (i) Except as modified in this paragraph, all of the preceding standards for dip tanks apply.

(ii) All piping shall be strongly erected and rigidly supported.

(iii) Paint shall be supplied by direct low-pressure pumping arranged to automatically shut down by means of approved heat actuated devices, in the case of fire, or paint may be supplied by a gravity tank not exceeding 10 gallons in capacity.

(iv) The area of the sump and any areas on which paint flows should be considered the area of dip tank.

(3) *Electrostatic apparatus; general.* (i) Installation and use of electrostatic detearing equipment shall conform to paragraphs (a) through (g) of this section.

(ii) Electrostatic apparatus and devices used in connection with paint detearing operation shall be of approved types.

(iii) Transformers, powerpacks, control apparatus, and all other electrical portions of the equipment, with the exception of high voltage grid and their connections, shall be located outside the vapor area or shall conform to the requirements of paragraph (e) of this section.

(iv) Electrodes shall be of substantial construction, shall be rigidly supported in permanent locations and shall be effectively insulated from ground. Insulators shall be nonporous and noncombustible.

(v) High voltage leads to electrodes shall be effectively and permanently supported on suitable insulators, and shall be effectively guarded against accidental contact or grounding. An automatic means shall be provided for grounding and discharging any accumulated residual charge on the electrode assembly or the secondary circuit of the high voltage transformer when the transformer primary is disconnected from the source of supply.

(vi) A space shall be maintained between goods being deteared and electrodes or conductors of at least twice the sparking distance. A suitable sign stating the sparking distance shall be conspicuously posted near the assembly.

(vii) Goods being deteared using this electrostatic process are to be supported on conveyors. The conveyors shall be so arranged as to maintain safe distances between the goods and the electrodes at all times. All goods shall be so supported as to prevent any swinging or movement which would reduce the clearance to less than specified in subdivision (vi) of this subparagraph.

(viii) This electrostatic process is not approved where goods being deteared are manipulated by hand.

(ix) Electrostatic apparatus shall be equipped with automatic controls which will operate without time delay to disconnect the power supply to the high voltage transformer and to signal the

operator under any of the following conditions:

(a) Stoppage of ventilating fans or failure of ventilating equipment from any cause.

(b) Stoppage of the conveyor carrying goods past the high voltage grid.

(c) Occurrence of a ground or of an imminent ground at any point on the high voltage system.

(d) Reduction of clearance below that specified in subdivision (vi) of this subparagraph.

(x) Adequate fencing, railings, or guards shall be so placed about the equipment that they, either by their location or character or both, assure that a safe isolation of the process is maintained from plant storage or personnel. Such railings, fencing and guards shall be of conducting material, adequately grounded, and should be at least 5 feet from processing equipment.

(xi) Electrode insulators shall be kept clean and dry.

(xii) The detearing area shall be ventilated by exhausting adequate air from the area as specified in paragraph (b) of this section.

(xiii) All areas for detearing shall be protected by automatic sprinklers where this protection is available. Where this protection is not available, other approved automatic extinguishing equipment shall be provided.

(xiv) Drip plates and screens subject to paint deposits shall be removable and shall be taken to a safe place for cleaning.

(4) *Roll coating.* (i) The processes of roll coating, spreading, and impregnating, in which fabrics, paper, or other materials are passed directly through a tank or trough containing flammable or combustible liquids, or over the surface of a roller that revolves partially submerged in a Class I or Class II liquid, as these terms are defined in §1910.106 (a), shall conform to the applicable requirements of paragraphs (a) through (g) of this section and in addition shall conform to subdivision (ii) of this subparagraph.

(ii) Adequate arrangements shall be made to prevent sparks from static electricity by electrically bonding and grounding all metallic rotating and other parts of machinery and equipment and by the installation of static collectors or maintaining a conductive atmosphere such as a high relative humidity.

§ 1910.109 Explosives and blasting agents.

(a) *Definitions applicable to this section*—(1) *Blasting agent.* Blasting agent—any material or mixture, consisting of a fuel and oxidizer, intended for blasting, not otherwise classified as an explosive and in which none of the ingredients are classified as an explosive, provided that the finished product, as mixed and packaged for use or shipment, cannot be detonated by means of a No. 8 test blasting cap when unconfined.

(2) *Explosive-actuated power devices.* Explosive-actuated power device—any tool or special mechanized device which is actuated by explosives, but not including propellant-actuated power devices. Examples of explosive-actuated power devices are jet tappers and jet perforators.

(3) *Explosive.* Explosive—any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion, i.e., with substantially instantaneous release of gas and heat, unless such compound, mixture, or device is otherwise specifically classified by the U.S. Department of Transportation; see 49 CFR Chapter I. The term "explosives" shall include all material which is classified as Class A, Class B, and Class C explosives by the U.S. Department of Transportation, and includes, but is not limited to dynamite, black powder, pellet powders, initiating explosives, blasting caps, electric blasting caps, safety fuse, fuse lighters, fuse igniters, squibs, cordeau detonant fuse, instantaneous fuse, igniter cord, igniters, small arms ammunition, small arms ammunition primers, smokeless propellant, cartridges for propellant-actuated powar devices, and cartridges for industrial guns. Commercial explosives are those explosives which are intended to be used in commercial or industrial operations.

Note 1: Classification of explosives is described by the U.S. Department of Transportation as follows (see 49 CFR Chapter I):

(i) *Class A explosives.* Possessing, detonating, or otherwise maximum hazard, such as dynamite, nitroglycerin, picric acid, lead azide, fulminate of mercury, black powder, blasting caps, and detonating primers.

(ii) *Class B explosives.* Possessing flammable hazard, such as propellant explosives (including some smokeless propellants), photographic flash powders, and some special fireworks.

(iii) *Class C explosives.* Includes certain types of manufactured articles which contain Class A or Class B explosives, or both, as components but in restricted quantities.

(iv) *Forbidden or not acceptable explosives.* Explosives which are forbidden or not acceptable for transportation by common carriers by rail freight, rail express, highway, or water in accordance with the regulations of the U.S. Department of Transportation, 49 CFR Chapter I.

(4) *Highway.* Highway—any public street, public alley, or public road.

(5) *Inhabited building.* Inhabited building—a building or structure regularly used in whole or part as a place of human habitation. The term "inhabited building" shall also mean any church, school, store, railway passenger station, airport terminal for passengers, and any other building or structure where people are accustomed to congregate or assemble but excluding any building or structure occupied in connection with the manufacture, transportation, storage, and use of explosives.

(6) *Magazine.* Magazine—any building or structure, other than an explosives manufacturing building, used for the storage of explosives.

(7) *Motor vehicle.* Motor vehicle—any self-propelled vehicle, truck, tractor, semitrailer, or truck-full trailers used for the transportation of freight over public highways.

(8) *Propellant-actuated power devices.* Propellant-actuated power devices—any tool or special mechanized device or gas generator system which is actuated by a smokeless propellant or which releases and directs work through a smokeless propellant charge.

(9) *Public conveyance.* Public conveyance—any railroad car, streetcar, ferry, cab, bus, airplane, or other vehicle which is carrying passengers for hire.

(10) *Pyrotechnics.* Pyrotechnics—any combustible or explosive compositions or manufactured articles designed and prepared for the purpose of producing audible or visible effects which are commonly referred to as fireworks.

(11) *Railway.* Railway—any steam, electric, diesel electric, or other railroad or railway which carries passengers for hire on the particular line or branch in the vicinity where explosives are stored or where explosives manufacturing buildings are situated.

(12) *Semiconductive hose.* Semiconductive hose—a hose with an electrical resistance high enough to limit flow of stray electric currents to safe levels, yet not so high as to prevent drainage of static electric charges to ground; hose of not more than 2 megohms resistance over its entire length and of not less than 5,000 ohms per foot meets the requirement.

(13) *Small arms ammunition.* Small arms ammunition—any shotgun, rifle, pistol, or revolver cartridge, and cartridges for propellant-actuated power devices and industrial guns. Military-type ammunition containing explosive-bursting charges, incendiary, tracer, spotting, or pyrotechnic projectiles is excluded from this definition.

(14) *Small arms ammunition primers.* Small arms ammunition primers—small percussion-sensitive explosive charges, encased in a cup, used to ignite propellant powder.

(15) *Smokeless propellants.* Smokeless propellants—solid propellants, commonly called smokeless powders in the trade, used in small arms ammunition, cannon, rockets, propellant-actuated power devices, etc.

(16) *Special industrial explosives devices.* Special industrial explosives devices—explosive-actuated power devices and propellent-actuated power devices.

(17) *Special industrial explosives materials.* Special industrial explosives materials—shaped materials and sheet forms and various other extrusions, pellets, and packages of high explosives, which include dynamite, trinitrotoluene (TNT), pentaerythritol tetranitrate (PETN), hexahydro-1,3,5-trinitro-s-triazine (RDX), and other similar compounds used for high-energy-rate forming, expanding, and shaping in metal fabrication, and for dismemberment and quick reduction of scrap metal.

(18) *Water gels or slurry explosives.* These comprise a wide variety of materials used for blasting. They all contain substantial proportions of water and high proportions of ammonium nitrate, some of which is in solution in the water. Two broad classes of water gels are (i) those which are sensitized by a material classed as an explosive, such as TNT or

smokeless powder, (ii) those which contain no ingredient classified as an explosive; these are sensitized with metals such as aluminum or with other fuels. Water gels may be premixed at an explosives plant or mixed at the site immediately before delivery into the borehole.

(19) *DOT specifications.* Regulations of the Department of Transportation published in 49 CFR Chapter I.

(20) *DOT regulations.* See § 1910.109 (a) (19).

(21) *DOT requirements.* See § 1910.109 (a) (19).

(b) *Miscellaneous provisions* — (1) *General hazard.* No person shall store, handle, or transport explosives or blasting agents when such storage, handling, and transportation of explosives or blasting agents constitutes an undue hazard to life and property.

(2) *Unauthorized recipients.* No person shall sell or give away any explosive or blasting agent to any unauthorized person.

(3) *Display.* No person shall sell, display, or expose for sale any explosive or blasting agent on any highway, street, sidewalk, public way, or public place.

(c) *Storage of explosives*—(1) *General provisions.* (i) All Class A, Class B, Class C explosives, and special industrial explosives, and any newly developed and unclassified explosives, shall be kept in magazines which meet the requirements of this paragraph.

(ii) Blasting caps, electric blasting caps, detonating primers, and primed cartridges shall not be stored in the same magazine with other explosives.

(iii) Ground around magazines shall slope away for drainage. The land surrounding magazines shall be kept clear of brush, dried grass, leaves, and other materials for a distance of at least 25 feet.

(iv) Magazines as required by this paragraph shall be of two classes; namely, Class I magazines, and Class II magazines.

(v) Class I magazines shall be required where the quantity of explosives stored is more than 50 pounds. Class II magazines may be used where the quantity of explosives stored is 50 pounds or less.

(vi) Class I magazines shall be located away from inhabited buildings, passenger railways, and public highways and from other magazines in conformity with Table H–21.

TABLE H-21—AMERICAN TABLE OF DISTANCES FOR STORAGE OF EXPLOSIVES

As revised and approved by the Institute of Makers of Explosives, June 5, 1964

Explosives		Distances in feet when storage is barricaded			
Pounds over	Pounds not over	Inhabited buildings	Passenger railways	Public highways	Separation of magazines
2	5	70	30	30	6
5	10	90	35	35	8
10	20	110	45	45	10
20	30	125	50	50	11
30	40	140	55	55	12
40	50	150	60	60	14
50	75	170	70	70	15
75	100	190	75	75	16
100	128	200	80	80	18
125	150	215	85	85	19
150	200	235	95	95	21
200	250	255	105	105	23
250	300	270	110	110	24
300	400	295	120	120	27
400	500	320	130	130	29
500	600	340	135	135	31
600	700	355	145	145	32
700	800	375	150	150	33
800	900	390	155	155	35
900	1,000	400	160	160	36
1,000	1,200	425	170	170	39
1,200	1,400	450	180	170	41
1,400	1,600	470	190	175	43
1,600	1,800	490	195	180	44
1,800	2,000	505	205	185	46
2,000	2,500	545	220	190	49
2,500	3,000	580	235	195	52
3,000	4,000	635	255	210	58
4,000	5,000	685	275	225	61
5,000	6,000	730	295	235	66
6,000	7,000	770	310	245	69
7,000	8,000	800	320	260	72
8,000	9,000	835	335	265	75
9,000	10,000	865	345	280	78
10,000	12,000	875	370	270	83
12,000	14,000	895	390	275	87
14,000	16,000	900	405	280	90
16,000	18,000	940	420	285	94
18,000	20,000	975	435	290	98
20,000	25,000	1,055	470	315	105
25,000	30,000	1,130	500	340	112
30,000	35,000	1,205	535	360	119
35,000	40,000	1,275	560	380	124
40,000	45,000	1,340	570	400	129
45,000	50,000	1,400	590	420	133
50,000	55,000	1,460	610	440	140
55,000	60,000	1,515	630	455	145
60,000	65,000	1,565	645	470	150
65,000	70,000	1,610	660	485	153
70,000	75,000	1,655	675	500	160
75,000	80,000	1,695	690	510	165
80,000	85,000	1,730	705	525	170
85,000	90,000	1,760	720	530	175
90,000	95,000	1,790	730	540	180
95,000	100,000	1,815	745	545	184
100,000	110,000	1,835	770	550	193
110,000	120,000	1,855	790	555	205
120,000	130,000	1,875	810	560	215
130,000	140,000	1,890	835	565	225
140,000	150,000	1,900	850	570	233
150,000	160,000	1,925	870	580	243
160,000	170,000	1,955	900	590	254

TABLE H-21—AMERICAN TABLE OF DISTANCES FOR STORAGE OF EXPLOSIVES—Continued

As revised and approved by the Institute of Makers of Explosives, June 5, 1964

Explosives		Distances in feet when storage is barricaded			
Pounds over	Pounds not over	Inhabited buildings	Passenger railways	Public highways	Separation of magazines
170,000	180,000	1,990	905	600	255
180,000	190,000	2,010	920	605	273
190,000	200,000	2,030	935	610	283
200,000	210,000	2,055	955	620	295
210,000	230,000	2,100	980	635	315
230,000	250,000	2,155	1,010	650	330
250,000	275,000	2,215	1,040	670	360
275,000	300,000	2,275	1,075	690	385

NOTE 1. "Natural barricade" means natural features of the ground, such as hills, or timber of sufficient density that the surrounding exposures which require protection cannot be seen from the magazine when the trees are bare of leaves.

NOTE 2. "Artificial barricade" means an artificial mound or revetted wall of earth of a minimum thickness of three feet.

NOTE 3. "Barricaded" means that a building containing explosives is effectually screened from a magazine, building, railway, or highway, either by a natural barricade, or by an artificial barricade of such height that a straight line from the top of any sidewall of the building containing explosives to the eave line of any magazine, or building, or to a point 12 feet above the center of a railway or highway, will pass through such intervening natural or artificial barricade.

NOTE 4. When two or more storage magazines are located on the same property, each magazine must comply with the minimum distances specified from inhabited buildings, railways, and highways, and in addition, they should be separated from each other by not less than the distances shown for "Separation of Magazines," except that the quantity of explosives contained in cap magazines shall govern in regard to the spacing of said cap magazines from magazines containing other explosives. If any two or more magazines are separated from each other by less than the specified "Separation of Magazines" distances, then such two or more magazines, as a group, must be considered as one magazine, and the total quantity of explosives stored in such group must be treated as if stored in a single magazine located on the site of any magazine of the group, and must comply with the minimum of distances specified from other magazines, inhabited buildings, railways, and highways.

NOTE 5. This table applies only to the manufacture and permanent storage of commercial explosives. It is not applicable to transportation of explosives, or any handling or temporary storage necessary or incident thereto. It is not intended to apply to bombs, projectiles, or other heavily encased explosives.

(vii) Except as provided in subdivision (viii) of this subparagraph, class II magazines shall be located in conformity with Table H–21, but may be permitted in warehouses and in wholesale and retail establishments when located on a floor which has an entrance at outside grade level and the magazine is located not more than 10 feet from such an entrance. Two class II magazines may be located in the same building when one is used only for blasting caps in quantities not in excess of 5,000 caps and a distance of 10 feet is maintained between magazines.

(viii) When used for temporary storage at a site for blasting operations, class II magazines shall be located away from neighboring inhabited buildings, railways, highways, and other magazines A distance of at least one hundred and fifty (150) feet shall be maintained between class II magazines and the work in progress when the quantity of explosives kept therein is in excess of 25 pounds, and at least 50 feet when the quantity of explosives is 25 pounds, or less.

(ix) This paragraph (c) does not apply to:

(*a*) Stocks of small arms ammunition, propellant-actuated power cartridges, small arms ammunition primers in quantities of less than 750,000, or of smokeless propellants in quantities less than 750 pounds;

(*b*) Explosive-actuated power devices when in quantities less than 50 pounds net weight of explosives;

(*c*) Fuse lighters and fuse igniters;

(*d*) Safety fuses other than cordeau detonant fuses.

(2) *Construction of magazines—general.* (i) Magazines shall be constructed in conformity with the provisions of this paragraph.

(ii) Magazines for the storage of explosives, other than black powder, Class B and Class C explosives shall be bullet resistant, weather resistant, fire resistant, and ventilated sufficiently to protect the explosive in the specific locality Magazines used only for storage of black powder, Class B and Class C explosives shall be weather resistant, fire-resistant, and have ventilation. Magazines for storage of blasting and electric blasting caps shall be weather resistant, fire-resistant, and ventilated.

(iii) Property upon which Class I magazines are located and property where Class II magazines are located outside of buildings shall be posted with signs reading "Explosives—Keep Off." Such signs shall be located so as to minimize the possibility of a bullet traveling in the direction of the magazine if anyone shoots at the sign.

(iv) Magazines requiring heat shall be heated by either hot-water radiant heating with the magazine building; or air directed into the magazine building over either hot water or low pressure steam (15 p.s.i.g.) coils located outside the magazine building.

(v) The magazine heating systems shall meet the following requirements:

(*a*) The radiant heating coils within the building shall be installed in such a manner that the explosives or explosives containers cannot contact the coils and air is free to circulate between the coils and the explosives or explosives containers.

(*b*) The heating ducts shall be installed in such a manner that the hot-air discharge from the duct is not directed against the explosives or explosives containers.

(*c*) The heating device used in connection with a magazine shall have controls which prevent the ambient building temperature from exceeding 130° F.

(*d*) The electric fan or pump used in the heating system for a magazine shall be mounted outside and separate from the wall of the magazine and shall be grounded.

(*e*) The electric fan motor and the controls for electrical heating devices used in heating water or steam shall have overloads and disconnects, which comply with subpart S of this part. All electrical switch gear shall be located a minimum distance of 25 feet from the magazine.

(*f*) The heating source for water or steam shall be separated from the magazine by a distance of not less than 25 feet when electrical and 50 feet when fuel fired. The area between the heating unit and the magazine shall be cleared of all combustible materials.

(*g*) The storage of explosives and explosives containers in the magazine shall allow uniform air circulation so product temperature uniformity can be maintained.

(vi) When lights are necessary inside the magazine, electric safety flashlight, or electric safety lanterns shall be used.

(3) *Construction of Class I magazines.* (i) Class I magazines shall be of masonry construction or of wood or of metal construction, or a combination of these types. Thickness of masonry units shall not be less than 8 inches. Hollow masonry units used in construction required to be bullet resistant shall have all hollow spaces filled with weak cement or well-tamped sand. Wood constructed walls, required to be bullet resistant, shall have at least a 6-inch space between interior and exterior sheathing and the space between sheathing shall be filled with well-tamped sand. Metal wall construction, when required to be bullet resistant, shall be lined with brick at least 4 inches in thickness or shall have at least a 6-inch sandfill between interior and exterior walls.

(ii) Floors and roofs of masonry magazines may be of wood construction. Wood floors shall be tongue and grooved lumber having a nominal thickness of 1 inch.

(iii) Roofs required to be bullet resistant shall be protected by a sand tray located at the line of eaves and covering the entire area except that necessary for ventilation. Sand in the sand tray shall be maintained at a depth of not less than 4 inches.

(iv) All wood at the exterior of magazines, including eaves, shall be protected by being covered with black or galvanized steel or aluminum metal of thickness of not less than No. 26 gage All nails exposed to the interior of magazines shall be well countersunk.

(v) Foundations for magazines shall be of substantial construction and arranged to provide good cross ventilation.

(vi) Magazines shall be ventilated sufficiently to prevent dampness and heating of stored explosives. Ventilating openings shall be screened to prevent the entrance of sparks.

(vii) Openings to magazines shall be restricted to that necessary for the placement and removal of stocks of explosives. Doors for openings in magazines for Class A explosives shall be bullet resistant. Doors for magazines not required to be bullet resistant shall be designed to prevent unauthorized entrance to the magazine.

(viii) Magazines shall be provided with substantial means for locking; locks shall be provided and magazine doors shall be kept locked, except during the time of placement and removal of stocks of explosives.

(ix) Provisions shall be made to prevent the piling of stocks of explosives directly against masonry walls, brick-lined or sand-filled metal walls and single-thickness metal walls; such protection, however, shall not interfere with proper ventilation at the interior of side and end walls.

(4) *Construction of Class II magazines.* (i) Class II magazines shall be of wood or metal construction, or a combination thereof.

(ii) Wood magazines of this class shall have sides, bottom, and cover constructed of 2-inch hardwood boards well braced at corners and protected by being entirely covered with sheet metal of not less than No. 20 gage. All nails exposed to the interior of the magazine shall be well countersunk. All metal magazines of this class shall have sides, bottom, and cover constructed of sheet metal, and shall be lined with three-eighths-inch plywood or equivalent. Edges of metal covers shall overlap sides at least 1 inch.

(iii) Covers for both wood- and metal-constructed magazines of this class shall be provided with substantial strap hinges and shall be provided with substantial means for locking Covers shall be kept locked except during the placement or removal of explosives.

(iv) Magazines of this class shall be painted red and shall bear lettering in white, on all sides and top, at least 3 inches high, "Explosives—Keep Fire Away." Class II magazines when located in warehouses, and in wholesale and retail establishments shall be provided with substantial wheels or casters to facilitate easy removal in the case of fire. Where necessary due to climatic conditions, Class II magazines shall be ventilated.

(5) *Storage within magazines.* (i) Packages of explosives shall be laid flat with top side up. Black powder when stored in magazines with other explosives shall be stored separately. Black powder stored in kegs shall be stored on ends, bungs down, or on side, seams down. Corresponding grades and brands shall be stored together in such a manner that brands and grade marks show. All stocks shall be stored so as to be easily counted and checked. Packages of explosives shall be piled in a stable manner. When any kind of explosive is removed from a magazine for use, the oldest explosive of that particular kind shall always be taken first.

(ii) Packages of explosives shall not be unpacked or repacked in a magazine nor within 50 feet of a magazine or in close proximity to other explosives. Tools used for opening packages of explosives shall be constructed of nonsparking materials, except that metal slitters may be used for opening fiberboard boxes. A wood wedge and a fiber, rubber, or wood mallet shall be used for opening or closing wood packages of explosives. Opened packages of explosives shall be securely closed before being returned to a magazine.

(iii) Magazines shall not be used for the storage of any metal tools nor any commodity except explosives, but this restriction shall not apply to the storage of blasting agents and blasting supplies.

(iv) Magazine floors shall be regularly swept, kept clean, dry, free of grit, paper, empty used packages, and rubbish. Brooms and other cleaning utensils shall not have any spark-producing metal parts. Sweepings from floors of magazines shall be properly disposed of. Magazine floors stained with nitroglycerin shall be cleaned according to instructions by the manufacturer.

(v) When any explosive has deteriorated to an extent that it is in an unstable or dangerous condition, or if nitroglycerin leaks from any explosives, then the person in possession of such explosive shall immediately proceed to destroy such explosive in accordance with the instructions of the manufacturer Only experienced persons shall be allowed to do the work of destroying explosives.

(vi) When magazines need inside repairs, all explosives shall be removed therefrom and the floors cleaned. In making outside repairs, if there is a possibility of causing sparks or fire the explosives shall be removed from the magazine. Explosives removed from a magazine under repair shall either be placed in another magazine or placed a safe distance from the magazine where they shall be properly guarded and protected until repairs have been completed, when they shall be returned to the magazine.

(vii) Smoking, matches, open flames, spark-producing devices, and firearms (except firearms carried by guards) shall not be permitted inside of or within 50 feet of magazines. The land surrounding a magazine shall be kept clear of all combustible materials for a distance of at least 25 feet. Combustible materials shall not be stored within 50 feet of magazines.

(viii) Magazines shall be in the charge of a competent person at all times who shall be at least 21 years of age and who shall be held responsible for the enforcement of all safety precautions.

(ix) Explosives recovered from blasting misfires shall be placed in a separate magazine until competent personnel has determined from the manufacturer the method of disposal. Caps recovered from blasting misfires shall not be reused. Such explosives and caps shall then be disposed of in the manner recommended by the manufacturer.

(d) *Transportation of explosives.*—(1) *General provisions.* (i) No employee shall be allowed to smoke, carry matches or any other flame-producing device, or carry any firearms or loaded cartridges while in or near a motor vehicle transporting explosives; or drive, load, or unload such vehicle in a careless or reckless manner.

(ii) Explosives shall not be carried or transported in or upon a public conveyance or vehicle carrying passengers for hire.

(iii) Explosives shall not be transferred from one vehicle to another within the confines of any jurisdiction (city, county, State, or other area) without informing the fire and police departments thereof. In the event of breakdown or collision the local fire and police departments shall be promptly notified to help safeguard such emergencies. Explosives shall be transferred from the disabled vehicle to another only, when proper and qualified supervision is provided.

(iv) Blasting caps or electric blasting caps shall not be transported over the highways on the same vehicles with other explosives.

(2) *Transportation vehicles.* (i) Vehicles used for transporting explosives shall be strong enough to carry the load without difficulty and be in good mechanical condition. If vehicles do not have a closed body, the body shall be covered with a flameproof and moisture-proof tarpaulin or other effective protection against moisture and sparks. All vehicles used for the transportation of explosives shall have tight floors and any exposed spark-producing metal on the inside of the body shall be covered with wood or other nonsparking materials to prevent contact with packages of explosives. Packages of explosives shall not be loaded above the sides of an open-body vehicle.

(ii) Every vehicle used for transporting explosives and oxidizing materials listed in (a) of this subdivision shall be marked as follows:

(a) Exterior markings or placards required on applicable vehicles shall be as follows for the various classes of commodities:

Commodity	Type of marking or placard
Explosives, Class A, any quantity or a combination of Class A and Class B explosives.	Explosives A (Red letters on white background).
Explosives, Class B, any quantity.	Explosives B (Red letters on white background).
Oxidizing material (blasting agents, ammonium nitrate, etc.), 1,000 pounds or more gross weight.	Oxidizers (Yellow letters on black background).

(b) Each marking or placard shall consist of letters not less than 4 inches high, in the color specified, using approximately a ¾-inch stroke. The placard must be larger than the lettering required thereon by at least 1 inch at the top and bottom sides. Such marking or placard described in subdivision (a) shall be contained in an area on the vehicle which has no other marking, lettering, or graphic display, for at least 3 inches in each direction.

(c) Such markings or placards shall be displayed at the front, rear, and on each side of the motor vehicle or trailer or other cargo carrying body while it contains explosives or other dangerous articles of such type and in such quantity as specified in (a) of this subdivision. The front marking or placard may be displayed on the front of either the truck, truck body, truck tractor or the trailer.

(d) Any motor vehicle, trailer, or other cargo-carrying body containing more than one kind of explosive as well as an oxidizing material requiring a placard under the provisions of subdivision (a), the aggregate gross weight of which totals 1,000 pounds or more, shall be marked or placarded "Dangerous" as well as "Explosive A" or "Explosive B" as appropriate. If explosives Class A and explosives Class B are loaded on the same vehicle, the "Explosives B" marking need not be displayed.

(e) In any combination of two or more vehicles containing explosives or other dangerous articles each vehicle shall be marked or placarded as to its contents and in accordance with (a) and (c) of this subdivision.

(iii) Each motor vehicle used for transporting explosives shall be equipped with a minimum of two extinguishers, each having a rating of at least 10-BC.

(a) Only extinguishers listed or approved by Underwriters' Laboratories, Inc., or the Factory Mutual Engineering Corp. shall be deemed suitable for use on explosives-carrying vehicles.

(b) Extinguishers shall be filled and ready for immediate use and located near the driver's seat. Extinguishers shall be examined periodically by a competent person.

(iv) A motor vehicle used for transporting explosives shall be given the following inspection to determine that it is in proper condition for safe transportation of explosives:

(a) Fire extinguishers shall be filled and in working order.

(b) All electrical wiring shall be completely protected and securely fastened to prevent short-circuiting.

(c) Chassis, motor, pan, and underside of body shall be reasonably clean and free of excess oil and grease.

(d) Fuel tank and feedline shall be secure and have no leaks.

(e) Brakes, lights, horn, windshield wipers, and steering apparatus shall function properly.

(f) Tires shall be checked for proper inflation and defects.

(g) The vehicle shall be in proper condition in every other respect and acceptable for handling explosives.

(3) *Operation of transportation vehicles.* (i) Vehicles transporting explosives shall only be driven by and be in the charge of a driver who is physically fit, careful, capable, reliable, able to read and write the English language, and not addicted to the use, or under the influence of intoxicants, narcotics, or other dangerous drugs, and not less than 21 years of age. He shall be familiar with the traffic regulations, State laws, and the provisions of this section.

(ii) Except under emergency conditions, no vehicle transporting explosives shall be parked before reaching its destination, even though attended, on any public street adjacent to or in proximity to any bridge, tunnel, dwelling, building, or place where people work, congregate, or assemble.

(iii) Every motor vehicle transporting any quantity of Class A or Class B explosives shall, at all times, be attended by a driver or other attendant of the motor carrier. This attendant shall have been made aware of the class of the explosive material in the vehicle and of its inherent dangers, and shall have been instructed in the measures and procedures to be followed in order to protect the public from those dangers. He shall have been made familiar with the vehicle he is assigned, and shall be trained, supplied with the necessary means, and authorized to move the vehicle when required.

(a) For the purpose of this subdivision, a motor vehicle shall be deemed "attended" only when the driver or other attendant is physically on or in the vehicle, or has the vehicle within his field of vision and can reach it quickly and without any kind of interference "attended" also means that the driver or attendant is awake, alert, and not engaged in other duties or activities which may divert his attention from the vehicle, except for necessary communication with public officers, or representatives of the carrier shipper, or consignee, or except for necessary absence from the vehicle to obtain food or to provide for his physical comfort.

(b) However, an explosive-laden vehicle may be left unattended if parked within a securely fenced or walled area with all gates or entrances locked where parking of such vehicle is otherwise permissible, or at a magazine site established solely for the purpose of storing explosives.

(iv) No spark-producing metal, spark-producing metal tools, oils, matches, firearms, electric storage batteries, flammable substances, acids, oxidizing materials, or corrosive compounds shall be carried in the body of any motor truck and/or vehicle transporting explosives, unless the loading of such dangerous articles and the explosives comply with U.S. Department of Transportation regulations.

(v) Vehicles transporting explosives shall avoid congested areas and heavy traffic. Where routes through congested areas have been designated by local authorities such routes shall be followed.

(vi) Delivery shall only be made to authorized persons and into authorized magazines or authorized temporary storage or handling areas.

(e) *Use of explosives and blasting agents.*—(1) *General provisions.* (i) While explosives are being handled or used, smoking shall not be permitted and no one near the explosives shall possess matches, open light or other fire or flame. No person shall be allowed to handle explosives while under the influence of intoxicating liquors, narcotics, or other dangerous drugs.

(ii) Original containers or Class II magazines shall be used for taking detonators and other explosives from storage magazines to the blasting area.

(iii) When blasting is done in congested areas or in close proximity to a structure, railway, or highway or any other installation that may be damaged, the blast shall be covered before firing with a mat constructed so that it is capable of preventing fragments from being thrown.

(iv) Persons authorized to prepare explosive charges or conduct blasting operations shall use every reasonable precaution, including but not limited to warning signals, flags, barricades, or woven wire mats to insure the safety of the general public and workmen.

(v) Blasting operations shall be conducted during daylight hours.

(vi) Whenever blasting is being conducted in the vicinity of gas, electric, water, fire alarm, telephone, telegraph, and steam utilities, the blaster shall notify the appropriate representatives of such utilities at least 24 hours in advance of blasting, specifying the location and intended time of such blasting. Verbal notice shall be confirmed with written notice.

(vii) Due precautions shall be taken to prevent accidental discharge of electric blasting caps from current induced by radar, radio transmitters, lightning, adjacent powerlines, dust storms, or other sources of extraneous electricity. These precautions shall include:

(a) The suspension of all blasting operations and removal of persons from the blasting area during the approach and progress of an electric storm.

(b) The posting of signs warning against the use of mobile radio transmitters on all roads within 350 feet of the blasting operations.

(2) *Storage at use sites.* (i) Empty boxes and paper and fiber packing materials which have previously contained high explosives shall not be used again for any purpose, but shall be destroyed by burning at an approved isolated location out of doors, and no person shall be nearer than 100 feet after the burning has started.

(ii) Containers of explosives shall not be opened in any magazine or within 50 feet of any magazine. In opening kegs or wooden cases, no sparking metal tools shall be used; wooden wedges and either wood, fiber or rubber mallets shall be used. Nonsparking metallic slitters may be used for opening fiberboard cases.

(iii) Explosives or blasting equipment that are obviously deteriorated or damaged shall not be used.

(iv) No explosives shall be abandoned.

(3) *Loading of explosives in blast holes.* (i) All drill holes shall be sufficiently large to admit freely the insertion of the cartridges of explosives.

(ii) Tamping shall be done only with wood rods without exposed metal parts, but nonsparking metal connectors may be used for jointed poles. Violent tamping shall be avoided. Primed cartridges shall not be tamped.

(iii) When loading blasting agents pneumatically over electric blasting caps, semiconductive delivery hose shall be used and the equipment shall be bonded and grounded.

(iv) No holes shall be loaded except those to be fired in the next round of blasting. After loading, all remaining explosives shall be immediately returned to an authorized magazine.

(v) Drilling shall not be started until all remaining butts of old holes are examined with a wooden stick for unexploded charges, and if any are found, they shall be refired before work proceeds.

(vi) No person shall be allowed to deepen drill holes which have contained explosives.

(vii) After loading for a blast is completed, all excess blasting caps or electric blasting caps and other explosives shall immediately be returned to their separate storage magazines.

(4) *Initiation of explosive charges.* (i) Only electric blasting caps shall be used for blasting operations in congested districts, or on highways, or adjacent to highways open to traffic, except where sources of extraneous electricity make such use dangerous.

(ii) When fuse is used, the blasting cap shall be securely attached to the safety fuse with a standard-ring type cap crimper. All primers shall be assembled at least 50 feet from any magazine.

(iii) Primers shall be made up only as required for each round of blasting.

(iv) No blasting cap shall be inserted in the explosives without first making a hole in the cartridge for the cap with a wooden punch of proper size or standard cap crimper.

(v) Explosives shall not be extracted from a hole that has once been charged or has misfired unless it is impossible to detonate the unexploded charge by insertion of a fresh additional primer.

(vi) If there are any misfires while using cap and fuse, all persons shall be required to remain away from the charge for at least 1 hour. If electric blasting caps are used and a misfire occurs, this waiting period may be reduced to 30 minutes. Misfires shall be handled under the direction of the person in charge of the blasting and all wires shall be carefully traced and search made for unexploded charges.

(vii) Blasters, when testing circuits to charged holes, shall use only blasting galvanometers designed for this purpose.

(viii) Only the employee making leading wire connections in electrical firing shall be allowed to fire the shot. Leading wires shall remain shorted and not be connected to the blasting machine or other source of current until the charge is to be fired.

(5) *Warning required.* Before a blast is fired, the employer shall require that a loud warning signal be given by the person in charge, who has made certain that all surplus explosives are in a safe place, all persons and vehicles are at a safe distance or under sufficient cover, and that an adequate warning has been given.

(f) *Explosives at piers, railway stations, and cars or vessels not otherwise specified in this standard.*—(1) *Railway cars.* Except in an emergency and with permission of the local authority, no person shall have or keep explosives in a railway car unless said car and contents and methods of loading are in accordance with the U.S. Department of Transportation Regulations for the Transportation of Explosives, 49 CFR Chapter I.

(2) *Packing and marking.* No person shall deliver any explosive to any carrier unless such explosive conforms in all respects, including marking and packing, to the U.S. Department of Transportation Regulations for the Transportation of Explosives.

(3) *Marking cars.* Every railway car containing explosives which has reached its designation, or is stopped in transit so as no longer to be in interstate commerce, shall have attached to both sides and ends of the car, cards with the words "Explosives—Handle Carefully—Keep Fire Away" in red letters at least 1½ inches high on a white background.

(4) *Storage.* Any explosives at a railway facility, truck terminal, pier, wharf harbor facility, or airport terminal whether for delivery to a consignee, or forwarded to some other destination shall be kept in a safe place, isolated as far as practicable and in such manner that they can be easily and quickly removed.

(5) *Hours of transfer.* Explosives shall not be delivered to or received from any railway station, truck terminal, pier, wharf, harbor facility, or airport terminal between the hours of sunset and sunrise.

(g) *Blasting agents.*—(1) *General.* Unless otherwise set forth in this paragraph, blasting agents, excluding water gels, shall be transported, stored, and used in the same manner as explosives. Water gels are covered in paragraph (h) of this section.

(2) *Fixed location mixing.* (i) Buildings or other facilities used for mixing blasting agents shall be located, with respect to inhabited buildings, passenger railroads, and public highways, in accordance with Table H-21. In determining the distance separating highways, railroads, and inhabited buildings from potential explosions (as prescribed in Table H-21), the sum of all masses which may propagate (i.e., lie at distances less than prescribed in Table H-22) from either individual or combined donor masses are included. However, when the ammonium nitrate must be included, only 50 percent of its weight shall be used because of its reduced blast effects.

(ii) Buildings used for the mixing of blasting agents shall conform to the requirements of this section.

(a) Buildings shall be of noncombustible construction or sheet metal on wood studs.

(b) Floors in a mixing plant shall be of concrete or of other nonabsorbent materials.

(c) All fuel oil storage facilities shall be separated from the mixing plant and located in such a manner that in case of tank rupture, the oil will drain away from the mixing plant building.

(d) The building shall be well ventilated.

(e) Heating units which do not depend on combustion processes, when properly designed and located, may be used in the building. All direct sources of heat shall be provided exclusively from units located outside the mixing building.

(f) All internal-combustion engines used for electric power generation shall be located outside the mixing plant building, or shall be properly ventilated and isolated by a firewall. The exhaust systems on all such engines shall be located so any spark emission cannot be a hazard to any materials in or adjacent to the plant.

(iii) Equipment used for mixing blasting agents shall conform to the requirements of this subdivision.

(a) The design of the mixer shall minimize the possibility of frictional heating, compaction, and especially confinement. All bearings and drive assemblies shall be mounted outside the mixer and protected against the accumulation of dust. All surfaces shall be accessible for cleaning.

(b) Mixing and packaging equipment shall be constructed of materials compatible with the fuel-ammonium nitrate composition.

(c) Suitable means shall be provided to prevent the flow of fuel oil to the mixer in case of fire. In gravity flow systems an automatic spring-loaded shutoff valve with fusible link shall be installed.

(iv) The provisions of this subdivision shall be considered when determining blasting agent compositions.

(a) The sensitivity of the blasting agent shall be determined by means of a No. 8 test blasting cap at regular intervals and after every change in formulation.

(b) Oxidizers of small particle size, such as crushed ammonium nitrate prills or fines, may be more sensitive than coarser products and shall, therefore, be handled with greater care.

(c) No hydrocarbon liquid fuel with flashpoint lower than that of No. 2 diesel fuel oil 125° F. minimum shall be used.

(d) Crude oil and crankcase oil shall not be used.

(e) Metal powders such as aluminum shall be kept dry and shall be stored in containers or bins which are moisture-resistant or weathertight. Solid fuels shall be used in such manner as to minimize dust explosion hazards.

(f) Peroxides and chlorates shall not be used.

(v) All electrical switches, controls, motors, and lights located in the mixing room shall conform to the requirements in subpart S of this part for Class II, Division 2 locations; otherwise they shall be located outside the mixing room. The frame of the mixer and all other equipment that may be used shall be electrically bonded and be provided with a continuous path to the ground.

(vi) Safety precautions at mixing plants shall include the requirements of this subdivision.

(a) Floors shall be constructed so as to eliminate floor drains and piping into which molten materials could flow and be confined in case of fire.

(b) The floors and equipment of the mixing and packaging room shall be cleaned regularly and thoroughly to prevent accumulation of oxidizers or fuels and other sensitizers.

(c) The entire mixing and packaging plant shall be cleaned regularly and thoroughly to prevent excessive accumulation of dust.

(d) Smoking, matches, open flames, spark-producing devices, and firearms (except firearms carried by guards) shall not be permitted inside of or within 50 feet of any building or facility used for the mixing of blasting agents.

(e) The land surrounding the mixing plant shall be kept clear of brush, dried grass, leaves, and other materials for a distance of at least 25 feet.

(f) Empty ammonium nitrate bags shall be disposed of daily in a safe manner.

(g) No welding shall be permitted or open flames used in or around the mixing or storage area of the plant unless the equipment or area has been completely washed down and all oxidizer material removed.

(h) Before welding or repairs to hollow shafts, all oxidizer material shall be removed from the outside and inside of the shaft and the shaft vented with a minimum one-half inch diameter opening.

(i) Explosives shall not be permitted inside of or within 50 feet of any building or facility used for the mixing of blasting agents.

(3) *Bulk delivery and mixing vehicles.* (i) The provisions of this subparagraph shall apply to off-highway private operations as well as to all public highway movements.

(ii) A bulk vehicle body for delivering and mixing blasting agents shall conform with the requirements of this subdivision (ii).

(a) The body shall be constructed of noncombustible materials.

(b) Vehicles used to transport bulk premixed blasting agents on public highways shall have closed bodies.

(c) All moving parts of the mixing system shall be designed as to prevent a heat buildup. Shafts or axles which contact the product shall have outboard bearings with 1-inch minimum clearance between the bearings and the outside of the product container. Particular attention shall be given to the clearances on all moving parts.

(d) A bulk delivery vehicle shall be strong enough to carry the load without difficulty and be in good mechanical condition.

(iii) Operation of bulk delivery vehicles shall conform to the requirements of this subdivision. These include the placarding requirements as specified by Department of Transportation.

(a) The operator shall be trained in the safe operation of the vehicle together with its mixing, conveying, and related equipment. The employer shall assure that the operator is familiar with the commodities being delivered and the general procedure for handling emergency situations.

(b) The hauling of either blasting caps or other explosives but not both, shall be permitted on bulk trucks provided that a special wood or nonferrous-lined container is installed for the explosives. Such blasting caps or other explosives shall be in DOT-specified shipping containers; see 49 CFR Chapter I.

(c) No person shall smoke, carry matches or any flame-producing device, or carry any firearms while in or about bulk vehicles effecting the mixing transfer or down-the-hole loading of blasting agents at or near the blasting site.

(d) Caution shall be exercised in the movement of the vehicle in the blasting area to avoid driving the vehicle over or dragging hoses over firing lines, cap wires, or explosive materials. The employer shall assure that the driver, in moving the vehicle, has assistance of a second person to guide his movements.

(e) No intransit mixing of materials shall be performed.

(iv) Pneumatic loading from bulk delivery vehicles into blastholes primed with electric blasting caps or other static-sensitive systems shall conform to the requirements of this subdivision.

(a) A positive grounding device shall be used to prevent the accumulation of static electricity.

(b) A discharge hose shall be used that has a resistance range that will prevent conducting stray currents, but that is conductive enough to bleed off static buildup.

(c) A qualified person shall evaluate all systems to determine if they will adequately dissipate static under potential field conditions.

(v) Repairs to bulk delivery vehicles shall conform to the requirements of this section.

(a) No welding or open flames shall be used on or around any part of the delivery equipment unless it has been completely washed down and all oxidizer material removed.

(b) Before welding or making repairs to hollow shafts, the shaft shall be thoroughly cleaned inside and out and vented with a minimum one-half-inch diameter opening.

(4) *Bulk storage bins.* (i) The bin, including supports, shall be constructed of compatible materials, waterproof, and adequately supported and braced to withstand the combination of all loads including impact forces arising from product movement within the bin and accidental vehicle contact with the support legs.

(ii) The bin discharge gate shall be designed to provide a closure tight enough to prevent leakage of the stored product. Provision shall also be made so that the gate can be locked.

(iii) Bin loading manways or access hatches shall be hinged or otherwise attached to the bin and be designed to permit locking.

(iv) Any electrically driven conveyors for loading or unloading bins shall conform to the requirements of Subpart S of this Part. They shall be designed to minimize damage from corrosion.

(v) Bins containing blasting agent shall be located, with respect to inhabited buildings, passenger railroads, and public highways, in accordance with Table H-21 and separation from other blasting agent storage and explosives storage shall be in conformity with Table H-22.

(vi) Bins containing ammonium nitrate shall be separated from blasting

agent storage and explosives storage in conformity with Table H-22.

TABLE H-22—TABLE OF RECOMMENDED SEPARATION DISTANCES OF AMMONIUM NITRATE AND BLASTING AGENTS FROM EXPLOSIVES OR BLASTING AGENTS [1] [2]

Donor weight		Minimum separation distance of receptor when barricaded [3] (ft.)		Minimum thickness of artificial barricades [4] (in.)
Pounds over	Pounds not over	Ammonium nitrate [5]	Blasting agent [6]	
	100	3	11	12
100	200	4	14	12
200	500	6	18	12
500	1,000	8	22	12
1,000	1,500	7	25	12
1,500	2,000	8	29	12
2,000	3,000	9	33	18
3,000	4,000	10	36	18
4,000	5,000	11	40	18
5,000	6,000	12	43	20
6,000	7,000	13	47	20
7,000	8,000	14	50	20
8,000	10,000	15	54	25
10,000	12,000	16	58	25
12,000	15,000	18	64	25
15,000	20,000	18	68	25
20,000	25,000	18	68	25
25,000	30,000	19	68	30
30,000	35,000	20	72	30
35,000	40,000	21	76	30
40,000	45,000	22	79	35
45,000	50,000	23	83	35
50,000	55,000	24	86	35
55,000	60,000	25	90	35
60,000	70,000	26	94	40
70,000	80,000	28	101	40
80,000	90,000	30	108	40
90,000	100,000	32	115	40
100,000	120,000	34	122	50
120,000	140,000	37	133	50
140,000	160,000	40	144	50
160,000	180,000	44	158	50
180,000	200,000	48	172	50
200,000	220,000	52	187	60
220,000	250,000	56	202	60
250,000	275,000	60	216	60
275,000	300,000	64	230	60

Notes to Table of Recommended Separation Distances of Ammonium Nitrate and Blasting Agents from Explosives or Blasting Agents:

NOTE 1. These distances apply to the separation of stores only. Table H-21 shall be used in determining separation distances from inhabited buildings, passenger railways, and public highways.

NOTE 2. When the ammonium nitrate and/or blasting agent is not barricaded, the distances shown in the table shall be multiplied by six. These distances allow for the possibility of high velocity metal fragments from mixers, hoppers, truck bodies, sheet metal structures, metal containers, and the like which may enclose the "donor". Where storage is in bullet-resistant magazines recommended for explosives or where the storage is protected by a bullet-resistant wall, distances, and barricade thicknesses in excess of those prescribed in Table H-21 are not required.

NOTE 3. The distances in the table apply to ammonium nitrate that passes the insensitivity test prescribed in the definition of ammonium nitrate fertilizer promulgated by the National Plant Food Institute*; and ammonium nitrate failing to pass said test shall be stored at separation distances determined by competent persons. (*Definition and Test Procedures for Ammonium Nitrate Fertilizer, National Plant Food Institute, November 1964.)

NOTE 4. These distances apply to nitrocarbo-nitrates and blasting agents which pass the insensitivity test prescribed in the D.S. Department of Transportation (DOT) regulations.

NOTE 5. Earth, or sand dikes, or enclosures filled with the prescribed minimum thickness of earth or sand are acceptable artificial barricades. Natural barricades, such as hills or timber of sufficient density that the surrounding exposures which require protection cannot be seen from the "donor" when the trees are bare of leaves, are also acceptable.

NOTE 6. When the ammonium nitrate must be counted in determining the distances to be maintained from inhabited buildings, passenger railways and public highways, it may be counted at one-half its actual weight because its blast effect is lower.

NOTE 7. Guide to use of table of recommended separation distances of ammonium nitrate and blasting agents from explosives or blasting agents.

(a) Sketch location of all potential donor and acceptor materials together with the maximum mass of material to be allowed in that vicinity. (Potential donors are high explosives, blasting agents, and combination of masses of detonating materials. Potential acceptors are high explosives, blasting agents, and ammonium nitrate.)

(b) Consider separately each donor mass in combination with each acceptor mass. If the masses are closer than table allowance (distances measured between nearest edges), the combination of masses becomes a new potential donor of weight equal to the total mass. When individual masses are considered as donors, distances to potential acceptors shall be measured between edges. When combined masses within propagating distance of each other are considered as a donor, the appropriate distance to the edge of potential acceptors shall be computed as a weighted distance from the combined masses.

Calculation of weighted distance from combined masses:

Let M_a, M_b . . . M_n be donor masses to be combined.

M_s is a potential acceptor mass.

D_{as} is distance from M_a to M_s (edge to edge).

D_{bs} is distance from M_b to M_s (edge to edge), etc.

To find weighted distance $[D_{(ab \ldots n)s}]$ from combined masses to M_s, add the products of the individual masses and distances and divide the total by the sum of the masses thus:

$$D_{(ab \ldots n)s} = \frac{M_a \times D_{as} + M_b \times D_{bs} \ldots + M_n \times D_{ns}}{M_a + M_b \ldots + M_n}$$

Propagation is possible if either an individual donor mass is less than the tabulated distance from an acceptor or a combined mass is less than the weighted distance from an acceptor.

(c) In determining the distances separating highways, railroads, and inhabited buildings from potential explosions (as prescribed in Table H-21), the sum of all masses which may propagate (i.e., lie at distances less than prescribed in the Table) from *either* individual or combined donor masses are included. However, when the ammonium nitrate must be included, only 50 percent of its weight shall be used because of its reduced blast effects. In applying Table H-21 to distances from highways, railroads, and inhabited buildings, distances are measured from the nearest edge of potentially explodable material as prescribed in Table H-21, Note 5.

(d) When all or part of a potential acceptor comprises Explosives Class A as defined in DOT regulations, storage in bullet-resistant magazines is required. Safe distances to stores in bullet-resistant magazines may be obtained from the intermagazine distances prescribed in Table H-21.

(e) Barricades must not have line-of-sight openings between potential donors and acceptors which permit blast or missiles to move directly between masses.

(f) Good housekeeping practices shall be maintained around any bin containing ammonium nitrate or blasting agent. This includes keeping weeds and other combustible materials cleared within 25 feet of such bin. Accumulation of spilled product on the ground shall be prevented.

(5) *Storage of blasting agents and supplies.* (i) Blasting agents and oxidizers used for mixing of blasting agents shall be stored in the manner set forth in this subdivision.

(a) Blasting agents or ammonium nitrate, when stored in conjunction with explosives, shall be stored in the manner set forth in paragraph (c) of this section for explosives. The mass of blasting agents and one-half the mass of ammonium nitrate shall be included when computing the total quantity of explosives for determining distance requirements.

(b) Blasting agents, when stored entirely separate from explosives, may be stored in the manner set forth in paragraph (c) of this section or in one-story warehouses (without basements) which shall be:

(1) Noncombustible or fire resistive;

(2) Constructed so as to eliminate open floor drains and piping into which molten materials could flow and be confined in case of fire;

(3) Weather resistant;

(4) Well ventilated; and

(5) Equipped with a strong door kept securely locked except when open for business.

(c) Semitrailer or full-trailer vans used for highway or onsite transportation of the blasting agents are satisfactory for temporarily storing these materials, provided they are located in accordance with Table H-21 with respect to inhabited buildings, passenger railways, and public highways and according to Table H-22 with respect to one another. Trailers shall be provided with substantial means for locking, and the trailer doors shall be kept locked, except during the time of placement and removal of stocks of blasting agents.

(ii) Warehouses used for the storage of blasting agents separate from explosives shall be located as set forth in this subdivision.

(a) Warehouses used for the storage of blasting agents shall be located in accordance with the provisions of Table H-21 with respect to inhabited buildings, passenger railways, and public highways, and according to Table H-22 with respect to one another.

(b) If both blasting agents and ammonium nitrate are handled or stored within the distance limitations prescribed through subparagraph (2) of this paragraph, one-half the mass of the ammonium nitrate shall be added to the mass of the blasting agent when computing the total quantity of explosives for determining the proper distance for compliance with Table H-21.

(iii) Smoking, matches, open flames, spark producing devices, and firearms are prohibited inside of or within 50 feet of any warehouse used for the storage of blasting agents. Combustible materials shall not be stored within 50 feet of warehouses used for the storage of blasting agents.

(iv) The interior of warehouses used for the storage of blasting agents shall be kept clean and free from debris and empty containers. Spilled materials shall be cleaned up promptly and safely removed. Combustible materials, flammable liquids, corrosive acids, chlorates, or nitrates shall not be stored in any warehouse used for blasting agents unless separated therefrom by a fire resistive separation of not less than 1 hour resistance. The provisions of this subdivision shall not prohibit the storage

of blasting agents together with non-explosive blasting supplies.

(v) Piles of ammonium nitrate and warehouses containing ammonium nitrate shall be adequately separated from readily combustible fuels.

(vi) Caked oxidizers, either in bags or in bulk, shall not be loosened by blasting.

(vii) Every warehouse used for the storage of blasting agents shall be under the supervision of a competent person who shall be not less than 21 years of age.

(6) *Transportation of packaged blasting agents.* (i) When blasting agents are transported in the same vehicle with explosives, all of the requirements of paragraph (d) of this section shall be complied with.

(ii) Vehicles transporting blasting agents shall only be driven by and be in charge of a driver of at least twenty-one (21) years of age who is capable, careful, reliable, and in possession of a valid motor vehicle operator's license. Such a person shall also be familiar with the States vehicle and traffic laws.

(iii) No matches, firearms, acids, or other corrosive liquids shall be carried in the bed or body of any vehicle containing blasting agents.

(iv) No person shall be permitted to ride upon, drive, load, or unload a vehicle containing blasting agents while smoking or under the influence of intoxicants, narcotics, or other dangerous drugs.

(v) It is prohibited for any person to transport or carry any blasting agents upon any public vehicle carrying passengers for hire.

(vi) Vehicles transporting blasting agents shall be in safe operating condition at all times.

(vii) When offering blasting agents for transportation on public highways the packaging, marking, and labeling of containers of blasting agents shall comply with the requirements of DOT.

(viii) Vehicles used for transporting blasting agents on public highways shall be placarded in accordance with DOT regulations.

(7) *Use of blasting agents.* Persons using blasting agents shall comply with all of the applicable provisions of paragraph (e) of this section.

(h) *Water gel (Slurry) explosives and blasting agents*—(1) *General provisions.* Unless otherwise set forth in this paragraph, water gels shall be transported, stored and used in the same manner as explosives or blasting agents in accordance with the classification of the product.

(2) *Types and classifications.* (i) Water gels containing a substance in itself classified as an explosive shall be classified as an explosive and manufactured, transported, stored, and used as specified for "explosives" in this section, except as noted in subdivision (iv) of this subparagraph.

(ii) Water gels containing no substance in itself classified as an explosive and which are cap-sensitive as defined in paragraph (a) of this section under Blasting Agent shall be classified as an explosive and manufactured, transported, stored and used as specified for "explosives" in this section.

(iii) Water gels containing no substance in itself classified as an explosive and which are not cap-sensitive as defined in paragraph (a) of this section under Blasting Agent shall be classified as blasting agents and manufactured, transported, stored, and used as specified for "blasting agents" in this section.

(iv) When tests on specific formulations of water gels result in Department of Transportation classification as a Class B explosive, bullet-resistant magazines are not required, see paragraph (c)(2)(ii) of this section.

(3) *Fixed location mixing.* (i)(a) Buildings or other facilities used for mixing water gels shall be located with respect to inhabited buildings, passenger railroads and public highways, in accordance with Table H-21.

(b) In determining the distances separating highways, railroads, and inhabited buildings from potential explosions (as prescribed in Table H-21), the sum of all masses that may propagate (i.e., lie at distances less than prescribed in Table H-22) from either individual or combined donor masses are included. However, when the ammonium nitrate must be included, only 50 percent of its weight shall be used because of its reduced blast effects.

(ii) Buildings used for the mixing of water gels shall conform to the requirements of this subdivision.

(a) Buildings shall be of noncombustible construction or sheet metal on wood studs.

(b) Floors in a mixing plant shall be of concrete or of other nonabsorbent materials.

(c) Where fuel oil is used all fuel oil storage facilities shall be separated from the mixing plant and located in such a manner that in case of tank rupture, the oil will drain away from the mixing plant building.

(d) The building shall be well ventilated.

(e) Heating units that do not depend on combustion processes, when properly designed and located, may be used in the building. All direct sources of heat shall be provided exclusively from units located outside of the mixing building.

(f) All internal-combustion engines used for electric power generation shall be located outside the mixing plant building, or shall be properly ventilated and isolated by a firewall. The exhaust systems on all such engines shall be located so any spark emission cannot be a hazard to any materials in or adjacent to the plant.

(iii) Ingredients of water gels shall conform to the requirements of this subdivision.

(a) Ingredients in themselves classified as Class A or Class B explosives shall be stored in conformity with paragraph (c) of this section.

(b) Nitrate-water solutions may be stored in tank cars, tank trucks, or fixed tanks without quantity or distance limitations. Spills or leaks which may contaminate combustible materials shall be cleaned up immediately.

(c) Metal powders such as aluminum shall be kept dry and shall be stored in containers or bins which are moisture-resistant or weathertight. Solid fuels shall be used in such manner as to minimize dust explosion hazards.

(d) Ingredients shall not be stored with incompatible materials.

(e) Peroxides and chlorates shall not be used.

(iv) Mixing equipment shall comply with the requirements of this subdivision.

(a) The design of the processing equipment, including mixing and conveying equipment, shall be compatible with the relative sensitivity of the materials being handled. Equipment shall be designed to minimize the possibility of frictional heating, compaction, overloading, and confinement.

(b) Both equipment and handling procedures shall be designed to prevent the introduction of foreign objects or materials.

(c) Mixers, pumps, valves, and related equipment shall be designed to permit regular and periodic flushing, cleaning, dismantling, and inspection.

(d) All electrical equipment including wiring, switches, controls, motors, and lights, shall conform to the requirements of Subpart S of this part.

(e) All electric motors and generators shall be provided with suitable overload protection devices. Electrical generators, motors, proportioning devices, and all other electrical enclosures shall be electrically bonded. The grounding conductor to all such electrical equipment shall be effectively bonded to the service-entrance ground connection and to all equipment ground connections in a manner so as to provide a continuous path to ground.

(v) Mixing facilities shall comply with the fire prevention requirements of this subdivision.

(a) The mixing, loading, and ingredient transfer areas where residues or spilled materials may accumulate shall be cleaned periodically. A cleaning and collection system for dangerous residues shall be provided.

(b) A daily visual inspection shall be made of mixing, conveying, and electrical equipment to establish that such equipment is in good operating condition. A program of systematic maintenance shall be conducted on regular schedule.

(c) Heaters which are not dependent on the combustion process within the heating unit may be used within the confines of processing buildings, or compartments, if provided with temperature and safety controls and located away from combustible materials and the finished product.

(4) *Bulk delivery and mixing vehicles.* (i) The design of vehicles shall comply with the requirements of this subdivision.

(a) Vehicles used over public highways for the bulk transportation of water gels or of ingredients classified as dangerous commodities, shall meet the requirements of th Department of Transportation and shall meet the requirements of paragraphs (d) and (g)(6) of this section.

(b) When electric power is supplied by a self-contained motor generator located on the vehicle the generator shall be at a point separate from where the water gel is discharged.

(c) The design of processing equipment and general requirements shall con-

form to subparagraphs (3) (iii) and (iv) of this paragraph.

(d) A positive action parking brake which will set the wheel brakes on at least one axle shall be provided on vehicles when equipped with air brakes and shall be used during bulk delivery operations. Wheel chocks shall supplement parking brakes whenever conditions may require.

(ii) Operation of bulk delivery and mixing vehicles shall comply with the requirements of this subdivision.

(a) The placarding requirements contained in DOT regulations apply to vehicles carrying water gel explosives or blasting agents.

(b) The operator shall be trained in the safe operation of the vehicle together with its mixing, conveying, and related equipment. He shall be familiar with the commodities being delivered and the general procedure for handling emergency situations.

(c) The hauling of either blasting caps or other explosives, but not both, shall be permitted on bulk trucks provided that a special wood or nonferrous-lined container is installed for the explosives. Such blasting caps or other explosives shall be in DOT-specified shipping containers; see 49 CFR Chapter I.

(d) No person shall be allowed to smoke, carry matches or any flame-producing device, or carry any firearms while in or about bulk vehicles effecting the mixing, transfer, or down-the-hole loading of water gels at or near the blasting site.

(e) Caution shall be exercised in the movement of the vehicle in the blasting area to avoid driving the vehicle over or dragging hoses over firing lines, cap wires, or explosive materials. The employer shall furnish the driver the assistance of a second person to guide the driver's movements.

(f) No intransit mixing of materials shall be performed.

(g) The location chosen for water gel or ingredient transfer from a support vehicle into the borehole loading vehicle shall be away from the blasthole site when the boreholes are loaded or in the process of being loaded.

(i) *Storage of ammonium nitrate*—(1) *Scope and definitions.* (i)(a) Except as provided in subdivision (d) of this subdivision this paragraph applies to the storage of ammonium nitrate in the form of crystals, flakes, grains, or prills including fertilizer grade, dynamite grade, nitrous oxide grade, technical grade, and other mixtures containing 60 percent or more ammonium nitrate by weight but does not apply to blasting agents.

(b) This paragraph does not apply to the transportation of ammonium nitrate.

(c) This paragraph does not apply to storage under the jurisdiction of and in compliance with the regulations of the U.S. Coast Guard (see 46 CFR Parts 146-149).

(d) The storage of ammonium nitrate and ammonium nitrate mixtures that are more sensitive than allowed by the "Definition of Test Procedures for Ammonium Nitrate Fertilizer" is prohibited.

(e) Nothing in this paragraph shall apply to the production of ammonium nitrate or to the storage of ammonium nitrate on the premises of the producing plant, provided that no distinct undue hazard to the public is created.

(ii) (a) The definition and test procedures for ammonium nitrate fertilizer are those found in the bulletin, "Definition and Test Procedures for Ammonium Nitrate Fertilizer", available from the National Plant Food Institute, 1700 K Street NW., Washington, DC 20006. This definition limits the contents of organic materials, metals, sulfur, etc., in a product that may be classified ammonium nitrate fertilizer.

(b) The standards for ammonium nitrate (nitrous oxide grade) are those found in the "Specifications, Properties, and Recommendations for Packaging, Transportation, Storage, and Use of Ammonium Nitrate", available from the Compressed Gas Association, Inc., 500 Fifth Avenue, New York, NY 10036.

(2) *General provisions.* (i) This paragraph applies to all persons storing, having, or keeping ammonium nitrate, and to the owner or lessee of any building, premises, or structure in which ammonium nitrate is stored in quantities of 1,000 pounds or more.

(ii) Approval of large quantity storage shall be subject to due consideration of the fire and explosion hazards, including exposure to toxic vapors from burning or decomposing ammonium nitrate.

(iii) (a) Storage buildings shall not have basements unless the basements are open on at least one side. Storage buildings shall not be over one story in height.

(b) Storage buildings shall have adequate ventilation or be of a construction that will be self-ventilating in the event of fire.

(c) The wall on the exposed side of a storage building within 50 feet of a combustible building, forest, piles of combustible materials and similar exposure hazards shall be of fire-resistive construction. In lieu of the fire-resistive wall, other suitable means of exposure protection such as a free standing wall may be used. The roof coverings shall be Class C or better, as defined in the Manual on Roof Coverings, NFPA 203M-1970.

(d) All flooring in storage and handling areas, shall be of noncombustible material or protected against impregnation by ammonium nitrate and shall be without open drains, traps, tunnels, pits, or pockets into which any molten ammonium nitrate could flow and be confined in the event of fire.

(e) The continued use of an existing storage building or structure not in strict conformity with this paragraph may be approved in cases where such continued use will not constitute a hazard to life or adjoining property.

(f) Buildings and structures shall be dry and free from water seepage through the roof, walls, and floors.

(3) *Storage of ammonium nitrate in bags, drums, or other containers.* (i) (a) Bags and containers used for ammonium nitrate must comply with specifications and standards required for use in interstate commerce (see 49 CFR Chapter I).

(b) Containers used on the premises in the actual manufacturing or processing need not comply with provisions of subdivision (a) of this subdivision.

(ii) (a) Containers of ammonium nitrate shall not be accepted for storage when the temperature of the ammonium nitrate exceeds 130° F.

(b) Bags of ammonium nitrate shall not be stored within 30 inches of the storage building walls and partitions.

(c) The height of piles shall not exceed 20 feet. The width of piles shall not exceed 20 feet and the length 50 feet except that where the building is of noncombustible construction or is protected by automatic sprinklers the length of piles shall not be limited. In no case shall the ammonium nitrate be stacked closer than 36 inches below the roof or supporting and spreader beams overhead.

(d) Aisles shall be provided to separate piles by a clear space of not less than 3 feet in width. At least one service or main aisle in the storage area shall be not less than 4 feet in width.

(4) *Storage of bulk ammonium nitrate.* (i) (a) Warehouses shall have adequate ventilation or be capable of adequate ventilation in case of fire.

(b) Unless constructed of noncombustible material or unless adequate facilities for fighting a roof fire are available, bulk storage structures shall not exceed a height of 40 feet.

(ii) (a) Bins shall be clean and free of materials which may contaminate ammonium nitrate.

(b) Due to the corrosive and reactive properties of ammonium nitrate, and to avoid contamination, galvanized iron, copper, lead, and zinc shall not be used in a bin construction unless suitably protected. Aluminum bins and wooden bins protected against impregnation by ammonium nitrate are permissible. The partitions dividing the ammonium nitrate storage from other products which would contaminate the ammonium nitrate shall be of tight construction.

(c) The ammonium nitrate storage bins or piles shall be clearly identified by signs reading "Ammonium Nitrate" with letters at least 2 inches high.

(iii) (a) Piles or bins shall be so sized and arranged that all material in the pile is moved out periodically in order to minimize possible caking of the stored ammonium nitrate.

(b) Height or depth of piles shall be limited by the pressure-setting tendency of the product. However, in no case shall the ammonium nitrate be piled higher at any point than 36 inches below the roof or supporting and spreader beams overhead.

(c) Ammonium nitrate shall not be accepted for storage when the temperature of the product exceeds 130° F.

(d) Dynamite, other explosives, and blasting agents shall not be used to break up or loosen caked ammonium nitrate.

(5) *Contaminants.* (i) (a) Ammonium nitrate shall be in a separate building or shall be separated by approved type fire-walls of not less than 1 hour fire-resistance rating from storage of organic chemicals, acids, or other corrosive materials, materials that may require blasting during processing or handling, compressed flammable gases, flammable and

combustible materials or other contaminating substances, including but not limited to animal fats, baled cotton, baled rags, baled scrap paper, bleaching powder, burlap or cotton bags, caustic soda, coal, coke, charcoal, cork, camphor, excelsior, fibers of any kind, fish oils, fish meal, foam rubber, hay, lubricating oil, linseed oil, or other oxidizable or drying oils, naphthalene, oakum, oiled clothing, oiled paper, oiled textiles, paint, straw, sawdust, wood shavings, or vegetable oils. Walls referred to in this subdivision need extend only to the underside of the roof.

(b) In lieu of separation walls, ammonium nitrate may be separated from the materials referred to in subdivision (a) of this subdivision by a space of at least 30 feet.

(c) Flammable liquids such as gasoline, kerosene, solvents, and light fuel oils shall not be stored on the premises except when such storage conforms to § 1910.106, and when walls and sills or curbs are provided in accordance with subdivisions (a) or (b) of this subdivision.

(d) LP-Gas shall not be stored on the premises except when such storage conforms to § 1910.110.

(ii) (a) Sulfur and finely divided metals shall not be stored in the same building with ammonium nitrate except when such storage conforms to paragraphs (a) through (h) of this section.

(b) Explosives and blasting agents shall not be stored in the same building with ammonium nitrate except on the premises of makers, distributors, and user-compounders of explosives or blasting agents.

(c) Where explosives or blasting agents are stored in separate buildings, other than on the premises of makers, distributors, and user-compounders of explosives or blasting agents, they shall be separated from the ammonium nitrate by the distances and/or barricades specified in Table H-22 of this subpart, but by not less than 50 feet.

(d) Storage and/or operations on the premises of makers, distributors, and user-compounders of explosives or blasting agents shall be in conformity with paragraphs (a) through (h) of this section.

(6) *General precautions.* (i) Electrical installations shall conform to the requirements of subpart S of this part, for ordinary locations. They shall be designed to minimize damage from corrosion.

(ii) In areas where lightning storms are prevalent, lightning protection shall be provided. (See the Lightning Protection Code, NFPA 78–1968.)

(iii) Provisions shall be made to prevent unauthorized personnel from entering the ammonium nitrate storage area.

(7) *Fire protection.* (i) Not more than 2,500 tons of bagged ammonium nitrate shall be stored in a building or structure not equipped with an automatic sprinkler system. Sprinkler systems shall be of approved type and installed in accordance with the Standard for the Installation of Sprinkler Systems, NFPA 13–1969.

(ii) (a) Suitable fire control devices such as small hose or portable extinguishers shall be provided throughout the warehouse and in the loading and unloading areas. See the Standard for the Installation of Portable Fire Extinguishers, NFPA 10–1970, and the Standard for the Installation of Standpipe and Hose Systems, NFPA 14–1970.

(b) Water supplies and fire hydrants shall be available in accordance with recognized good practices.

(j) *Small arms ammunition, small arms primers, and small arms propellants.*—(1) *Scope.* This paragraph does not apply to in-process storage and intraplant transportation during manufacture of small arms ammunition, small arms primers, and smokeless propellants.

(2) *Small arms ammunition.* (i) No quantity limitations are imposed on the storage of small arms ammunition in warehouses, retail stores, and other general occupancy facilities, except those imposed by limitations of storage facilities.

(ii) Small arms ammunition shall be separated from flammable liquids, flammable solids as classified in 49 CFR Part 172, and from oxidizing materials, by a fire-resistive wall of 1-hour rating or by a distance of 25 feet.

(iii) Small arms ammunition shall not be stored together with Class A or Class B explosives unless the storage facility is adequate for this latter storage.

(3) *Smokeless propellants.* (i) All smokeless propellants shall be stored in shipping containers specified in 49 CFR 173.93 for smokeless propellants.

(ii) Not more than 20 pounds of smokeless propellants, in containers of 1 pound maximum capacity, shall be displayed in commercial establishments.

(iii) Commercial stocks of smokeless propellants over 20 pounds and not more than 100 pounds shall be stored in portable wooden boxes having walls of at least 1 inch nominal thickness.

(iv) Commercial stocks in quantities not to exceed 750 pounds shall be stored in nonportable storage cabinets having wooden walls of at least 1 inch nominal thickness. Not more than 400 pounds shall be permitted in any one cabinet.

(v) Quantities in excess of 750 pounds shall be stored in magazines in accordance with paragraph (c) of this section.

(4) *Small arms ammunition primers.* (i) Small arms ammunition primers shall not be stored except in the original shipping container in accordance with the requirements of 49 CFR 173.107 for small arms ammunition primers.

(ii) Not more than 10,000 small arms ammunition primers may be displayed in commercial establishments.

(iii) Small arms ammunition primers shall be separated from flammable liquids, flammable solids as classified in 49 CFR Part 172, and oxidizing materials by a fire-resistive wall of 1-hour rating or by a distance of 25 feet.

(iv) Not more than 750,000 small arms ammunition primers shall be stored in any one building, except as provided in subdivision (v) of this subparagraph. Not more than 100,000 shall be stored in any one pile. Piles shall be at least 15 feet apart.

(v) Quantities of small arms ammunition primers in excess of 750,000 shall be stored in magazines in accordance with paragraph (c) of this section.

(k) *Scope.* This section applies to the manufacture, keeping, having, storage, sale, transportation, and use of explosives, blasting agents, and pyrotechnics. This section does not apply to the sale and use (public display) of pyrotechnics, commonly known as fireworks, nor to the use of explosives in the form prescribed by the official U.S. Pharmacopeia.

§ 1910.110 Storage and handling of liquefied petroleum gases.

(a) *Definitions applicable to this section.* As used in this section:

(1) API–ASME container—A container constructed in accordance with the requirements of paragraph (b)(3)(iii) of this section.

(2) ASME container—A container constructed in accordance with the requirements of paragraph (b)(3)(i) of this section.

(3) Container assembly—An assembly consisting essentially of the container and fittings for all container openings, including shutoff valves, excess flow valves, liquid-level gaging devices, safety relief devices, and protective housing.

(4) Containers—All vessels, such as tanks, cylinders, or drums, used for transportation or storing liquefied petroleum gases.

(5) DOT—Department of Transportation.

(6) DOT container—A container constructed in accordance with the applicable requirements of 49 CFR Chapter I.

(7) "Liquified petroleum gases"—"LPG" and "LP-Gas"—Any material which is composed predominantly of any of the following hydrocarbons, or mixtures of them; propane, propylene, butanes (normal butane or iso-butane), and butylenes.

(8) Movable fuel storage tenders or farm carts—Containers not in excess of 1,200 gallons water capacity, equipped with wheels to be towed from one location of usage to another. They are basically nonhighway vehicles, but may occasionally be moved over public roads or highways. They are used as a fuel supply for farm tractors, construction machinery and similar equipment.

(9) P.S.I.G.—pounds per square inch gauge.

(10) P.S.I.A.—pounds per square inch absolute.

(11) Systems—an assembly of equipment consisting essentially of the container or containers, major devices such as vaporizers, safety relief valves, excess flow valves, regulators, and piping connecting such parts.

(12) Vaporizer-burner—an integral vaporizer-burner unit, dependent upon the heat generated by the burner as the source of heat to vaporize the liquid used for dehydrators or dryers.

(13) Ventilation, adequate—when specified for the prevention of fire during normal operation, ventilation shall be considered adequate when the concentration of the gas in a gas-air mixture does not exceed 25 percent of the lower flammable limit.

(14) Approved—unless otherwise indicated, listing or approval by the following nationally recognized testing laboratories: Underwriters' Laboratories, Inc.; Factual Mutual Engineering Corp.

(15) Listed—see "approved" in § 1910.110(14).

(16) DOT Specifications—regulations of the Department of Transportation published in 49 CFR Chapter I.

(17) DOT regulations—see § 1910.110(a)(16).

(18) DOT requirements—see § 1910.110(a)(16).

(19) DOT cylinders—cylinders meeting the requirements of 49 CFR Chapter I.

(b) *Basic rules.*—(1) *Odorizing gases.* (i) All liquefied petroleum gases shall be effectively odorized by an approved agent of such character as to indicate positively, by distinct odor, the presence of gas down to concentration in air of not over one-fifth the lower limit of flammability. Odorization, however, is not required if harmful in the use of further processing of the liquefied petroleum gas, or if odorization will serve no useful purpose as a warning agent in such use or further processing.

(ii) The odorization requirement of subdivision (i) of this subparagraph shall be considered to be met by the use of 1.0 pounds of ethyl mercaptan, 1.0 pounds of thiophane or 1.4 pounds of amyl mercaptan per 10,000 gallons of LP-Gas. However, this listing of odorants and quantities shall not exclude the use of other odorants that meet the odorization requirements of subdivision (i) of this subparagraph.

(2) *Approval of equipment and systems.* (i) Each system utilizing DOT containers in accordance with 49 CFR Part 178 shall have its container valves, connectors, manifold valve assemblies, and regulators approved.

(ii) Each system for domestic or commercial use utilizing containers of 2,000 gallons or less water capacity, other than those constructed in accordance with 49 CFR Part 178, shall consist of a container assembly and one or more regulators, and may include other parts. The system as a unit or the container assembly as a unit, and the regulator or regulators, shall be individually listed.

(iii) In systems utilizing containers of over 2,000 gallons water capacity, each regulator, container valve, excess flow valve, gaging device, and relief valve installed on or at the container, shall have its correctness as to design, construction, and performance determined by listing by Underwriters' Laboratories, Inc., or Factory Mutual Engineering Corp.

(3) *Requirements for construction and original test of containers.* (i) Containers used with systems embodied in paragraphs (d), (e), (g), and (h) of this section, except as provided in paragraphs (e)(3)(iii) and (g)(2)(i) of this section, shall be designed, constructed, and tested in accordance with the Rules for Construction of Unfired Pressure Vessels, section VIII, Division 1, American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, 1968 edition.

(ii) Containers constructed according to the 1949 and earlier editions of the ASME Code do not have to comply with paragraphs U–2 through U–10 and U–19 thereof. Containers constructed according to paragraph U–70 in the 1949 and earlier editions are not authorized.

(iii) Containers designed, constructed, and tested prior to July 1, 1961, according to the Code for Unfired Pressure Vessels for Petroleum Liquids and Gases, 1951 edition with 1954 Addenda, of the American Petroleum Institute and the American Society of Mechanical Engineers shall be considered in conformance. Containers constructed according to API–ASME Code do not have to comply with section I or with appendix to section I. Paragraphs W–601 to W–606 inclusive in the 1943 and earlier editions do not apply.

(iv) The provisions of subdivision (i) of this subparagraph shall not be construed as prohibiting the continued use or reinstallation of containers constructed and maintained in accordance with the standard for the Storage and Handling of Liquefied Petroleum Gases NFPA No. 58 in effect at the time of fabrication.

(v) Containers used with systems embodied in paragraph (b), (d)(3)(iii), and (f) of this section, shall be constructed, tested, and stamped in accordance with DOT specifications effective at the date of their manufacture.

(4) *Welding of containers.* (i) Welding to the shell, head, or any other part of the container subject to internal pressure, shall be done in compliance with the code under which the tank was fabricated. Other welding is permitted only on saddle plates, lugs, or brackets attached to the container by the tank manufacturer.

(ii) Where repair or modification involving welding of DOT containers is required, the container shall be returned to a qualified manufacturer making containers of the same type and the repair or modification made in compliance with DOT regulations.

(5) *Markings on containers.* (i) Each container covered in subparagraph (3) (i) of this paragraph, except as provided in subparagraph (3)(iv) of this paragraph shall be marked as specified in the following:

(a) With a marking identifying compliance with, and other markings required by, the rules of the reference under which the container is constructed; or with the stamp and other markings required by the National Board of Boiler and Pressure Vessel Inspectors.

(b) With notation as to whether the container is designed for underground or aboveground installation or both. If intended for both and different style hoods are provided, the marking shall indicate the proper hood for each type of installation.

(c) With the name and address of the supplier of the container, or with the trade name of the container.

(d) With the water capacity of the container in pounds or gallons, U.S. Standard.

(e) With the pressure in p.s.i.g., for which the container is designed.

(f) With the wording "This container shall not contain a product having a vapor pressure in excess of — p.s.i.g. at 100° F.," see subparagraph (14)(viii) of this paragraph.

(g) With the tare weight in pounds or other identified unit of weight for containers with a water capacity of 300 pounds or less.

(h) With marking indicating the maximum level to which the container may be filled with liquid at temperatures between 20° F. and 130° F., except on containers provided with fixed maximum level indicators or which are filled by weighing. Markings shall be increments of not more than 20° F. This marking may be located on the liquid level gaging device.

(i) With the outside surface area in square feet.

(ii) Markings specified shall be on a metal nameplate attached to the container and located in such a manner as to remain visible after the container is installed.

(iii) When LP-Gas and one or more other gases are stored or used in the same area, the containers shall be marked to identify their content. Marking shall be in compliance with American National Standard Z48.1–1954, "Method of Marking Portable Compressed Gas Containers To Identify the Material Contained."

(6) *Location of containers and regulating equipment.* (i) Containers, and first stage regulating equipment if used, shall be located outside of buildings, except under one or more of the following:

(a) In buildings used exclusively for container charging, vaporization pressure reduction, gas mixing, gas manufacturing, or distribution.

(b) When portable use is necessary and in accordance with paragraph (c)(5) of this section.

(c) LP-Gas fueled stationary or portable engines in accordance with paragraph (e)(11) or (12) of this section.

(d) LP-Gas fueled industrial trucks used in accordance with paragraph (e)(13) of this section.

(e) LP-Gas fueled vehicles garaged in accordance with paragraph (e)(14) of this section.

(f) Containers awaiting use or resale when stored in accordance with paragraph (f) of this section.

(ii) Each individual container shall be located with respect to the nearest important building or group of buildings or line of adjoining property which may be built on in accordance with Table H–23.

TABLE H–23

Water capacity per container	Minimum distance: Containers: Underground	Minimum distance: Containers: Aboveground	Minimum distance: Between aboveground containers
Less than 125 gals.[1]	10 feet	None	None.
125 to 250 gallons	10 feet	10 feet	None.
251 to 500 gallons	10 feet	10 feet	3 feet.
501 to 2,000 gallons	25 feet	25 feet	5 feet.
2,001 to 30,000 gallons	50 feet	50 feet	5 feet.
30,001 to 70,000 gallons	50 feet	75 feet	¼ of sum of diameters of adjacent containers.
70,001 to 90,000 gallons	50 feet	100 feet	

[1] If the aggregate water capacity of a multi-container installation at a consumer site is 500 gallons or greater, the minimum distance shall comply with the appropriate portion of this table, applying the aggregate capacity rather than the capacity per container. If more than one installation is made, each installation shall be separated from another installation by at least 25 feet. The not apply the MINIMUM DISTANCES BETWEEN ABOVEGROUND CONTAINERS in such installations.

[2] NOTE: The above distance requirements may be reduced to not less than 10 feet for a single container of 1,200 gallons water capacity or less, providing such a container is at least 25 feet from any other LP-Gas container of more than 125 gallons water capacity.

(iii) Containers installed for use shall not be stacked one above the other.

(iv) In industrial installations involving containers of 180,000 gallons aggregate water capacity or more, where serious mutual exposures between the container and adjacent properties prevail, firewalls or other means of special protection designed and constructed in accordance with good engineering practices are required.

(v) In the case of buildings devoted exclusively to gas manufacturing and distributing operations, the distances required by Table H–23 may be reduced provided that in no case shall containers of water capacity exceeding 500 gallons be located closer than 10 feet to such gas manufacturing and distributing buildings.

(vi) Readily ignitible material such as weeds and long dry grass shall be removed within 10 feet of any container.

(vii) The minimum separation between liquefied petroleum gas containers and flammable liquid tanks shall be 20 feet, and the minimum separation between a container and the centerline of the dike shall be 10 feet. The foregoing provision shall not apply when LP-Gas containers of 125 gallons or less capacity are installed adjacent to Class III flammable liquid tanks of 275 gallons or less capacity.

(viii) Suitable means shall be taken to prevent the accumulation of flammable liquids under adjacent liquefied petroleum gas containers, such as by diking, diversion curbs, or grading.

(ix) When dikes are used with flammable liquid tanks, no liquefied petroleum gas containers shall be located within the diked area.

(7) *Container valves and container accessories.* (i) Valves, fittings, and accessories connected directly to the container including primary shutoff valves, shall have a rated working pressure of at least 250 p.s.i.g., and shall be of material and design suitable for LP-Gas service. Cast iron shall not be used for container valves, fittings, and accessories. This does not prohibit the use of container valves made of malleable or nodular iron.

(ii) Connections to containers, except safety relief connections, liquid level gaging devices, and plugged openings, shall have shutoff valves located as close to the container as practicable.

(iii) Excess flow valves, where required shall close automatically at the rated flows of vapor or liquid as specified by the manufacturer. The connections or line including valves, fittings, etc., being protected by an excess flow valve shall have a greater capacity than the rated flow of the excess flow valve.

(iv) Liquid level gaging devices which are so constructed that outward flow of container contents shall not exceed that passed by a No. 54 drill size opening, need not be equipped with excess flow valves.

(v) Openings from container or through fittings attached directly on container to which pressure gage connection is made, need not be equipped with shutoff or excess flow valves if such openings are restricted to not larger than No. 54 drill size opening.

(vi) Except as provided in paragraph (e)(5)(i)(b) of this section, excess flow and back pressure check valves where required by this section shall be located inside of the container or at a point outside where the line enters the container; in the latter case, installation shall be made in such manner that any undue strain beyond the excess flow or back pressure check valve will not cause breakage between the container and such valve.

(vii) Excess flow valves shall be designed with a bypass, not to exceed a No. 60 drill size opening to allow equalization of pressures.

(viii) Containers of more than 30 gallons water capacity and less than 2,000 gallons water capacity, filled on a volumetric basis, and manufactured after December 1, 1963, shall be equipped for filling into the vapor space.

(8) *Piping—including pipe, tubing, and fittings.* (i) Pipe, except as provided in paragraphs (e)(6)(i) and (g)(10)(iii), of this section shall be wrought iron or steel (black or galvanized), brass, copper, or aluminum alloy. Aluminum alloy pipe shall be at least Schedule 40 in accordance with the specifications for Aluminum Alloy Pipe, American National Standards Institute (ANSI) H38.-7–1969 (ASTM B241–69), except that the use of alloy 5456 is prohibited and shall be suitably marked at each end of each length indicating compliance with American National Standard Institute Specifications. Aluminum Alloy pipe shall be protected against external corrosion when it is in contact with dissimilar metals other than galvanized steel, or its location is subject to repeated wetting by such liquids as water (except rain water), detergents, sewage, or leaking from other piping, or it passes through flooring, plaster, masonry, or insulation. Galvanized sheet steel or pipe, galvanized inside and out, may be considered suitable protection. The maximum nominal pipe size for aluminum pipe shall be three-fourths inch and shall not be used for pressures exceeding 20 p.s.i.g. Aluminum alloy pipe shall not be installed within 6 inches of the ground.

(a) Vapor piping with operating pressures not exceeding 125 p.s.i.g. shall be suitable for a working pressure of at least 125 p.s.i.g. Pipe shall be at least Schedule 40 (ASTM A–53–69, Grade B Electric Resistance Welded and Electric Flash Welded Pipe or equal).

(b) Vapor piping with operating pressures over 125 p.s.i.g. and all liquid piping shall be suitable for a working pressure of at least 250 p.s.i.g. Pipe shall be at least Schedule 80 if joints are threaded or threaded and back welded. At least Schedule 40 (ASTM A–53–69 Grade B Electric Resistance Welded and Electric Flash Welded Pipe or equal) shall be used if joints are welded, or welded and flanged.

(ii) Tubing shall be seamless and of copper, brass, steel, or aluminum alloy. Copper tubing shall be of type K or L or equivalent as covered in the Specification for Seamless Copper Water Tube, ANSI H23.1–1970 (ASTM B88–69). Aluminum alloy tubing shall be of Type A or B or equivalent as covered in Specification ASTM B210–68 and shall be suitably marked every 18 inches indicating compliance with ASTM Specifications. The minimum nominal wall thickness of copper tubing and aluminum alloy tubing shall be as specified in Table H–24 and Table H–25.

Aluminum alloy tubing shall be protected against external corrosion when it is in contact with dissimilar metals other than galvanized steel, or its location is subject to repeated wetting by liquids such as water (except rainwater), detergents, sewage, or leakage from other piping, or it passes through flooring, plaster, masonry, or insulation. Galvanized sheet steel or pipe, galvanized inside and out, may be considered suitable protection. The maximum outside diameter for aluminum alloy tubing shall be three-fourths inch and shall not be used for pressures exceeding 20 p.s.i.g. Aluminum alloy tubing shall not be installed within 6 inches of the ground.

(iii) In systems where the gas in liquid form without pressure reduction enters the building, only heavy walled seamless brass or copper tubing with an internal diameter not greater than three thirty-seconds inch, and a wall thickness of not less than three sixty-fourths inch shall be used. This requirement shall not apply to research and experimental laboratories, buildings, or separate fire divisions of buildings used exclusively for housing internal combustion engines, and to commercial gas plants or bulk stations where containers are charged, nor to industrial vaporizer buildings, nor to buildings, structures, or equipment under construction or undergoing major renovation.

(iv) Pipe joints may be screwed, flanged, welded, soldered, or brazed with a material having a melting point exceeding 1,000° F. Joints on seamless copper, brass, steel, or aluminum alloy gas tubing shall be made by means of approved gas tubing fittings, or soldered or brazed with a material having a melting point exceeding 1,000° F.

TABLE H–24—WALL THICKNESS OF COPPER TUBING [1]

NOTE: The standard size by which tube is designated is ⅛-inch smaller than its nominal outside diameter.

Standard size (inches)	Nominal O.D. (inches)	Nominal wall thickness (inches)	
		Type K	Type L
¼	0.375	0.035	0.030
⅜	0.500	0.049	0.035
½	0.625	0.049	0.040
¾	0.750	0.049	0.042
1	0.875	0.065	0.045
1¼	1.125	0.065	0.050
1½	1.375	0.065	0.055
2	1.625	0.072	0.060
2½	2.125	0.083	0.070

[1] Based on data in Specification for Seamless Copper Water Tube, ANSI H23.1–1970 (ASTM B–88–69).

TABLE H–25—WALL THICKNESS OF ALUMINUM ALLOY TUBING [1]

Outside diameter (inches)	Nominal wall thickness (inches)	
	Type A	Type B
¼	0.035	0.049
⅜	0.035	0.049
½	0.042	0.049
¾	0.049	0.058

[1] Based on data in Standard Specification for Aluminum-Alloy Drawn Seamless Coiled Tubes for Special Purpose Applications, ASTM B210–68.

(v) For operating pressures of 125 p.s.i.g. or less, fittings shall be designed for a pressure of at least 125 p.s.i.g. For operating pressures above 125 p.s.i.g., fittings shall be designed for a minimum of 250 p.s.i.g.

(vi) The use of threaded cast iron pipe fittings such as ells, tees, crosses, couplings, and unions is prohibited. Aluminum alloy fittings shall be used with aluminum alloy pipe and tubing. Insulated fittings shall be used where aluminum alloy pipe or tubing connects with a dissimilar metal.

(vii) Strainers, regulators, meters, compressors, pumps, etc., are not to be considered as pipe fittings. This does not prohibit the use of malleable, nodular, or higher strength gray iron for such equipment.

(viii) All materials such as valve seats, packing, gaskets, diaphragms, etc., shall be of such quality as to be resistant to the action of liquified petroleum gas under the service conditions to which they are subjected.

(ix) All piping, tubing, or hose shall be tested after assembly and proved free from leaks at not less than normal operating pressures. After installation, piping and tubing of all domestic and commercial systems shall be tested and proved free of leaks using a manometer or equivalent device that will indicate a drop in pressure. Test shall not be made with a flame.

(x) Provision shall be made to compensate for expansion, contraction, jarring, and vibration, and for settling. This may be accomplished by flexible connections.

(xi) Piping outside buildings may be buried, above ground, or both, but shall be well supported and protected against physical damage. Where soil conditions warrant, all piping shall be protected against corrosion. Where condensation may occur, the piping shall be pitched back to the container, or suitable means shall be provided for revaporization of the condensate.

(9) *Hose specifications.* (i) Hose shall be fabricated of materials that are resistant to the action of LP-Gas in the liquid and vapor phases. If wire braid is used for reinforcing the hose, it shall be of corrosion-resistant material such as stainless steel.

(ii) Hose subject to container pressure shall be marked "LP-Gas" or "LPG" at not greater than 10-foot intervals.

(iii) Hose subject to container pressure shall be designed for a bursting pressure of not less than 1,250 p.s.i.g.

(iv) Hose subject to container pressure shall have its correctness as to design construction and performance determined by being listed (see § 1910.110 (a)(15)).

(v) Hose connections subject to container pressure shall be capable of withstanding, without leakage, a test pressure of not less than 500 p.s.i.g.

(vi) Hose and hose connections on the low-pressure side of the regulator or reducing valve shall be designed for a bursting pressure of not less than 125 p.s.i.g. or five times the set pressure of the relief devices protecting that portion of the system, whichever is higher.

(vii) Hose may be used on the low-pressure side of regulators to connect to other than domestic and commercial gas appliances under the following conditions:

(a) The appliances connected with hose shall be portable and need a flexible connection.

(b) For use inside buildings the hose shall be of minimum practical length, but shall not exceed 6 feet except as provided in paragraph (c)(5)(i)(g) of this section and shall not extend from one room to another, nor pass through any walls, partitions, ceilings, or floors. Such hose shall not be concealed from view or used in a concealed location. For use outside of buildings, the hose may exceed this length but shall be kept as short as practical.

(c) The hose shall be approved and shall not be used where it is likely to be subjected to temperatures above 125° F. The hose shall be securely connected to the appliance and the use of rubber slip ends shall not be permitted.

(d) The shutoff valve for an appliance connected by hose shall be in the metal pipe or tubing and not at the appliance end of the hose. When shutoff valves are installed close to each other, precautions shall be taken to prevent operation of the wrong valve.

(e) Hose used for connecting to wall outlets shall be protected from physical damage.

(10) *Safety devices.* (i) Every container except those constructed in accordance with DOT specifications and every vaporizer (except motor fuel vaporizers and except vaporizers described in subparagraph (11)(ii)(c) of this paragraph and paragraph (d)(4)(v)

(a) of this section) whether heated by artificial means or not, shall be provided with one or more safety relief valves of spring-loaded or equivalent type. These valves shall be arranged to afford free vent to the outer air with discharge not less than 5 feet horizontally away from any opening into the building which is below such discharge. The rate of discharge shall be in accordance with the requirements of subdivision (ii) of this subparagraph or subdivision (iii) of this subparagraph in the case of vaporizers.

(ii) Minimum required rate of discharge in cubic feet per minute of air at 120 percent of the maximum permitted start to discharge pressure for safety relief valves to be used on containers other than those constructed in accordance with DOT specification shall be as follows:

Surface area (sq. ft.)	*Flow rate CFM air*
20 or less	626
25	751
30	872
35	990
40	1,100
45	1,220
50	1,330
55	1,430
60	1,540
65	1,640
70	1,750
75	1,850
80	1,950
85	2,050
90	2,150
95	2,240
100	2,340
105	2,440
110	2,530
115	2,630
120	2,720
125	2,810
130	2,900
135	2,990
140	3,080
145	3,170
150	3,260
155	3,350
160	3,440
165	3,530
170	3,620
175	3,700
180	3,790
185	3,880
190	3,960
195	4,050
200	4,130
210	4,300
220	4,470
230	4,630
240	4,800
250	4,960
260	5,130
270	5,290
280	5,450
290	5,610
300	5,760
310	5,920
320	6,080
330	6,230
340	6,390
350	6,540
360	6,690
370	6,840
380	7,000
390	7,150
400	7,300
450	8,040
500	8,760
550	9,470
600	10,170
650	10,860
700	11,550
750	12,220
800	12,880
850	13,540
900	14,190
950	14,830
1,000	15,470
1,050	16,100
1,100	16,720
1,150	17,350
1,200	17,960
1,250	18,570
1,300	19,180
1,350	19,780
1,400	20,380
1,450	20,960
1,500	21,570
1,550	22,160
1,600	22,740
1,650	23,320
1,700	23,900
1,750	24,470
1,800	25,050
1,850	25,620
1,900	26,180
1,950	26,750
2,000	27,310

Surface area = total outside surface area of container in square feet.

When the surface area is not stamped on the nameplate or when the marking is not legible, the area can be calculated by using one of the following formulas:

(1) Cylindrical container with hemispherical heads:

Area = Overall length × outside diameter × 3.1416.

(2) Cylindrical container with other than hemispherical heads:

Area = (Overall length + 0.3 outside diameter) × outside diameter × 3.1416.

NOTE: This formula is not exact, but will give results within the limits of practical

accuracy for the sole purpose of sizing relief valves.

(3) Spherical container:

Area = Outside diameter squared × 3.1416.

Flow Rate-CFM Air = Required flow capacity in cubic feet per minute of air at standard conditions, 60 F. and atmospheric pressure (14.7 p.s.i.a.).

The rate of discharge may be interpolated for intermediate values of surface area. For containers with total outside surface area greater than 2,000 square feet, the required flow rate can be calculated using the formula, Flow Rate-CFM Air = $53.632\ A^{0.82}$.

A = total outside surface area of the container in square feet.

Valves not marked "Air" have flow rate marking in cubic feet per minute of liquefied petroleum gas. These can be converted to ratings in cubic feet per minute of air by multiplying the liquefied petroleum gas ratings by factors listed below. Air flow ratings can be converted to ratings in cubic feet per minute of liquefied petroleum gas by dividing the air ratings by the factors listed below.

AIR CONVERSION FACTORS

Container type	100	125	150	175	200
Air conversion factor	1.167	1.142	1.113	1.078	1.010

(iii) Minimum Required Rate of Discharge for Safety Relief Valves for Liquefied Petroleum Gas Vaporizers (Steam Heated, Water Heated, and Direct Fired).

The minimum required rate of discharge for safety relief valves shall be determined as follows:

(a) Obtain the total surface area by adding the surface area of vaporizer shell in square feet directly in contact with LP-Gas and the heat exchanged surface area in square feet directly in contact with LP-Gas.

(b) Obtain the minimum required rate of discharge in cubic feet of air per minute, at 60° F. and 14.7 p.s.i.a. from subdivision (ii) of this subparagraph, for this total surface area.

(iv) Container and vaporizer safety relief valves shall be set to start-to-discharge, with relation to the design pressure of the container, in accordance with Table H-26.

(v) Safety relief devices used with systems employing containers other than those constructed according to DOT specifications shall be so constructed as to discharge at not less than the rates shown in subdivision (ii) of this subparagraph, before the pressure is in excess of 120 percent of the maximum (not including the 10 percent re-

TABLE H-26

Containers	Minimum (percent)	Maximum (percent)
ASME Code, Par. U-68, U-69—1949 and earlier editions	110	[1] 125
ASME Code, Par. U-200, U-201—1949 edition	88	[1] 100
ASME Code—1950, 1952, 1956, 1959, 1962, 1965 and 1968 (Division 1) editions	88	[1] 100
API—ASME Code—all editions	88	[1] 100
DOT—As prescribed in 49 CFR, Chapter I		

[1] Manufacturers of safety relief valves are allowed a plus tolerance not exceeding 10 percent of the set pressure marked on the valve.

ferred to in subdivision (iv) of this subparagraph) permitted start to discharge pressure setting of the device.

(vi) In certain locations sufficiently sustained high temperatures prevail which require the use of a lower vapor pressure product to be stored or the use of a higher designed pressure vessel in order to prevent the safety valves opening as the result of these temperatures. As an alternative the tanks may be protected by cooling devices such as by spraying, by shading, or other effective means.

(vii) Safety relief valves shall be arranged so that the possibility of tampering will be minimized. If pressure setting or adjustment is external, the relief valves shall be provided with approved means for sealing adjustment.

(viii) Shutoff valves shall not be installed between the safety relief devices and the container, or the equipment or piping to which the safety relief device is connected except that a shutoff valve may be used where the arrangement of this valve is such that full required capacity flow through the safety relief device is always afforded.

(ix) Safety relief valves shall have direct communication with the vapor space of the container at all times.

(x) Each container safety relief valve used with systems covered by paragraphs (d), (e), (g), and (h) of this section, except as provided in paragraph (e) (3) (iii) of this section shall be plainly and permanently marked with the following: "Container Type" of the pressure vessel on which the valve is designed to be installed; the pressure in p.s.i.g. at which the valve is set to discharge; the actual rate of discharge of the valve in cubic feet per minute of air at 60° F. and 14.7 p.s.i.a.; and the manufacturer's name and catalog number, for example: T200-250-4050 AIR—indicating that the valve is suitable for use on a Type 200 container, that it is set to start to discharge at 250 p.s.i.g.; and that its rate of discharge is 4,050 cubic feet per minute of air as determined in subdivision (ii) of this subparagraph.

(xi) Safety relief valve assemblies, including their connections, shall be of sufficient size so as to provide the rate of flow required for the container on which they are installed.

(xii) A hydrostatic relief valve shall be installed between each pair of shut-off valves on liquefied petroleum gas liquid piping so as to relieve into a safe atmosphere. The start-to-discharge pressure setting of such relief valves shall not be in excess of 500 p.s.i.g. The minimum setting on relief valves installed in piping connected to other than DOT containers shall not be lower than 140 percent of the container relief valve setting and in piping connected to DOT containers not lower than 400 p.s.i.g. Such a relief valve should not be installed in the pump discharge piping if the same protection can be provided by installing the relief valve in the suction piping. The start-to-discharge pressure setting of such a relief valve, if installed on the discharge side of a pump, shall be greater than the maximum pressure permitted by the recirculation device in the system.

(xiii) The discharge from any safety relief device shall not terminate in or beneath any building, except relief devices covered by subparagraphs (6) (i) (a)–(e) of this paragraph, or paragraphs, (c) (4) (i) or (5) of this section.

(xiv) Container safety relief devices and regulator relief vents shall be located not less than five (5) feet in any direction from air openings into sealed combustion system appliances or mechanical ventilation air intakes.

(11) *Vaporizer and housing.* (i) Indirect fired vaporizers utilizing steam, water, or other heating medium shall be constructed and installed as follows:

(a) Vaporizers shall be constructed in accordance with the requirements of subparagraph (3) (i)–(iii) of this paragraph and shall be permanently marked as follows:

(1) With the code marking signifying the specifications to which the vaporizer is constructed.

(2) With the allowable working pressure and temperature for which the vaporizer is designed.

(3) With the sum of the outside surface area and the inside heat exchange surface area expressed in square feet.

(4) With the name or symbol of the manufacturer.

(b) Vaporizers having an inside diameter of 6 inches or less exempted by the ASME Unfired Pressure Vessel Code, Section VIII of the ASME Boiler and Pressure Vessel Code—1968 shall have a design pressure not less than 250 p.s.i.g. and need not be permanently marked.

(c) Heating or cooling coils shall not be installed inside a storage container.

(d) Vaporizers may be installed in buildings, rooms, sheds, or lean-tos used exclusively for gas manufacturing or distribution, or in other structures of light, noncombustible construction or equivalent, well ventilated near the floor line and roof.

When vaporizing and/or mixing equipment is located in a structure or building not used exclusively for gas manufacturing or distribution, either attached to or within such a building, such structure or room shall be separated from the remainder of the building by a wall designed to withstand a static pressure of at least 100 pounds per square foot. This wall shall have no openings or pipe or conduit passing through it. Such structure or room shall be provided with adequate ventilation and shall have a roof or at least one exterior wall of lightweight construction.

(e) Vaporizers shall have, at or near the discharge, a safety relief valve providing an effective rate of discharge in accordance with subparagraph (10) (iii) of this paragraph, except as provided in paragraph (d) (4) (v) (a), of this section.

(f) The heating medium lines into and leaving the vaporizer shall be provided with suitable means for preventing the flow of gas into the heat systems in the event of tube rupture in the vaporizer. Vaporizers shall be provided with suitable automatic means to prevent liquid passing through the vaporizers to the gas discharge piping.

(g) The device that supplies the necessary heat for producing steam, hot water, or other heating medium may be installed in a building, compartment, room, or lean-to which shall be ventilated near the floorline and roof to the outside. The device location shall be separated from all compartments or rooms containing liquefied petroleum

gas vaporizers, pumps, and central gas mixing devices by a wall designed to withstand a static pressure of at least 100 pounds per square foot. This wall shall have no openings or pipes or conduit passing through it. This requirement does not apply to the domestic water heaters which may supply heat for a vaporizer in a domestic system.

(h) Gas-fired heating systems supplying heat exclusively for vaporization purposes shall be equipped with automatic safety devices to shut off the flow of gas to main burners, if the pilot light should fail.

(i) Vaporizers may be an integral part of a fuel storage container directly connected to the liquid section or gas section or both.

(j) Vaporizers shall not be equipped with fusible plugs.

(k) Vaporizer houses shall not have unprotected drains to sewers or sump pits.

(ii) Atmospheric vaporizers employing heat from the ground or surrounding air shall be installed as follows:

(a) Buried underground, or

(b) Located inside the building close to a point at which pipe enters the building provided the capacity of the unit does not exceed 1 quart.

(c) Vaporizers of less than 1 quart capacity heated by the ground or surrounding air, need not be equipped with safety relief valves provided that adequate tests demonstrate that the assembly is safe without safety relief valves.

(iii) Direct gas-fired vaporizers shall be constructed, marked, and installed as follows:

(a) (1) In accordance with the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code—1968 that are applicable to the maximum working conditions for which the vaporizer is designed.

(2) With the name of the manufacturer; rated BTU input to the burner; the area of the heat exchange surface in square feet; the outside surface of the vaporizer in square feet; and the maximum vaporizing capacity in gallons per hour.

(b) (1) Vaporizers may be connected to the liquid section or the gas section of the storage container, or both; but in any case there shall be at the container a manually operated valve in each connection to permit completely shutting off when desired, of all flow of gas or liquid from container to vaporizer.

(2) Vaporizers with capacity not exceeding 35 gallons per hour shall be located at least 5 feet from container shutoff valves. Vaporizers having capacity of more than 35 gallons but not exceeding 100 gallons per hour shall be located at least 10 feet from the container shutoff valves. Vaporizers having a capacity greater than 100 gallons per hour shall be located at least 15 feet from container shutoff valves.

(c) Vaporizers may be installed in buildings, rooms, housings, sheds, or lean-tos used exclusively for vaporizing or mixing of liquefied petroleum gas. Vaporizing housing structures shall be of noncombustible construction, well ventilated near the floorline and the highest point of the roof. When vaporizer and/or mixing equipment is located in a structure or room attached to or within a building, such structure or room shall be separated from the remainder of the building by a wall designed to withstand a static pressure of at least 100 pounds per square foot. This wall shall have no openings or pipes or conduit passing through it. Such structure or room shall be provided with adequate ventilation, and shall have a roof or at least one exterior wall of lightweight construction.

(d) Vaporizers shall have at or near the discharge, a safety relief valve providing an effective rate of discharge in accordance with subparagraph (10) (iii) of this paragraph. The relief valve shall be so located as not to be subjected to temperatures in excess of 140° F.

(e) Vaporizers shall be provided with suitable automatic means to prevent liquid passing from the vaporizer to the gas discharge piping of the vaporizer.

(f) Vaporizers shall be provided with means for manually turning off the gas to the main burner and pilot.

(g) Vaporizers shall be equipped with automatic safety devices to shut off the flow of gas to main burners if the pilot light should fail. When the flow through the pilot exceeds 2,000 B.t.u. per hour, the pilot also shall be equipped with an automatic safety device to shut off the flow of gas to the pilot should the pilot flame be extinguished.

(h) Pressure regulating and pressure reducing equipment if located within 10 feet of a direct fire vaporizer shall be separated from the open flame by a substantially airtight noncombustible partition or partitions.

(i) Except as provided in (c) of this subdivision, the following minimum distances shall be maintained between direct fired vaporizers and the nearest important building or group of buildings or line of adjoining property which may be built upon:

Ten feet for vaporizers having a capacity of 18 gallons per hour or less vaporizing capacity.

Twenty-five feet for vaporizers having a vaporizing capacity of 18 to 100 gallons per hour.

Fifty feet for vaporizers having a vaporizing capacity exceeding 100 gallons per hour.

(j) Direct fired vaporizers shall not raise the product pressure above the design pressure of the vaporizer equipment nor shall they raise the product pressure within the storage container above the pressure shown in the second column of Table H-31.

(k) Vaporizers shall not be provided with fusible plugs.

(l) Vaporizers shall not have unprotected drains to sewers or sump pits.

(iv) Direct gas-fired tank heaters shall be constructed and installed as follows:

(a) Direct gas-fired tank heaters, and tanks to which they are applied, shall only be installed above ground.

(b) Tank heaters shall be permanently marked with the name of the manufacturer, the rated B.t.u. input to the burner, and the maximum vaporizing capacity in gallons per hour.

(c) Tank heaters may be an integral part of a fuel storage container directly connected to the container liquid section, or vapor section, or both.

(d) Tank heaters shall be provided with a means for manually turning off the gas to the main burner and pilot.

(e) Tank heaters shall be equipped with an automatic safety device to shut off the flow of gas to main burners, if the pilot light should fail. When flow through pilot exceeds 2,000 B.t.u. per hour, the pilot also shall be equipped with an automatic safety device to shut off the flow of gas to the pilot should the pilot flame be extinguished.

(f) Pressure regulating and pressure reducing equipment if located within 10 feet of a direct fired tank heater shall be separated from the open flame by a substantially airtight noncombustible partition.

(g) The following minimum distances shall be maintained between a storage tank heated by a direct fired tank heater and the nearest important building or group of buildings or line of adjoining property which may be built upon:

Ten feet for storage containers of less than 500 gallons water capacity.

Twenty-five feet for storage containers of 500 to 1,200 gallons water capacity.

Fifty feet for storage containers of over 1,200 gallons water capacity.

(h) No direct fired tank heater shall raise the product pressure within the storage container over 75 percent of the pressure set out in the second column of Table H-31.

(v) The vaporizer section of vaporizer-burners used for dehydrators or dryers shall be located outside of buildings; they shall be constructed and installed as follows:

(a) Vaporizer-burners shall have a minimum design pressure of 250 p.s.i.g. with a factor of safety of five.

(b) Manually operated positive shut-off valves shall be located at the containers to shut off all flow to the vaporizer-burners.

(c) Minimum distances between storage containers and vaporizer-burners shall be as follows:

Water capacity per container (gallons)	*Minimum distances (feet)*
Less than 501	10
501 to 2,000	25
Over 2,000	50

(d) The vaporizer section of vaporizer-burners shall be protected by a hydrostatic relief valve. The relief valve shall be located so as not to be subjected to temperatures in excess of 140° F. The start-to-discharge pressure setting shall be such as to protect the components involved, but not less than 250 p.s.i.g. The discharge shall be directed upward and away from component parts of the equipment and away from operating personnel.

(e) Vaporizer-burners shall be provided with means for manually turning off the gas to the main burner and pilot.

(f) Vaporizer-burners shall be equipped with automatic safety devices to shut off the flow of gas to the main burner and pilot in the event the pilot is extinguished.

(g) Pressure regulating and control equipment shall be located or protected so that the temperatures surrounding

this equipment shall not exceed 140° F. except that equipment components may be used at higher temperatures if designed to withstand such temperatures.

(h) Pressure regulating and control equipment when located downstream of the vaporizer shall be designed to withstand the maximum discharge temperature of the vapor.

(i) The vaporizer section of vaporizer-burners shall not be provided with fusible plugs.

(j) Vaporizer coils or jackets shall be made of ferrous metal or high temperature alloys.

(k) Equipment utilizing vaporizer-burners shall be equipped with automatic shutoff devices upstream and downstream of the vaporizer section connected so as to operate in the event of excessive temperature, flame failure, and, if applicable, insufficient airflow.

(12) *Filling densities.* (i) The "filling density" is defined as the percent ratio of the weight of the gas in a container to the weight of water the container will hold at 60° F. All containers shall be filled according to the filling densities shown in Table H–27.

TABLE H-27—MAXIMUM PERMITTED FILLING DENSITY

Specific gravity at 60° F. (15.6° C.)	Aboveground containers		Underground containers, all facilities
	0 to 1,200 U.S. gals. (1,000 Imp. gal., 4,550 liters) total water cap.	Over 1,200 U.S. gals. (1,000 Imp. gal., 4,550 liters) total water cap.	
	Percent	*Percent*	*Percent*
0.496–0.503	41	44	45
.504– .510	42	45	46
.511– .519	43	46	47
.520– .527	44	47	48
.528– .536	45	48	49
.537– .544	46	49	50
.545– .552	47	50	51
.553– .560	48	51	52
.561– .568	49	52	53
.569– .576	50	53	54
.577– .584	51	54	55
.585– .592	52	55	56
.593– .600	53	56	57

(ii) Except as provided in subdivision (iii) of this subparagraph, any container including mobile cargo tanks and portable tank containers regardless of size or construction, shipped under DOT jurisdiction or constructed in accordance with 49 CFR Chapter I Specifications shall be charged according to 49 CFR Chapter I requirements.

(iii) Portable containers not subject to DOT jurisdiction (such as, but not limited to, motor fuel containers on industrial and lift trucks, and farm tractors covered in paragraph (e) of this section, or containers recharged at the installation) may be filled either by weight, or by volume using a fixed length dip tube gaging device.

(13) *LP-Gas in buildings.* (i) Vapor shall be piped into buildings at pressures in excess of 20 p.s.i.g. only if the buildings or separate areas thereof, (a) are constructed in accordance with this section; (b) are used exclusively to house equipment for vaporization, pressure reduction, gas mixing, gas manufacturing, or distribution, or to house internal combustion engines, industrial processes, research and experimental laboratories, or equipment and processes using such gas and having similar hazard; (c) buildings, structures, or equipment under construction or undergoing major renovation.

(ii) Liquid may be permitted in buildings as follows:

(a) Buildings, or separate areas of buildings, used exclusively to house equipment for vaporization, pressure reduction, gas mixing, gas manufacturing, or distribution, or to house internal combustion engines, industrial processes, research and experimental laboratories, or equipment and processes using such gas and having similar hazard; and when such buildings, or separate areas thereof are constructed in accordance with this section.

(b) Buildings, structures, or equipment under construction or undergoing major renovation provided the temporary piping meets the following conditions:

(*1*) Liquid piping inside the building shall conform to the requirements of subparagraph (8) of this paragraph, and shall not exceed three-fourths iron pipe size. Copper tubing with an outside diameter of three-fourths inch or less may be used provided it conforms to Type K of Specifications for Seamless Water Tube, ANSI H23.1–1970 (ASTM B88–69) (see Table H–24). All such piping shall be protected against construction hazards. Liquid piping inside buildings shall be kept to a minimum. Such piping shall be securely fastened to walls or other surfaces so as to provide adequate protection from breakage and so located as to subject the liquid line to lowest ambient temperatures.

(*2*) A shutoff valve shall be installed in each intermediate branch line where it takes off the main line and shall be readily accessible. A shutoff valve shall also be placed at the appliance end of the intermediate branch line. Such shutoff valve shall be upstream of any flexible connector used with the appliance.

(*3*) Suitable excess flow valves shall be installed in the container outlet line supplying liquid LP-Gas to the building. A suitable excess flow valve shall be installed immediately downstream of each shutoff valve. Suitable excess flow valves shall be installed where piping size is reduced and shall be sized for the reduced size piping.

(*4*) Hydrostatic relief valves shall be installed in accordance with subparagraph (10) (xii) of this paragraph.

(*5*) The use of hose to carry liquid between the container and the building or at any point in the liquid line, except at the appliance connector, shall be prohibited.

(*6*) Where flexible connectors are necessary for appliance installation, such connectors shall be as short as practicable and shall comply with subparagraph (8) (ii) or (9) of this paragraph.

(*7*) Release of fuel when any section of piping or appliances is disconnected shall be minimized by either of the following methods:

(i) Using an approved automatic quick-closing coupling (a type closing in both directions when coupled in the fuel line), or

(ii) Closing the valve nearest to the appliance and allowing the appliance to operate until the fuel in the line is consumed.

(iii) Portable containers shall not be taken into buildings except as provided in subparagraph (6) (i) of this paragraph.

(14) *Transfer of liquids.* The employer shall assure that (i) at least one attendant shall remain close to the transfer connection from the time the connections are first made until they are finally disconnected, during the transfer of the product.

(ii) Containers shall be filled or used only upon authorization of the owner.

(iii) Containers manufactured in accordance with specifications of 49 CFR Part 178 and authorized by 49 CFR Chapter I as a "single trip" or "nonrefillable container" shall not be refilled or reused in LP-Gas service.

(iv) Gas or liquid shall not be vented to the atmosphere to assist in transferring contents of one container to another, except as provided in paragraph (e) (5) (iv) of this section and except that this shall not preclude the use of listed pump utilizing LP-Gas in the vapor phase as a source of energy and venting such gas to the atmosphere at a rate not to exceed that from a No. 31 drill size opening and provided that such venting and liquid transfer shall be located not less than 50 feet from the nearest important building.

(v) Filling of fuel containers for industrial trucks or motor vehicles from industrial bulk storage containers shall be performed not less than 10 feet from the nearest important masonry-walled building or not less than 25 feet from the nearest important building or other construction and, in any event, not less than 25 feet from any building opening.

(vi) Filling of portable containers, containers mounted on skids, fuel containers on farm tractors, or similar applications, from storage containers used in domestic or commercial service, shall be performed not less than 50 feet from the nearest important building.

(vii) The filling connection and the vent from the liquid level gages in containers, filled at point of installation, shall not be less than 10 feet in any direction from air openings into sealed combustion system appliances or mechanical ventilation air intakes.

(viii) Fuel supply containers shall be gaged and charged only in the open air or in buildings especially provided for that purpose.

(ix) The maximum vapor pressure of the product at 100° F. which may be transferred into a container shall be in accordance with paragraphs (d) (2) and (e) (3) of this section. (For DOT containers use DOT requirements.)

(x) Marketers and users shall exercise precaution to assure that only those gases for which the system is designed, examined, and listed, are employed in its operation, particularly with regard to pressures.

(xi) Pumps or compressors shall be designed for use with LP-Gas. When compressors are used they shall normally take suction from the vapor space of the container being filled and discharge to the vapor space of the container being emptied.

(xii) Pumping systems, when equipped with a positive displacement pump, shall include a recirculating device which shall limit the differential pressure on the pump under normal operating conditions

to the maximum differential pressure rating of the pump. The discharge of the pumping system shall be protected so that pressure does not exceed 350 p.s.i.g. If a recirculation system discharges into the supply tank and contains a manual shutoff valve, an adequate secondary safety recirculation system shall be incorporated which shall have no means of rendering it inoperative. Manual shutoff valves in recirculation systems shall be kept open except during an emergency or when repairs are being made to the system.

(xiii) When necessary, unloading piping or hoses shall be provided with suitable bleeder valves for relieving pressure before disconnection.

(xiv) Agricultural air moving equipment, including crop dryers, shall be shut down when supply containers are being filled unless the air intakes and sources of ignition on the equipment are located 50 feet or more from the container.

(xv) Agricultural equipment employing open flames or equipment with integral containers, such as flame cultivators, weed burners, and, in addition, tractors, shall be shut down during refueling.

(15) *Tank car or transport truck loading or unloading points and operations.* (i) The track of tank car siding shall be relatively level.

(ii) A "Tank Car Connected" sign, as covered by DOT rules, shall be installed at the active end or ends of the siding while the tank car is connected.

(iii) While cars are on sidetrack for loading or unloading, the wheels at both ends shall be blocked on the rails.

(iv) The employer shall insure that an employee is in attendance at all times while the tank car, cars, or trucks are being loaded or unloaded.

(v) A backflow check valve, excess-flow valve, or a shutoff valve with means of remote closing, to protect against uncontrolled discharge of LP-Gas from storage tank piping shall be installed close to the point where the liquid piping and hose or swing joint pipe is connected.

(vi) Except as provided in subdivision (vii) of this subparagraph, when the size (diameter) of the loading or unloading hoses and/or piping is reduced below the size of the tank car or transport truck loading or unloading connections, the adaptors to which lines are attached shall be equipped with either a backflow check valve, a properly sized excess flow valve, or shutoff valve with means of remote closing, to protect against uncontrolled discharge from the tank car or transport truck.

(vii) The requirement of subdivision (vi) of this subparagraph shall not apply if the tank car or transport is equipped with a quick-closing internal valve that can be remotely closed.

(viii) The tank car or transport truck loading or unloading point shall be located with due consideration to the following:

(a) Proximity to railroads and highway traffic.

(b) The distance of such unloading or loading point from adjacent property.

(c) With respect to buildings on installer's property.

(d) Nature of occupancy.

(e) Topography.

(f) Type of construction of buildings.

(g) Number of tank cars or transport trucks that may be safely loaded or unloaded at one time.

(h) Frequency of loading or unloading.

(ix) Where practical, the distance of the unloading or loading point shall conform to the distances in subparagraph (6) (ii) of this paragraph.

(16) *Instructions.* Personnel performing installation, removal, operation, and maintenance work shall be properly trained in such function.

(17) *Electrical equipment and other sources of ignition.* (i) Electrical equipment and wiring shall be of a type specified by and shall be installed in accordance with Subpart S of this part, for ordinary locations except that fixed electrical equipment in classified areas shall comply with subparagraph (18) of this paragraph.

(ii) Open flames or other sources of ignition shall not be permitted in vaporizer rooms (except those housing direct-fired vaporizers), pumphouses, container charging rooms or other similar locations. Direct-fired vaporizers shall not be permitted in pumphouses or container charging rooms.

(iii) Liquefied petroleum gas storage containers do not require lightning protection.

(iv) Since liquefied petroleum gas is contained in a closed system of piping and equipment, the system need not be electrically conductive or electrically bonded for protection against static electricity.

(v) Open flames (except as provided for in subparagraph (11) of this paragraph), cutting or welding, portable electric tools, and extension lights capable of igniting LP-Gas, shall not be permitted within classified areas specified in Table H–28 unless the LP-Gas facilities have been freed of all liquid and vapor, or special precautions observed under carefully controlled conditions.

TABLE H-28

Part	Location	Extent of classified area [1]	Equipment shall be suitable for National Electrical Code, Class I, Group D [2]
A	Storage containers other than DOT cylinders.	Within 15 feet in all directions from connections, except connections otherwise covered in Table H–28.	Division 2.
B	Tank vehicle and tank car loading and unloading. [3]	Within 5 feet in all directions from connections regularly made or disconnected for product transfer.	Division 1.
		Beyond 5 feet but within 15 feet in all directions from a point where connections are regularly made or disconnected and within the cylindrical volume between the horizontal equator of the sphere and grade (See Figure H–1).	Division 2
C	Gage vent openings other than those on DOT cylinders.	Within 5 feet in all directions from point of discharge.	Division 1.
		Beyond 5 feet but within 15 feet in all directions from point of discharge.	Division 2.
D	Relief valve discharge other than those on DOT cylinders.	Within direct path of discharge.	Division 1. *Note*—Fixed electrical equipment should preferably not be installed.
		Within 5 feet in all directions from point of discharge.	Division 1.
		Beyond 5 feet but within 15 feet in all directions from point of discharge except within the direct path of discharge.	Division 2.
E	Pumps, compressors, gas-air mixers and vaporizers other than direct fired.		
	Indoors without ventilation.	Entire room and any adjacent room not separated by a gastight partition.	Division 1.
		Within 15 feet of the exterior side of any exterior wall or roof that is not vaportight or within 15 feet of any exterior opening.	Division 2.
	Indoors with adequate ventilation. [4]	Entire room and any adjacent room not separated by a gastight partition.	Division 2.
	Outdoors in open air at or aboveground.	Within 15 feet in all directions from this equipment and within the cylindrical volume between the horizontal equator of the sphere and grade. See Figure H–1	Division 2.
F	Service Station Dispensing Units.	Entire space within dispenser enclosure, and 18 inches horizontally from enclosure exterior up to an elevation 4 ft. above dispenser base. Entire pit or open space beneath dispenser.	Division 1.
		Up to 18 inches aboveygrade within 20 ft. horizontally from any edge of enclosure. Note: For pits within this area, see Part F of this table.	Division 2.
G	Pits or trenches containing or located beneath LP-Gas valves, pumps, compressors, regulators, and similar equipment.		
	Without mechanical ventilation.	Entire pit or trench	Division 1.
		Entire room and any adjacent room not separated by a gastight partition.	Division 2.
		Within 15 feet in all directions from pit or trench when located outdoors.	Division 2.
	With adequate mechanical ventilation.	Entire pit or trench	Division 2.
		Entire room and any adjacent room not separated by a gastight partition.	Division 2.
		Within 15 feet in all directions from pit or trench when located outdoors.	Division 2.
H	Special buildings or rooms for storage of portable containers.	Entire room	Division 2.
	Pipelines and connections containing operational bleeds, drips, vents or drains.	Within 5 ft. in all directions from point of discharge.	Division 1.
		Beyond 5 ft. from point of discharge, same as Part E of this table.	

See footnotes at end of table.

TABLE H-28—Continued

Part	Location	Extent of classified area [1]	Equipment shall be suitable for National Electrical Code, Class I, Group D [2]
J	Container filling:		
	Indoors without ventilation	Entire room	Division 1.
	Indoors with adequate ventilation [3]	Within 5 feet in all directions from connections regularly made or disconnected for product transfer.	Division 1.
		Beyond 5 feet and entire room	Division 2.
	Outdoors in open air	Within 5 feet in all directions from connections regularly made or disconnected for product transfer.	Division 1.
		Beyond 5 feet but within 15 feet in all directions from a point where connections are regularly made or disconnected and within the cylindrical volume between the horizontal equator of the sphere and grade. (See Figure H-1)	Division 2.

[1] The class H(c) area shall not extend beyond an unpierced wall, roof, or solid vaportight partition.
[2] See Subp a rt S of this part.
[3] When elas sifying extent of hazardous area, consideration shall be given to possible variations in the spotting of tank cars ay d tank vehicles at the unloading points and the effect these variations of actual spotting point may have on the / point of connection.
[4] Ventilat on, either natural or mechanical, is considered adequate when the concentration of the gas in a vapor-air mixture does not exceed 25 percent of the lower flammable limit under normal operating conditions.

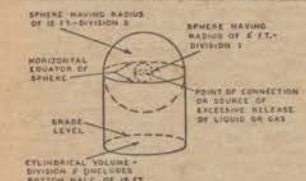


Figure H-1

(18) *Fixed electrical equipment in classified areas.* Fixed electrical equipment and wiring installed within classified areas specified in Table H-28 shall comply with Table H-28 and shall be installed in accordance with Subpart S of this part. This provision does not apply to fixed electrical equipment at residential or commercial installations of LP-Gas systems or to systems covered by paragraph (e) or (g) of this section.

(19) *Liquid-level gaging device.* (i) Each container manufactured after December 31, 1965, and filled on a volumetric basis shall be equipped with a fixed liquid-level gage to indicate the maximum permitted filling level as provided in subdivision (v) of this subparagraph. Each container manufactured after December 31, 1969, shall have permanently attached to the container adjacent to the fixed level gage a marking showing the percentage full that will be shown by that gage. When a variable liquid-level gage is also provided, the fixed liquid-level gage will also serve as a means for checking the variable gage. These gages shall be used in charging containers as required in subparagraph (12) of this paragraph.

(ii) All variable gaging devices shall be arranged so that the maximum liquid level for butane, for a 50–50 mixture of butane and propane, and for propane, to which the container may be charged is readily determinable. The markings indicating the various liquid levels from empty to full shall be on the system nameplate or gaging device or part may be on the system nameplate and part on the gaging device. Dials of magnetic or rotary gages shall show whether they are for cylindrical or spherical containers and whether for aboveground or underground service. The dials of gages intended for use only on aboveground containers of over 1,200 gallons water capacity shall be so marked.

(iii) Gaging devices that require bleeding of the product to the atmosphere, such as the rotary tube, fixed tube, and slip tube, shall be designed so that the bleed valve maximum opening is not larger than a No. 54 drill size, unless provided with excess flow valve.

(iv) Gaging devices shall have a design working pressure of at least 250 p.s.i.g.

(v) Length of tube or position of fixed liquid-level gage shall be designed to indicate the maximum level to which the container may be filled for the product contained. This level shall be based on the volume of the product at 40° F. at

its maximum permitted filling density for aboveground containers and at 50° F. for underground containers. The employer shall calculate the filling point for which the fixed liquid level gage shall be designed according to the method in this subdivision.

(a) It is impossible to set out in a table the length of a fixed dip tube for various capacity tanks because of the varying tank diameters and lengths and because the tank may be installed either in a vertical or horizontal position. Knowing the maximum permitted filling volume in gallons, however, the length of the fixed tube can be determined by the use of a strapping table obtained from the container manufacturer. The length of the fixed tube should be such that when its lower end touches the surface of the liquid in the container, the contents of the container will be the maximum permitted volume as determined by the following formula:

$$\frac{\text{Water capacity (gals.) of container* } \times \text{ filling density**}}{\text{Specific gravity of LP-Gas* } \times \text{ volume correction factor† } \times 100} = \text{Maximum volume of LP-Gas}$$

*Measured at 60° F.

**From subparagraph (12) of this paragraph "Filling Densities."

†For aboveground containers the liquid temperature is assumed to be 40° F. and for underground containers the liquid temperature is assumed to be 50° F. To correct the liquid volumes at these temperatures to 60° F. the following factors shall be used.

(b) Formula for determining maximum volume of liquefied petroleum gas for which a fixed length of dip tube shall be set:

TABLE H-29—VOLUME CORRECTION FACTORS

Specific gravity	Aboveground	Underground
0.500	1.033	1.017
.510	1.031	1.016
.520	1.029	1.015
.530	1.029	1.014
.540	1.026	1.013
.550	1.025	1.013
.560	1.024	1.012
.570	1.023	1.011
.580	1.021	1.011
.590	1.020	1.010

(c) The maximum volume of LP-Gas which can be placed in a container when determining the length of the dip tube expressed as a percentage of total water content of the container is calculated by the following formula.

(d) The maximum weight of LP-Gas which may be placed in a container *for determining the length of a fixed dip tube* is determined by multiplying the maximum volume of liquefied petroleum gas obtained by the formula in (b) of this subdivision by the pounds of liquefied petroleum gas in a gallon at 40° F. for aboveground and at 50° F. for underground containers. For example, typical pounds per gallon are specified below:

Example: Assume a 100-gallon total water capacity tank for aboveground storage of propane having a specific gravity of 0.510 of 60° F.

$$\frac{100 \text{ (gals.)} \times 42 \text{ (filling density from subparagraph (12) of this paragraph)}}{0.510 \times 1.031 \text{ (correction factor from Table H-29)} \times 100} = \frac{4200}{82.6}$$

$\frac{4200}{82.6}$ = 79.8 gallons propane, the maximum amount permitted to be placed in a 100-gallon total water capacity aboveground container equipped with a fixed dip tube.

$$\frac{\text{Maximum volume of LP-Gas (from formula in subdivision (b) of this subdivision)} \times 100}{\text{Total water content of container in gallons}} = \text{Maximum percent of LP-Gas}$$

	Aboveground, pounds per gallon	Underground, pounds per gallon
Propane	4.37	4.31
N Butane	4.97	4.92

(vi) Fixed liquid-level gages used on containers other than DOT containers shall be stamped on the exterior of the gage with the letters "DT" followed by the vertical distance (expressed in inches and carried out to one decimal place) from the top of container to the end of the dip tube or to the centerline of the gage when it is located at the maximum permitted filling level. For portable

containers that may be filled in the horizontal and/or vertical position the letters "DT" shall be followed by "V" with the vertical distance from the top of the container to the end of the dip tube for vertical filling and with "H" followed by the proper distance for horizontal filling. For DOT containers the stamping shall be placed both on the exterior of the gage and on the container. On aboveground or cargo containers where the gages are positioned at specific levels, the marking may be specified in percent of total tank contents and the marking shall be stamped on the container.

(vii) Gage glasses of the columnar type shall be restricted to charging plants where the fuel is withdrawn in the liquid phase only. They shall be equipped with valves having metallic handwheels, with excess flow valves, and with extra-heavy glass adequately protected with a metal housing applied by the gage manufacturer. They shall be shielded against the direct rays of the sun. Gage glasses of the columnar type are prohibited on tank trucks, and on motor fuel tanks, and on containers used in domestic, commercial, and industrial installations.

(viii) Gaging devices of the float, or equivalent type which do not require flow for their operation and having connections extending to a point outside the container do not have to be equipped with excess flow valves provided the piping and fittings are adequately designed to withstand the container pressure and are properly protected against physical damage and breakage.

(20) *Requirements for appliances.* (i) Except as provided in subdivision (ii) of this subparagraph, new commercial and industrial gas consuming appliances shall be approved.

(ii) Any appliance that was originally manufactured for operation with a gaseous fuel other than LP-Gas and is in good condition may be used with LP-Gas only after it is properly converted, adapted, and tested for performance with LP-Gas before the appliance is placed in use.

(iii) Unattended heaters used inside buildings for the purpose of animal or poultry production or care shall be equipped with an approved automatic device designed to shut off the flow of gas to the main burners, and pilot if used, in the event of flame extinguishment.

(iv) All commercial, industrial, and agricultural appliances or equipment shall be installed in accordance with the requirements of this section and in accordance with the following:

(a) Domestic and commercial appliances—NFPA 54–1969, Standard for the Installation of Gas Appliances and Gas Piping.

(b) Industrial appliances—NFPA 54A–1969, Standard for the Installation of Gas Piping and Gas Equipment on Industrial Premises and Certain Other Premises.

(c) Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines—NFPA 37–1970.

(d) Standard for the Installation of Equipment for the Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment, NFPA 96–1970.

(c) *Cylinder systems.*—(1) *Application.* This paragraph applies specifically to systems utilizing containers constructed in accordance with DOT Specifications. All requirements of paragraph (b) of this section apply to this paragraph unless otherwise noted in paragraph (b) of this section.

(2) *Marking of containers.* (i) Containers shall be marked in accordance with DOT regulations. Additional markings not in conflict with DOT regulations may be used.

(ii) Except as provided in subdivision (iii) of this subparagraph each container shall be marked with its water capacity in pounds or other identified unit of weight.

(iii) If a container is filled and maintained only by the owner or his representative and if the water capacity of each container is identified by a code, compliance with subdivision (ii) of this subparagraph is not required.

(iv) Each container shall be marked with its tare weight in pounds or other identified unit of weight including all permanently attached fittings but not the cap.

(3) *Description of a system.* A system shall include the container base or bracket, containers, container valves, connectors, manifold valve assembly, regulators, and relief valves.

(4) *Containers and regulating equipment installed outside of buildings or structures.* (i) Containers shall not be buried below ground. However, this shall not prohibit the installation in a compartment or recess below grade level

such as a niche in a slope or terrace wall which is used for no other purpose, providing that the container and regulating equipment are not in contact with the ground and the compartment or recess is drained and ventilated horizontally to the outside air from its lowest level, with the outlet at least 3 feet away from any building opening which is below the level of such outlet.

Except as provided in paragraph (b)(10)(xiii) of this section, the discharge from safety relief devices shall be located not less than 3 feet horizontally away from any building opening which is below the level of such discharge and shall not terminate beneath any building unless such space is well ventilated to the outside and is not enclosed on more than two sides.

(ii) Containers shall be set upon firm foundation or otherwise firmly secured; the possible effect on the outlet piping of settling shall be guarded against by a flexible connection or special fitting.

(5) *Containers and equipment used inside of buildings or structures.* (i) When operational requirements make portable use of containers necessary and their location outside of buildings or structure is impracticable, containers and equipment are permitted to be used inside of buildings or structures in accordance with (a) through (f) of this subdivision, and, in addition, such other provisions of this subparagraph as are applicable to the particular use or occupancy.

(a) Containers in use shall mean connected for use.

(b) Systems utilizing containers having a water capacity greater than 2½ pounds (nominal 1 pound LP-Gas capacity) shall be equipped with excess flow valves. Such excess flow valves shall be either integral with the container valves or in the connections to the container valve outlets. In either case, an excess flow valve shall be installed in such a manner that any undue strain beyond the excess flow valve will not cause breakage between the container and the excess flow valve. The installation of excess flow valves shall take into account the type of valve protection provided.

(c) Regulators, if used, shall be either directly connected to the container valves or to manifolds connected to the container values. The regulator shall be suitable for use with LP-Gas. Manifolds and fittings connecting containers to pressure regulator inlets shall be designed for at least 250 p.s.i.g. service pressure.

(d) Valves on containers having a water capacity greater than 50 pounds (nominal 20 pounds LP-Gas capacity) shall be protected while in use.

(e) Containers shall be marked in accordance with paragraph (b)(5)(iii) of this section and subparagraph (2) of this paragraph.

(f) Pipe or tubing shall conform to paragraph (b)(8) of this section except that aluminum pipe or tubing shall not be used.

(g) (1) Hose shall be designed for a working pressure of at least 250 p.s.i.g. Hose and hose connections shall have their correctness as to design, construction and performance determined by listing by Underwriters' Laboratories, Inc., or Factory Mutual Engineering Corp. The hose length may exceed the length specified in paragraph (b)(9)(vii)(b) of this section, but shall be as short as practicable.

(2) Hose shall be long enough to permit compliance with spacing provisions of this subparagraph without kinking or straining or causing hose to be so close to a burner as to be damaged by heat.

(h) Portable heaters, including salamanders, shall be equipped with an approved automatic device to shut off the flow of gas to the main burner, and pilot if used, in the event of flame extinguishment. Such heaters having inputs above 50,000 B.t.u. manufactured on or after May 17, 1967, and such heaters having inputs above 100,000 B.t.u. manufactured before May 17, 1967, shall be equipped with either.

(1) A pilot which must be lighted and proved before the main burner can be turned on; or

(2) An electric ignition system.

The provisions of this subdivision (h) do not apply to tar kettle burners, torches, melting pots, nor do they apply to portable heaters under 7,500 B.t.u.h. input when used with containers having a maximum water capacity of 2½ pounds. Container valves, connectors, regulators, manifolds, piping, and tubing shall not be used as structural supports for heaters.

(i) Containers, regulating equipment, manifolds, pipe, tubing, and hose shall be located so as to minimize exposure to abnormally high temperatures (such as may result from exposure to convection or radiation from heating equipment or

installation in confined spaces), physical damage, or tampering by unauthorized persons.

(j) Heat producing equipment shall be located and used so as to minimize the possibility of ignition of combustibles.

(k) Containers having a water capacity greater than 2½ pounds (nominal 1 pound LP-Gas capacity) connected for use, shall stand on a firm and substantially level surface and, when necessary, shall be secured in an upright position.

(l) Containers, including the valve protective devices, shall be installed so as to minimize the probability of impingement of discharge of safety relief devices upon containers.

(ii) Containers having a maximum water capacity of 2½ pounds (nominal 1 pound LP-Gas capacity) are permitted to be used inside of buildings as part of approved self-contained hand torch assemblies or similar appliances.

(iii) Containers having a maximum water capacity of 12 pounds (nominal 5 pounds LP-Gas capacity) are permitted to be used temporarily inside of buildings for public exhibition or demonstration purposes, including use for classroom demonstrations.

(iv) (a) When buildings frequented by the public are open to the public, containers are permitted to be used for repair or minor renovation as follows:

(1) The maximum water capacity of individual containers shall be 50 pounds (nominal 20 pounds LP-Gas capacity).

(2) The number of LP-Gas containers shall not exceed the number of workmen assigned to using the LP-Gas.

(3) Containers having a water capacity greater than 2½ pounds (nominal 1 pound LP-Gas capacity) shall not be left unattended in such buildings.

(b) When buildings frequented by the public are not open to the public, containers are permitted to be used for repair or minor renovations, as follows:

The provisions of subdivision (v) of this subparagraph shall apply except that containers having a water capacity greater than 2½ pounds (nominal 1 pound LP-Gas capacity) shall not be left unattended in such buildings.

(v) Containers are permitted to be used in buildings or structures under construction or undergoing major renovation when such buildings or structures are not occupied by the public, as follows:

(a) The maximum water capacity of individual containers shall be 245 pounds (nominal 100 pounds LP-Gas capacity).

(b) For temporary heating such as curing concrete, drying plaster and similar applications, heaters (other than integral heater-container units) shall be located at least 6 feet from any LP-Gas container. This shall not prohibit the use of heaters specifically designed for attachment to the container or to a supporting standard, provided they are designed and installed so as to prevent direct or radiant heat application from the heater onto the container. Blower and radiant type heaters shall not be directed toward any LP-Gas container within 20 feet.

(c) If two or more heater-container units, of either the integral or nonintegral type, are located in an unpartitioned area on the same floor, the container or containers of each unit shall be separated from the container or containers of any other unit by at least 20 feet.

(d) When heaters are connected to containers for use in an unpartitioned area on the same floor, the total water capacity of containers manifolded together for connection to a heater or heaters shall not be greater than 735 pounds (nominal 300 pounds LP-Gas capacity). Such manifolds shall be separated by at least 20 feet.

(e) On floors on which heaters are not connected for use, containers are permitted to be manifolded together for connection to a heater or heaters on another floor, *Provided*:

(1) The total water capacity of containers connected to any one manifold is not greater than 2,450 pounds (nominal 1,000 pounds LP-Gas capacity) and;

(2) Where more than one manifold having a total water capacity greater than 735 pounds (nominal 300 pounds LP-Gas capacity) are located in the same unpartitioned area, they shall be separated by at least 50 feet.

(f) Storage of containers awaiting use shall be in accordance with paragraph (f) of this section.

(vi) Containers are permitted to be used in industrial occupancies for processing, research, or experimental purposes as follows:

(a) The maximum water capacity of individual containers shall be 245 pounds (nominal 100 pounds LP-Gas capacity).

(b) Containers connected to a manifold shall have a total water capacity not greater than 735 pounds (nominal 300 pounds LP-Gas capacity) and not more than one such manifold may be located in the same room unless separated at least 20 feet from a similar unit.

(c) The amount of LP-Gas in containers for research and experimental use shall be limited to the smallest practical quantity.

(vii) (a) Containers are permitted to be used in industrial occupancies with essentially noncombustible contents where portable equipment for space heating is essential and where a permanent heating installation is not practical, as follows:

(b) Containers and heaters shall comply with and be used in accordance with subdivision (v) of this subparagraph.

(viii) Containers are permitted to be used in buildings for temporary emergency heating purposes, if necessary to prevent damage to the buildings or contents, when the permanent heating system is temporarily out of service, as follows:

(a) Containers and heaters shall comply with and be used in accordance with subdivision (v) of this subparagraph.

(b) The temporary heating equipment shall not be left unattended.

(ix) Containers are permitted to be used temporarily in buildings for training purposes related in installation and use of LP-gas systems, as follows:

(a) The maximum water capacity of individual containers shall be 245 pounds (nominal 100 pounds LP-Gas capacity), but the maximum quantity of LP-Gas that may be placed in each container shall be 20 pounds.

(b) If more than one such container is located in the same room, the containers shall be separated by at least 20 feet.

(c) Containers shall be removed from the building when the training class has terminated.

(6) *Container valves and accessories.*

(i) Valves in the assembly of multiple container systems shall be arranged so that replacement of containers can be made without shutting off the flow of gas in the system.

NOTE: This provision is not to be construed as requiring an automatic changeover device.

(ii) Regulators and low-pressure relief devices shall be rigidly attached to the cylinder valves, cylinders, supporting standards, the building walls or otherwise rigidly secured and shall be so installed or protected that the elements (sleet, snow, or ice) will not affect their operation.

(iii) Valves and connections to the containers shall be protected while in transit, in storage, and while being moved into final utilization, as follows:

(a) By setting into the recess of the container to prevent the possibility of their being struck if the container is dropped upon a flat surface, or

(b) By ventilated cap or collar, fastened to the container capable of withstanding a blow from any direction equivalent to that of a 30-pound weight dropped 4 feet. Construction must be such that a blow will not be transmitted to the valve or other connection.

(iv) When containers are not connected to the system, the outlet valves shall be kept tightly closed or plugged, even though containers are considered empty.

(v) Containers having a water capacity in excess of 50 pounds (approximately 21 pounds LP-Gas capacity), recharged at the installation, shall be provided with excess flow or backflow check valves to prevent the discharge of container contents in case of failure of the filling or equalizing connection.

(7) *Safety devices.* (i) Containers shall be provided with safety devices as required by DOT regulations.

(ii) A final stage regulator of an LP-Gas system (excluding any appliance regulator) shall be equipped on the low-pressure side with a relief valve which is set to start to discharge within the limits specified in Table H-30.

TABLE H-30

Regulator delivery pressure	Relief valve start-to-discharge pressure setting (percent of regulator delivery pressure)	
	Minimum	Maximum
1 p.s.i.g. or less	200	300
Above 1 p.s.i.g. but not over 5 p.s.i.g.	140	300
Above 5 p.s.i.g.	125	300

(iii) When a regulator or pressure relief valve is used inside a building for other than purposes specified in paragraph (b)(6)(i)(a)–(p) of this section, the relief valve and the space above the regulator and relief valve diaphragms shall be vented to the outside air with the

discharge outlet located not less than 3 feet horizontally away from any building opening which is below such discharge. These provisions do not apply to individual appliance regulators when protection is otherwise provided nor to subparagraph (5) of this paragraph and paragraph (b)(10)(xiii) of this section. In buildings devoted exclusively to gas distribution purposes, the space above the diaphragm need not be vented to the outside.

(8) *Reinstallation of containers.* Containers shall not be reinstalled unless they are requalified in accordance with DOT regulations.

(9) *Permissible product.* A product shall not be placed in a container marked with a service pressure less than four-fifths of the maximum vapor pressure of product at 130° F.

(d) *Systems utilizing containers other than DOT containers.*

(1) *Application.* This paragraph applies specifically to systems utilizing storage containers other than those constructed in accordance with DOT specifications. Paragraph (b) of this section applies to this paragraph unless otherwise noted in paragraph (b) of this section.

(2) *Design pressure and classification of storage containers.* Storage containers shall be designed and classified in accordance with Table H-31.

TABLE H-31

Container type	For gases with vapor pres. Not to exceed lb. per sq. in. gage at 100° F. (37.8° C.)	Minimum design pressure of container, lb. per sq. in. gage	
		1949 and earlier editions of ASME Code (Par. U-68)	1949 edition of ASME Code (Par. U-200, U-201); 1950, 1952, 1956, 1959, 1962, 1965, and 1968 (Division 1) editions of ASME Code: All editions of API-ASME Code[2]
[1] 80	[1] 80	[1] 80	[1] 100
100	100	100	125
125	133	125	156
150	150	150	187
175	175	175	219
[3] 200	210	200	250

[1] New storage containers of the 80 type have not been authorized since Dec. 31, 1947.

[2] Container type may be increased by increments of 25. The minimum design pressure of containers shall be 100% of the container type designation when constructed under 1949 or earlier editions of the ASME Code (Par. U-68 and U-69). The minimum design pressure of containers shall be 125% of the container type designation when constructed under: (1) the 1949 ASME Code (Par. U-200 and U-201), (2) 1950, 1952, 1956, 1959, 1962, 1965, and 1968 (Division 1) editions of the ASME Code, and (3) all editions of the API-ASME Code.

[3] Construction of containers under the API-ASME Code is not authorized after July 1, 1961.

(3) *Container valves and accessories, filler pipes, and discharge pipes.* (i) The filling pipe inlet terminal shall not be located inside a building. For containers with a water capacity of 125 gallons or more, such terminals shall be located not less than 10 feet from any building (see paragraph (b)(6)(ii) of this section), and preferably not less than 5 feet from any driveway, and shall be located in a protective housing built for the purpose.

(ii) The filling connection shall be fitted with one of the following:

(a) Combination back-pressure check valve and excess flow valve.

(b) One double or two single back-pressure check valves.

(c) A positive shutoff valve, in conjunction with either:

(1) An internal back pressure valve, or

(2) An internal excess flow valve.

(iii) All openings in a container shall be equipped with approved automatic excess flow valves except in the following: filling connections as provided in subdivision (ii) of this subparagraph; safety relief connections, liquid-level gaging devices as provided in paragraphs (b)(7)(iv), (10)(iii), and (10)(viii) of this section; pressure gage connections as provided in paragraph (b)(7)(v) of this section, as provided in subdivisions (iv), (vi), and (vii) of this subparagraph.

(iv) An excess flow valve is not required in the withdrawal service line providing the following are complied with:

(a) Such systems' total water capacity does not exceed 2,000 U.S. gallons.

(b) The discharge from the service outlet is controlled by a suitable manually operated shutoff valve which is;

(1) Threaded directly into the service outlet of the container; or

(2) Is an integral part of a substantial fitting threaded into or on the service outlet of the container; or

(3) Threaded directly into a substantial fitting threaded into or on the service outlet of the container.

(c) The shutoff valve is equipped with an attached handwheel or the equivalent.

(d) The controlling orifice between the contents of the container and the outlet of the shutoff valve does not exceed five-sixteenths inch in diameter for vapor withdrawal systems and one-eighth inch in diameter for liquid withdrawal systems.

(e) An approved pressure-reducing regulator is directly attached to the outlet of the shutoff valve and is rigidly supported, or that an approved pressure-reducing regulator is attached to the outlet of the shutoff valve by means of a suitable flexible connection, provided the regulator is adequately supported and properly protected on or at the tank.

(v) All inlet and outlet connections except safety relief valves, liquid level gaging devices and pressure gages on containers of 2,000 gallons water capacity, or more, and on any container used to supply fuel directly to an internal combustion engine, shall be labeled to designate whether they communicate with vapor or liquid space. Labels may be on valves.

(vi) In lieu of an excess flow valve openings may be fitted with a quick-closing internal valve which, except during operating periods shall remain closed. The internal mechanism for such valves may be provided with a secondary control which shall be equipped with a fusible plug (not over 220° F. melting point) which will cause the internal valve to close automatically in case of fire.

(vii) Not more than two plugged openings shall be permitted on a container of 2,000 gallons or less water capacity.

(viii) Containers of 125 gallons water capacity or more manufactured after July 1, 1961, shall be provided with an approved device for liquid evacuation, the size of which shall be three-fourths inch National Pipe Thread minimum. A plugged opening will not satisfy this requirement.

(4) *Safety devices.* (i) All safety devices shall comply with the following:

(a) All container safety relief devices shall be located on the containers and shall have direct communication with the vapor of space of the container.

(b) In industrial and gas manufacturing plants, discharge pipe from safety relief valves on pipe lines within a building shall discharge vertically upward and shall be piped to a point outside a building.

(c) Safety relief device discharge terminals shall be so located as to provide protection against physical damage and such discharge pipes shall be fitted with loose raincaps. Return bends and restrictive pipefittings shall not be permitted.

(d) If desired, discharge lines from two or more safety relief devices located on the same unit, or similar lines from two or more different units, may be run into a common discharge header, provided that the cross-sectional area of such header be at least equal to the sum of the cross-sectional area of the individual discharge lines, and that the setting of safety relief valves are the same.

(e) Each storage container of over 2,000 gallons water capacity shall be provided with a suitable pressure gage.

(f) A final stage regulator of an LP-Gas system (excluding any appliance regulator) shall be equipped on the low-pressure side with a relief valve which is set to start to discharge within the limits specified in Table H-30.

(g) When a regulator or pressure relief valve is installed inside a building, the relief valve and the space above the regulator and relief valve diaphragms shall be vented to the outside air with the discharge outlet located not less than 3 feet horizontally away from any opening into the building which is below such discharge. (These provisions do not apply to individual appliance regulators when protection is otherwise provided. In buildings devoted exclusively to gas distribution purposes, the space above the diaphragm need not be vented to the outside.)

(ii) Safety devices for aboveground containers shall be provided as follows:

(a) Containers of 1,200 gallons water capacity or less which may contain liquid fuel when installed above ground shall have the rate of discharge required by paragraph (b)(10)(ii) of this section provided by a spring-loaded relief valve or valves. In addition to the required spring-loaded relief valve(s), suitable fuse plug(s) may be used provided the total discharge area of the fuse plug(s) for each container does not exceed 0.25 square inch.

(b) The fusible metal of the fuse plugs shall have a yield temperature of 208° F. minimum and 220° F. maximum. Relief valves and fuse plugs shall have direct communication with the vapor space of the container.

(c) On a container having a water capacity greater than 125 gallons, but not over 2,000 gallons, the discharge from the safety relief valves shall be vented away from the container vertically upwards and unobstructed to the open air in such a manner as to prevent any impingement of escaping gas upon the container; loose-fitting rain caps shall be used. Suitable provision shall be made for draining condensate which may accumulate in the relief valve or its discharge pipe.

(d) On containers of 125 gallons water capacity or less, the discharge from safety relief devices shall be located not

less than 5 feet horizontally away from any opening into the building below the level of such discharge.

(e) On a container having a water capacity greater than 2,000 gallons, the discharge from the safety relief valves shall be vented away from the container vertically upwards to a point at least 7 feet above the container, and unobstructed to the open air in such a manner as to prevent any impingement of escaping gas upon the container; loose-fitting rain caps shall be used. Suitable provision shall be made so that any liquid or condensate that may accumulate inside of the safety relief valve or its discharge pipe will not render the valve inoperative. If a drain is used, a means shall be provided to protect the container, adjacent containers, piping, or equipment against impingement of flame resulting from ignition of product escaping from the drain.

(iii) On all containers which are installed underground and which contain no liquid fuel until buried and covered, the rate of discharge of the spring-loaded relief valve installed thereon may be reduced to a minimum of 30 percent of the rate of discharge specified in paragraph (b)(10)(ii) of this section. Containers so protected shall not be uncovered after installation until the liquid fuel has been removed therefrom. Containers which may contain liquid fuel before being installed under ground and before being completely covered with earth are to be considered aboveground containers when determining the rate of discharge requirement of the relief valves.

(iv) On underground containers of more than 2,000 gallons water capacity, the discharge from safety relief devices shall be piped vertically and directly upward to a point at least 7 feet above the ground.

Where there is a probability of the manhole or housing becoming flooded, the discharge from regulator vent lines shall be above the highest probable water level. All manholes or housings shall be provided with ventilated louvers or their equivalent, the area of such openings equaling or exceeding the combined discharge areas of the safety relief valves and other vent lines which discharge their content into the manhole housing.

(v) Safety devices for vaporizers shall be provided as follows:

(a) Vaporizers of less than 1 quart total capacity, heated by the ground or the surrounding air, need not be equipped with safety relief valves provided that adequate tests certified by any of the authorities referred to in paragraph (b)(2) of this section, demonstrate that the assembly is safe without safety relief valves.

(b) No vaporizer shall be equipped with fusible plugs.

(c) In industrial and gas manufacturing plants, safety relief valves on vaporizers within a building shall be piped to a point outside the building and be discharged upward.

(5) *Reinstallation of containers.* Containers may be reinstalled if they do not show any evidence of harmful external corrosion or other damage. Where containers are reinstalled underground, the corrosion resistant coating shall be put in good condition (see subparagraph (7)(vi) of this paragraph). Where containers are reinstalled above ground, the safety devices and gaging devices shall comply with subparagraph (4) of this paragraph and paragraph (b)(19) of this section respectively for aboveground containers.

(6) *Capacity of containers.* A storage container shall not exceed 90,000 gallons water capacity.

(7) *Installation of storage containers.* (i) Containers installed above ground, except as provided in subdivision (vii) of this subparagraph, shall be provided with substantial masonry or noncombustible structural supports on firm masonry foundation.

(ii) Aboveground containers shall be supported as follows:

(a) Horizontal containers shall be mounted on saddles in such a manner as to permit expansion and contraction. Structural metal supports may be employed when they are protected against fire in an approved manner. Suitable means of preventing corrosion shall be provided on that portion of the container in contact with the foundations or saddles.

(b) Containers of 2,000 gallons water capacity or less may be installed with nonfireproofed ferrous metal supports if mounted on concrete pads or footings, and if the distance from the outside bottom of the container shell to the concrete pad, footing, or the ground does not exceed 24 inches.

(iii) Any container may be installed with nonfireproofed ferrous metal supports if mounted on concrete pads or footings, and if the distance from the outside bottom of the container to the ground does not exceed 5 feet, provided the container is in an isolated location.

(iv) Containers may be partially buried providing the following requirements are met:

(a) The portion of the container below the surface and for a vertical distance not less than 3 inches above the surface of the ground is protected to resist corrosion, and the container is protected against settling and corrosion as required for fully buried containers.

(b) Spacing requirements shall be as specified for underground tanks in paragraph (b)(6)(ii) of this section.

(c) Relief valve capacity shall be as required for aboveground containers.

(d) Container is located so as not to be subject to vehicular damage, or is adequately protected against such damage.

(e) Filling densities shall be as required for above-ground containers.

(v) Containers buried underground shall be placed so that the top of the container is not less than 6 inches below grade. Where an underground container might be subject to abrasive action or physical damage due to vehicular traffic or other causes, then it shall be:

(a) Placed not less than 2 feet below grade, or

(b) Otherwise protected against such physical damage.

It will not be necessary to cover the portion of the container to which manhole and other connections are affixed; however, where necessary, protection shall be provided against vehicular damage. When necessary to prevent floating, containers shall be securely anchored or weighted.

(vi) (a) Containers shall be given a protective coating before being placed under ground. This coating shall be equivalent to hot-dip galvanizing or to two coatings of red lead followed by a heavy coating of coal tar or asphalt. In lowering the container into place, care shall be exercised to prevent damage to the coating. Any damage to the coating shall be repaired before backfilling.

(b) Containers shall be set on a firm foundation (firm earth may be used) and surrounded with earth or sand firmly tamped in place. Backfill should be free of rocks or other abrasive materials.

(vii) Containers with foundations attached (portable or semiportable containers with suitable steel "runners" or "skids" and popularly known in the industry as "skid tanks") shall be designed, installed, and used in accordance with these rules subject to the following provisions:

(a) If they are to be used at a given general location for a temporary period not to exceed 6 months they need not have fire-resisting foundations or saddles but shall have adequate ferrous metal supports.

(b) They shall not be located with the outside bottom of the container shell more than 5 feet above the surface of the ground unless fire-resisting supports are provided.

(c) The bottom of the skids shall not be less than 2 inches or more than 12 inches below the outside bottom of the container shell.

(d) Flanges, nozzles, valves, fittings, and the like, having communication with the interior of the container, shall be protected against physical damage.

(e) When not permanently located on fire-resisting foundations, piping connections shall be sufficiently flexible to minimize the possibility of breakage or leakage of connections if the container settles, moves, or is otherwise displaced.

(f) Skids, or lugs for attachment of skids, shall be secured to the container in accordance with the code or rules under which the container is designed and built (with a minimum factor of safety of four) to withstand loading in any direction equal to four times the weight of the container and attachments when filled to the maximum permissible loaded weight.

(viii) Field welding where necessary shall be made only on saddle plates or brackets which were applied by the manufacturer of the tank.

(ix) For aboveground containers, secure anchorage or adequate pier height shall be provided against possible container flotation wherever sufficiently high floodwater might occur.

(x) When permanently installed containers are interconnected, provision shall be made to compensate for expansion, contraction, vibration, and settling of containers, and interconnecting piping. Where flexible connections are used, they shall be of an approved type and shall be designed for a bursting pressure of not less than five times the vapor pressure of the product at 100° F. The use of nonmetallic hose is prohibited for permanently interconnecting such containers.

(xi) Container assemblies listed for interchangeable installation above

ground or under ground shall conform to the requirements for aboveground installations with respect to safety relief capacity and filling density. For installation above ground all other requirements for aboveground installations shall apply. For installation under ground all other requirements for underground installations shall apply.

(8) *Protection of container accessories.* (i) Valves, regulating, gaging, and other container accessory equipment shall be protected against tampering and physical damage. Such accessories shall also be so protected during the transit of containers intended for installation underground.

(ii) On underground or combination aboveground-underground containers, the service valve handwheel, the terminal for connecting the hose, and the opening through which there can be a flow from safety relief valves shall be at least 4 inches above the container and this opening shall be located in the dome or housing. Underground systems shall be so installed that all the above openings, including the regulator vent, are located above the normal maximum water table.

(iii) All connections to underground containers shall be located within a substantial dome, housing, or manhole and with access thereto protected by a substantial cover.

(9) *Drips for condensed gas.* Where vaporized gas on the low-pressure side of the system may condense to a liquid at normal operating temperatures and pressures, suitable means shall be provided for revaporization of the condensate.

(10) *Damage from vehicles.* When damage to LP-Gas systems from vehicular traffic is a possibility, precautions against such damage shall be taken.

(11) *Pits and drains.* Every effort should be made to avoid the use of pits, except pits fitted with automatic flammable vapor detecting devices. No drains or blowoff lines shall be directed into or in proximity to sewer systems used for other purposes.

(12) *General provisions applicable to systems in industrial plants (of 2,000 gallons water capacity and more) and to bulk filling plants.* (i) When standard watch service is provided, it shall be extended to the LP-Gas installation and personnel properly trained.

(ii) If loading and unloading are normally done during other than daylight hours, adequate lights shall be provided to illuminate storage containers, control valves, and other equipment.

(iii) Suitable roadways or means of access for extinguishing equipment such as wheeled extinguishers or fire department apparatus shall be provided.

(iv) To minimize trespassing or tampering, the area which includes container appurtenances, pumping equipment, loading and unloading facilities, and cylinder-filling facilities shall be enclosed with at least a 6-foot-high industrial type fence unless otherwise adequately protected. There shall be at least two means of emergency access.

(13) *Container-charging plants.* (i) The container-charging room shall be located not less than:

(a) Ten feet from bulk storage containers.

(b) Twenty-five feet from line of adjoining property which may be built upon.

(ii) Tank truck filling station outlets shall be located not less than:

(a) Twenty-five feet from line of adjoining property which may be built upon.

(b) Ten feet from pumps and compressors if housed in one or more separate buildings.

(iii) The pumps or compressors may be located in the container-charging room or building, in a separate building, or outside of buildings. When housed in a separate building, such building (a small noncombustible weather cover is not to be construed as a building) shall be located not less than:

(a) Ten feet from bulk storage tanks.

(b) Twenty-five feet from line of adjoining property which may be built upon.

(c) Twenty-five feet from sources of ignition.

(iv) When a part of the container-charging building is to be used for a boiler room or where open flames or similar sources of ignition exist or are employed, the space to be so occupied shall be separated from container charging room by a partition wall or walls of fire-resistant construction continuous from floor to roof or ceiling. Such separation walls shall be without openings and shall be joined to the floor, other walls, and ceiling or roof in a manner to effect a permanent gas-tight joint.

(v) Electrical equipment and installations shall conform with paragraphs (b)(17) and (18) of this section.

(14) *Fire protection.* (i) Each bulk plant shall be provided with at least one approved portable fire extinguisher having a minimum rating of 12-B, C.

(ii) In industrial installations involving containers of 150,000 gallons aggregate water capacity or more, provision shall be made for an adequate supply of water at the container site for fire protection in the container area, unless other adequate means for fire control are provided. Water hydrants shall be readily accessible and so spaced as to provide water protection for all containers. Sufficient lengths of firehose shall be provided at each hydrant location on a hose cart, or other means provided to facilitate easy movement of the hose in the container area. It is desirable to equip the outlet of each hose line with a combination fog nozzle. A shelter shall be provided to protect the hose and its conveyor from the weather.

(15) *Painting.* Aboveground containers shall be kept properly painted.

(16) *Lighting.* Electrical equipment and installations shall conform to paragraphs (b)(17) and (18) of this section.

(17) *Vaporizers for internal combustion engines.* The provisions of paragraph (e)(8) of this section shall apply.

(18) *Gas regulating and mixing equipment for internal combustion engines.* The provisions of paragraph (e)(9) of this section shall apply.

(c) *Liquefied petroleum gas as a motor fuel.*—(1) *Application.* (i) This paragraph applies to internal combustion engines, fuel containers, and pertinent equipment for the use of liquefied petroleum gases as a motor fuel on easily movable, readily portable units including self-propelled vehicles.

(ii) Fuel containers and pertinent equipment for internal combustion engines using liquefied petroleum gas where installation is of the stationary type are covered by paragraph (d) of this section. This paragraph does not apply to containers for transportation of liquefied petroleum gases nor to marine fuel use. All requirements of paragraph (b) of this section apply to this paragraph, unless otherwise noted in paragraph (b) of this section.

(2) *General.* (i) Fuel may be used from the cargo tank of a truck while in transit, but not from cargo tanks on trailers or semitrailers. The use of fuel from the cargo tanks to operate stationary engines is permitted providing wheels are securely blocked.

(ii) Passenger-carrying vehicles shall not be fueled while passengers are on board.

(iii) Industrial trucks (including lift trucks) equipped with permanently mounted fuel containers shall be charged outdoors. Charging equipment shall comply with the provisions of paragraph (h) of this section.

(iv) LP-Gas fueled industrial trucks shall comply with the Standard for Type Designations, Areas of Use, Maintenance and Operation of Powered Industrial Trucks, NFPA 505–1969.

(v) Engines on vehicles shall be shut down while fueling if the fueling operation involves venting to the atmosphere.

(3) *Design pressure and classification of fuel containers.* (i) Except as covered in subdivisions (ii) and (iii) of this subparagraph, containers shall be in accordance with Table H-32.

(ii) Fuel containers for use in industrial trucks (including lift trucks) shall be either DOT containers authorized for LP-Gas service having a minimum service pressure of 240 p.s.i.g. or minimum Container Type 250. Under 1950 and later ASME codes, this means a 312.5-p.s.i.g. design pressure container.

TABLE H-32

Container type	For gases with vapor press. not to exceed lb. per sq. in. gage at 100° F. (37.8 C.)	Minimum design pressure of container lb. per sq. in. gage — 1949 and earlier editions of ASME Code (Par. U-68, U-69)	1949 edition of ASME Code (Par. U-200, U-201); 1950, 1952, 1956, 1959, 1962, 1965, and 1968 (Division 1) editions of ASME Code; All editions of API-ASME Code[2]
[1]200	215	200	250

[1] Container type may be increased by increments of 25. The minimum design pressure of containers shall be 109% of the container type designation when constructed under 1949 or earlier editions of the ASME Code (Par. U-68 and U-69). The minimum design pressure of containers shall be 125% of the container type designation when constructed under: (1) the 1949 ASME Code (Par. U-200 and U-201), (2) 1950, 1952, 1956, 1959, 1962, 1965, and 1968 (Division 1) editions of the ASME Code, and (3) all editions of the API-ASME Code.

[2] Construction of containers under the API-ASME Code is not authorized after July 1, 1961.

(iii) Containers manufactured and maintained under DOT specifications and regulations may be used as fuel containers. When so used they shall conform to all requirements of this paragraph.

(iv) All container inlets and outlets except safety relief valves and gaging

devices shall be labeled to designate whether they communicate with vapor or liquid space. Labels may be on valves.

(4) *Installation of fuel containers.* (i) Containers shall be located in a place and in a manner to minimized the possibility of damage to the container. Containers located in the rear of trucks and buses, when protected by substantial bumpers, will be considered in conformance with this requirement. Fuel containers on passenger-carrying vehicles shall be installed as far from the engine as is practicable, and the passenger space and any space containing radio equipment shall be sealed from the container space to prevent direct seepage of gas to these spaces. The container compartment shall be vented to the outside. In case the fuel container is mounted near the engine or the exhaust system, the container shall be shielded against direct heat radiation.

(ii) Containers shall be installed with as much clearance as practicable but never less than the minimum road clearance of the vehicle under maximum spring deflection. This minimum clearance shall be to the bottom of the container or to the lowest fitting on the container or housing, whichever is lower.

(iii) Permanent and removable fuel containers shall be securely mounted to prevent jarring loose, slipping, or rotating, and the fastenings shall be designed and constructed to withstand static loading in any direction equal to twice the weight of the tank and attachments when filled with fuel using a safety factor of not less than four based on the ultimate strength of the material to be used. Field welding, when necessary, shall be made only on saddle plates, lugs or brackets, originally attached to the container by the tank manufacturer.

(iv) Fuel containers on buses shall be permanently installed.

(v) Containers from which vapor only is to be withdrawn shall be installed and equipped with suitable connections to minimize the accidental withdrawal of liquid.

(5) *Valves and accessories.* (i) Container valves and accessories shall have a rated working pressure of at least 250 p.s.i.g., and shall be of a type suitable for liquefied petroleum gas service.

(ii) The filling connection shall be fitted with an approved double back-pressure check valve, or a positive shut-off in conjunction with an internal back-pressure check valve. On a removable container the filler valve may be a hand operated shutoff valve with an internal excess flow valve. Main shutoff valves on the container on liquid and vapor lines must be readily accessible.

(iii) With the exceptions of subdivision (iv) (c) of this subparagraph, filling connections equipped with approved automatic back-pressure check valves, and safety relief valves, all connections to containers having openings for the flow of gas in excess of a No. 54 drill size shall be equipped with approved automatic excess flow valves to prevent discharge of content in case connections are broken.

(iv) Liquid-level gaging devices:

(a) Variable liquid-level gages which require the venting of fuel to the atmosphere shall not be used on fuel containers of industrial trucks (including lift trucks).

(b) On portable containers that may be filled in the vertical and/or horizontal position, the fixed liquid-level gage must indicate maximum permitted filling level for both vertical and horizontal filling with the container oriented to place the safety relief valve in communication with the vapor space.

(c) In the case of containers used solely in farm tractor service, and charged at a point at least 50 feet from any important building, the fixed liquid-level gaging device may be so constructed that the outward flow of container content exceeds that passed by a No. 54 drill size opening, but in no case shall the flow exceed that passed by a No. 31 drill-size opening. An excess flow valve is not required. Fittings equipped with such restricted drill size opening and container on which they are used shall be marked to indicate the size of the opening.

(d) All valves and connections on containers shall be adequately protected to prevent damage due to accidental contact with stationary objects or from loose objects thrown up from the road, and all valves shall be safeguarded against damage due to collision, overturning or other accident. For farm tractors where parts of the vehicle provide such protection to valves and fittings, the foregoing requirements shall be considered fulfilled. However, on removable type containers the protection for the fittings shall be permanently attached to the container.

(e) Exchange of removable fuel containers preferably should be done outdoors but may be done indoors. When removable fuel containers are used, means shall be provided in the fuel system to minimize the escape of fuel when the containers are exchanged. This may be accomplished by either of the following methods:

(*1*) Using an approved automatic quick-closing coupling (a type closing in both directions when uncoupled) in the fuel line, or

(*2*) Closing the valve at the fuel container and allowing the engine to run until the fuel in the line is consumed.

(6) *Piping—including pipe, tubing, and fittings.* (i) Pipe from fuel container to first-stage regulator shall be not less than schedule 80 wrought iron or steel (black or galvanized), brass or copper; or seamless copper, brass, or steel tubing. Steel tubing shall have a minimum wall thickness of 0.049 inch. Steel pipe or tubing shall be adequately protected against exterior corrosion. Copper tubing shall be types K or L or equivalent having a minimum wall thickness of 0.032 inch. Approved flexible connections may be used between container and regulator or between regulator and gas-air mixer within the limits of approval. The use of aluminum pipe or tubing is prohibited. In the case of removable containers an approved flexible connection shall be used between the container and the fuel line.

(ii) All piping shall be installed, braced, and supported so as to reduce to a minimum the possibility of vibration strains or wear.

(7) *Safety devices.* (i) Spring-loaded internal type safety relief valves shall be used on all motor fuel containers.

(ii) The discharge outlet from safety relief valves shall be located on the outside of enclosed spaces and as far as practicable from possible sources of ignition, and vented upward within 45 degrees of the vertical in such a manner as to prevent impingement of escaping gas upon containers, or parts of vehicles, or on vehicles in adjacent lines of traffic. A rain cap or other protector shall be used to keep water and dirt from collecting in the valve.

(iii) When a discharge line from the container safety relief valve is used, the line shall be metallic, other than aluminum, and shall be sized, located, and maintained so as not to restrict the required flow of gas from the safety relief valve. Such discharge line shall be able to withstand the pressure resulting from the discharge of vapor when the safety relief valve is in the full open position. When flexibility is necessary, flexible metal hose or tubing shall be used.

(iv) Portable containers equipped for volumetric filling may be filled in either the vertical or horizontal position only when oriented to place the safety relief valve in communication with the vapor space.

(v) Paragraph (b)(10)(xii) of this section for hydrostatic relief valves shall apply.

(8) *Vaporizers.* (i) Vaporizers and any part thereof and other devices that may be subjected to container pressure shall have a design pressure of at least 250 p.s.i.g.

(ii) Each vaporizer shall have a valve or suitable plug which will permit substantially complete draining of the vaporizer. It shall be located at or near the lowest portion of the section occupied by the water or other heating medium.

(iii) Vaporizers shall be securely fastened so as to minimize the possibility of becoming loosened.

(iv) Each vaporizer shall be permanently marked at a visible point as follows:

(*a*) With the design pressure of the fuel-containing portion in p.s.i.g.

(*b*) With the water capacity of the fuel-containing portion of the vaporizer in pounds.

(v) Devices to supply heat directly to a fuel container shall be equipped with an automatic device to cut off the supply of heat before the pressure inside the fuel container reaches 80 percent of the start to discharge pressure setting of the safety relief device on the fuel container.

(vi) Engine exhaust gases may be used as a direct source of heat supply for the vaporization of fuel if the materials of construction of those parts of the vaporizer in contact with exhaust gases are resistant to the corrosive action of exhaust gases and the vaporizer system is designed to prevent excessive pressures.

(vii) Vaporizers shall not be equipped with fusible plugs.

(9) *Gas regulating and mixing equipment.* (i) Approved automatic pressure reducing equipment shall be installed in a secure manner between the fuel supply container and gas-air mixer for the purpose of reducing the pressure of the fuel delivered to the gas-air mixer.

(ii) An approved automatic shutoff valve shall be provided in the fuel system at some point ahead of the inlet of the gas-air mixer, designed to prevent

flow of fuel to the mixer when the ignition is off and the engine is not running. In the case of industrial trucks and engines operating in buildings other than those used exclusively to house engines, the automatic shutoff valve shall be designed to operate if the engine should stop. Atmospheric type regulators (zero governors) shall be considered adequate as an automatic shutoff valve only in cases of outdoor operation such as farm tractors, construction equipment, irrigation pump engines, and other outdoor stationary engine installations.

(iii) The source of the air for combustion shall be completely isolated from the passenger compartment, ventilating system, or air-conditioning system.

(10) *Capacity of containers.* No single fuel container used on passenger carrying vehicles shall exceed 200 gallons water capacity. No single fuel container on other vehicles normally operating on the highway shall exceed 300 gallons water capacity except as provided in subparagraph (2)(i) of this paragraph.

(11) *Stationary engines in buildings.* Stationary engines and gas turbines installed in buildings, including portable engines used instead of or to supplement stationary engines, shall comply with the Standard for the Institution and Use of Stationary Combustion Engines and Gas Turbines, NFPA 37–1970, and the appropriate provisions of paragraphs (b), (c), and (d) of this section.

(12) *Portable engines in buildings.* (i) Portable engines may be used in buildings only for emergency use, except as provided by subparagraph (11) of this paragraph.

(ii) Exhaust gases shall be discharged to outside the building or to an area where they will not constitute a hazard.

(iii) Provision shall be made to supply sufficient air for combustion and cooling.

(iv) An approved automatic shutoff valve shall be provided in the fuel system ahead of the engine, designed to prevent flow of fuel to the engine when the ignition is off or if the engine should stop.

(v) The capacity of LP-Gas containers used with such engines shall comply with the applicable occupancy provision of paragraph (c)(5) of this section.

(13) *Industrial trucks inside buildings.* (i) LP-Gas-fueled industrial trucks are permitted to be used in buildings and structures.

(ii) No more than two LP-Gas containers shall be used on an industrial truck for motor fuel purposes.

(iii) LP-Gas-fueled industrial trucks are permitted to be used in buildings frequented by the public, when occupied by the public. The total water capacity of containers on each industrial truck shall not exceed 105 pounds (nominal 45 pounds LP-Gas).

(iv) Trucks shall not be left unattended in areas occupied by the public.

(v) Industrial trucks shall not be parked and left unattended in areas of possible excessive heat or sources of ignition.

(14) *Garaging LP-Gas-fueled vehicles.* (i) LP-Gas-fueled vehicles may be stored or serviced inside garages provided there are no leaks in the fuel system and the fuel tanks are not filled beyond the maximum filling capacity specified in paragraph (b)(12)(i) of this section.

(ii) LP-Gas-fueled vehicles being repaired in garages shall have the container shutoff valve closed except when fuel is required for engine operation.

(iii) Such vehicles shall not be parked near sources of heat, open flames, or similar sources of ignition or near open pits unless such pits are adequately ventilated.

(f) *Storage of containers awaiting use or resale.*—(1) *Application.* This paragraph shall apply to the storage of portable containers not in excess of 1,000 pounds water capacity, filled or partially filled, at user location but not connected for use, or in storage for resale by dealers or resellers. This paragraph shall not apply to containers stored at charging plants or at plants devoted primarily to the storage and distribution of LP-Gas or other petroleum products.

(2) *General.* (i) Containers in storage shall be located so as to minimize exposure to excessive temperature rise, physical damage, or tampering by unauthorized persons.

(ii) Containers when stored inside shall not be located near exits, stairways, or in areas normally used or intended for the safe exit of people.

(iii) Container valves shall be protected while in storage as follows:

(*a*) By setting into recess of container to prevent the possibility of their being struck if the container is dropped upon a flat surface, or

(*b*) By ventilated cap or collar, fastened to container capable of withstanding blow from any direction equivalent to that of a 30-pound weight dropped 4 feet. Construction must be such that a blow will not be transmitted to a valve or other connection.

(iv) The outlet valves of containers in storage shall be closed.

(v) Empty containers which have been in LP-Gas service should preferably be stored in the open. When stored inside, they shall be considered as full containers for the purpose of determining the maximum quantity of LP-Gas permitted by this paragraph.

(3) *Storage within buildings frequented by the public.* (i) DOT specification containers having a maximum individual water capacity of 2½ pounds, used with completely self-contained hand torches and similar applications, are permitted to be stored or displayed in a building frequented by the public. The display of such containers shall be limited to a total of 24 units of each brand and size. The total quantity on display and in storage shall not exceed 200 pounds LP-Gas.

(ii) Storage as provided in subparagraph (5) of this paragraph shall not be permitted within or attached to such a building.

(4) *Storage within buildings not frequented by the public (such as industrial buildings).* (i) The quantity of LP-Gas stored shall not exceed 300 pounds (approximately 2,550 cubic feet in vapor form) except as provided in subparagraph (5) of this paragraph.

(ii) Containers carried as a part of service equipment on highway mobile vehicles are not to be considered in the total storage capacity in subdivision (i) of this subparagraph provided such vehicles are stored in private garages, and are limited to one container per vehicle with an LP-Gas capacity of not more than 100 pounds. All container valves shall be closed.

(5) *Storage within special buildings or rooms.* (i) The quantity of LP-Gas stored in special buildings or rooms shall not exceed 10,000 pounds.

(ii) The walls, floors, and ceilings of container storage rooms that are within or adjacent to other parts of the building shall be constructed of material having at least a 2-hour fire resistance rating.

(iii) A portion of the exterior walls or roof having an area not less than 10 percent of that of the combined area of the enclosing walls and roof shall be of explosion relieving construction.

(iv) Each opening from such storage rooms to other parts of the building shall be protected by a 1½ hour (B) fire door listed by Underwriters' Laboratories Inc.

(v) Such rooms shall have no open flames for heating or lighting.

(vi) Such rooms shall be adequately ventilated both top and bottom to the outside only. The openings from such vents shall be at least 5 feet away from any other opening into any building.

(vii) The floors of such rooms shall not be below ground level. Any space below the floor shall be of solid fill or properly ventilated to the open air.

(viii) Such storage rooms shall not be located adjoining the line of property occupied by schools, churches, hospitals, athletic fields or other points of public gathering.

(ix) Fixed electrical equipment shall be installed in accordance with paragraph (b)(18) of this section.

(6) *Storage outside of buildings.* (i) Storage outside of buildings, for containers awaiting use or resale, shall be located in accordance with Table H–33 with respect to:

(*a*) the nearest important building or group of buildings;

(*b*) the line of adjoining property which may be built upon;

(*c*) busy thoroughfares;

(*d*) the line of adjoining property occupied by schools, churches, hospitals, athletic fields, or other points of public gathering.

TABLE H–33

Quantity of LP-Gas Stored:*	Distance
500 pounds or less	0
501 to 2,500 pounds	0*
2,501 to 6,000 pounds	10 feet
6,001 to 10,000 pounds	30 feet
Over 10,000 pounds	35 feet

*Container or containers shall be at least 10 feet from any building on adjoining property, any sidewalk, or any of the exposures described in § 1910.110(f)(6)(i) (*c*) or (*d*) of this paragraph.

(ii) Containers shall be in a suitable enclosure or otherwise protected against tampering.

(7) *Fire protection.* Storage locations other than supply depots separated and located apart from dealer, reseller, or user establishments shall be provided with at least one approved portable fire extinguisher having a minimum rating of 8–B, C.

(g) *LP-Gas system installations on commercial vehicles*—(1) *Application.* This paragraph applies to LP-Gas-system installations on vehicles (whether self-propelled or of the trailer or semi-trailer type) used for commercial, construction, or public service purposes such as mobile libraries and clinics, to all exchangeable container systems with container capacities greater than 105 pounds water capacity (approximately 45 pounds LP-Gas capacity) and to systems using containers permanently mounted on vehicles. It does not apply to LP-Gas motor fuel systems covered by paragraph (e) of this section. Paragraph (b) of this section applies to this paragraph unless otherwise noted. When such a vehicle is permanently parked, and LP-Gas is supplied from a system not mounted on and secured to the unit, paragraphs (c) and (d) of this section shall apply.

(2) *Construction and marking of containers.* Containers shall be constructed in accordance with paragraph (b) (3) of this section, and marked in accordance with the applicable requirements of paragraph (b) (5) of this section, and shall also meet the following:

(i) Containers designed for use as portable cylinders shall be constructed in accordance with DOT specifications, and in accordance with paragraph (b) (3) (v) of this section; where applicable.

(ii) All other containers whether designed for permanent mounting, or for portable or semiportable use (such as skid tanks), shall be constructed as provided for by paragraphs (b) (3) (i) and (iv) of this section. Mounting, securing, and protection of such containers shall be as in subdivisions (iii) and (iv) of this subparagraph.

(iii) Permanently installed containers shall meet the requirements of subdivision (a) of this subdivision with regard to container valves and accessories, and subdivision (b) of this subdivision as to mounting.

(a) (*1*) Nonrecessed container fittings and appurtenances shall be protected against damage by either:

(*i*) Their location.

(*ii*) The vehicle frame or bumper, or

(*iii*) A protective housing. The protective housing, if used, shall comply with the requirements under which the tanks are fabricated with respect to design and construction and shall be designed to withstand static loadings in any direction equal to twice the weight of the tank and attachments when filled with the lading using a safety factor of not less than four, based on the ultimate strength of the material to be used. The housing shall be provided with a weather cover if necessary to insure proper operation of valves and safety devices.

(2) Manually operated shutoff valves, except as covered in paragraph (e) (2) (i) of this section, or self-closing internal valves shall be closed except during transfer operations.

(b) (*1*) Tank motor vehicles with frames not made integral with the tank, as by welding, shall be provided with turnbuckles or similar positive devices for drawing the tank down tight on the frame. In addition, suitable stops or anchors shall be attached to the frame and/or the tank to prevent relative motion between them due to starting, stopping, and turning. The stops and anchors shall be so installed as to be readily accessible for inspection and maintenance.

(2) Any tank motor vehicle designed and constructed so that the cargo tank constitutes in whole or in part the stress member used in lieu of a frame shall be supported by external cradles subtending at least 120 degrees of the shell circumference. The design calculations shall include beam stress, shear stress, torsion stress, bending moment, and acceleration stress for the cargo tank as a whole using a factor of safety of four, based on the ultimate tensile strength of the material. Maximum concentrated stresses which might be created at pads and cradles due to shear, bending, and torsion shall also be calculated in accordance with Appendix G of the American Society of Mechanical Engineers, Unfired Pressure Vessel Code, 1968. Fully loaded vehicles shall be assumed to be operating under highway conditions equal to two "g" loading. The effects of fatigue shall be taken into consideration. Cargo tanks mounted on frames may be supported by longitudinal members attached to pads providing the above-stated factors are taken into account.

(3) Where any tank support is attached to any part of a tank head, the stresses imposed upon the head shall be provided for as required in (2) of this subdivision.

(*d*) Tank supports, stops, anchors, and bumpers shall not be welded directly to the tank but shall be attached by means of pads of the same material as the tank. The pad thickness shall be not less than one-fourth inch, or the thickness of the shell material if less, and no greater than the shell material. Each pad shall extend at least four times its thickness, in each direction, beyond the weld attaching the support, bumper, stop, or anchor. Each pad shall be preformed to an inside radius no greater than the outside radius of the tank at the place of attachment. Each pad corner shall be rounded to a radius at least one-fourth the width of the pad, and no greater than one-half the width of the pad. Weepholes and telltale holes, if used, shall be drilled or punched before the pads are attached to the tank. Each pad shall be attached to the tank by continuous fillet welding using filler material having properties conforming to the recommendations of the maker of the shell and head material.

(iv) Portable or semiportable containers (skid tanks as covered by paragraph (d) (7) (vii) of this section) shall meet the applicable requirements of (*a*) to (*f*) of this subdivision inclusive with regard to container valves and accessories and paragraph (e) (4) (iii) of this section as to mounting. Containers designed for permanent installation as part of systems under paragraph (d) of this section shall not be used.

(*a*) Nonrecessed container fittings and appurtenances shall be protected against damage by either—

(*1*) Their location.

(2) The vehicle frame or bumper, or

(3) A protective housing. The protective housing, if used, shall comply with the requirements under which the tanks are fabricated with respect to design and construction and shall be designed to withstand static loadings in any direction equal to twice the weight of the tank and attachments when filled with the lading using a safety factor of not less than four, based on the ultimate strength of the material to be used. The housing shall be provided with a weather cover if necessary to insure proper operation of valves and safety devices.

(*b*) Filling connections shall be provided with approved automatic back pressure check valves, excess flow check valves or quick closing internal valves to prevent excessive escape of gas in case the filling connection is broken, except that where the filling and discharge connect on a common opening in the container shell, and that opening is fitted with a quick-closing internal valve as specified in subdivision (c) of this subdivision, the automatic valve shall not be required. In addition every inlet and outlet connection shall be equipped with a manually or automatically operated shutoff valve. Liquid discharge openings, except those for engine fuel lines, on tanks built after September 1, 1965, shall be fitted with a remotely controlled internal shutoff valve. Such valve shall conform to the following requirements:

(*1*) The seat of the valve shall be inside the tank, or in the opening nozzle or flange, or in a companion flange bolted to the nozzle or flange.

(2) All parts of the valve inside the tank, nozzle, or companion flange shall be made of material not subject to corrosion or other deterioration in the presence of the lading.

(3) The arrangement of parts shall be such that damage to parts exterior to the tank will not prevent effective seating of the valve.

(*4*) The valve may be operated normally by mechanical means, by hydraulic means, or by air, or gas pressure.

(5) The valve shall be provided with remote means of automatic closure, both mechanical and thermal, in at least two places for tanks over 3,500 gallons water capacity. These remote control stations shall be located at each end of the tank and diagonally opposite each other. The thermal control mechanism shall have a fusible element with a melting point not over 220° F or less than 208° F. At least one remote control station shall be provided for tanks of 3,500 gallons water capacity or less, and such actuating means may be mechanical.

(*c*) All other connections to containers, except those used for gaging devices, thermometer wells, safety relief devices, and plugged openings, shall be provided with suitable automatic excess flow valves, or in lieu thereof may be fitted with quick-closing internal valves.

The control mechanism for the internal valve shall be provided with a secondary control, remote from the fill or discharge connections (for use in the event of accidents or fire during delivery operations), and such control mechanism shall have a fusible element with a melting point not over 220° F, or less than 208° F.

(*d*) Manually operated shutoff valves, except as covered in paragraphs (e) (2) (i) of this section, or self-closing internal

valves shall be closed except during transfer operations.

(*e*) Excess flow valves shall close automatically at the rated flow of vapor or liquid as specified by the valve manufacturers. The flow rating of the piping beyond the excess flow valve shall be greater than that of the excess flow valve and such rating shall include valves, fittings, and hose, except, when branching or necessary restrictions are incorporated in such a piping system so that flow ratings are less than that of the excess flow valve at the tank, then additional excess flow valves shall be installed in the piping where such flow rate is reduced.

(*f*) Container inlets and outlets, except those used for safety relief valves, liquid-level gaging devices, and pressure gages, shall be labeled to designate whether they communicate with vapor or liquid space when the container is filled to maximum permitted filling density. Labels may be on valves.

(3) *Capacity of a system.* No single fuel container used on passenger carrying vehicles shall exceed 200 gallons water capacity.

(4) *Description of a system.* A system consists of an assembly of equipment installed on a commercial vehicle.

(5) *Location of containers and systems.* (i) Containers shall not be installed, transported, or stored (even temporarily) inside any vehicle covered by this paragraph except as provided by the applicable regulations of DOT.

(ii) Containers, control valves, and regulating equipment comprising a complete system shall be suitably protected against damage and weather. Systems may be installed in a recess vaportight to the inside of the vehicle and accessible from and vented to the outside.

(iii) Systems installed outside of mobile units shall be so located that discharge from safety relief devices shall be not less than 3 feet horizontally away from any opening into the unit below the level of such discharge. When the system is located in a recess vaportight to the inside, vent openings in such recess shall be not less than 3 feet horizontally away from any opening into the mobile unit below the level of these vents.

(iv) There shall be no fuel connection between tractor and trailer or other vehicle units.

(v) The container or container carrier shall be secured in place by fastenings designed and constructed with a minimum safety factor of four to withstand loading in any direction equal to twice the weight of the container when filled to normal capacity with LP-Gas.

(6) *Container valves and accessories.* Container valves and accessories shall be provided, protected and mounted as follows:

(i) Systems utilizing DOT cylinders in accordance with paragraph (c) (6) of this section.

(ii) All other systems in accordance with paragraph (d) (3) (ii) through (vii) of this section.

(iii) Portable, semiportable and permanently mounted containers shall be mounted and protected as provided under subparagraph (2) (ii) through (iv) of this paragraph.

(7) *Safety-relief devices.* (i) DOT containers shall be provided with safety-relief devices as required by the regulations of DOT.

(ii) ASME containers and API-ASME containers shall be provided with safety-relief devices as required by paragraph (b) (10) of this section.

(iii) (*a*) A final stage regulator of an LP-Gas system (excluding any appliance regulator) shall be equipped on the low-pressure side with a relief valve which is set to start to discharge within the limits specified in Table H-30.

(*b*) The relief valve and space above the regulator and relief valve diaphragms shall be vented to the outside air and terminate at a position to minimize the possibility of vapors accumulating at sources of ignition.

(iv) Whenever equipment such as a cargo heater or cooler on commercial vehicles is a type designed to be in operation while in transit, suitable means to stop the flow such as an excess flow valve or other device, shall be installed. This device will be actuated to stop the flow in the event of a break in the fuel supply line. All excess flow valves shall comply with paragraph (b) (7) (iii) of this section.

(8) *System design and line pressure.* Systems may be of either vapor withdrawal or liquid withdrawal type and shall comply with the applicable requirements for the type of usage involved.

(9) *System enclosure and mounting.* (i) Housing or enclosures shall be designed to provide proper ventilation.

(ii) Hoods, domes, or removable portions of cabinets shall be provided with means to keep them firmly in place during transit.

(iii) Provision shall be incorporated in the assembly to hold the containers firmly in position and prevent their movement during transit in accordance with paragraph (e) (4) (iii) of this section.

(iv) Containers shall be mounted on a substantial support or base secured firmly to the vehicle chassis. Neither the container nor its support shall extend below the frame.

(10) *Piping—including pipe, tubing, and fittings.* (i) Regulators shall be connected directly to the container valve outlet or mounted securely by means of a support bracket and connected to the container valve or valves with a listed high pressure flexible connector.

(ii) Provision shall be made between the regulator outlet and the gas service lines by either a flexible connector or a tubing loop to provide for expansion, contraction, jarring, and vibration.

(iii) Pipe, tubing, and fittings shall conform to paragraph (b) (8) of this section except that the use of aluminum alloy piping is prohibited. Steel tubing shall have a minimum wall thickness of 0.049 inch. Steel piping or tubing shall be adequately protected against exterior corrosion.

(iv) Approved gas tubing fittings shall be employed for making tubing connections.

(v) The fuel line shall be firmly fastened in a protected location and where under the vehicle and outside and below any insulation or false bottom, fastenings shall be such as to prevent abrasion or damage to the gasline due to vibration. Where the fuel line passes through structural members or floors, a rubber grommet or equivalent shall be installed to prevent chafing.

(vi) The fuel line shall be installed to enter the vehicle through the floor directly beneath or adjacent to the appliance which it serves. When a branch line is required the tee connection shall be in the main fuel line and located under the floor and outside the vehicle.

(vii) All parts of the system assembly shall be so designed and secured as to preclude such parts working loose during transit.

(11) *Appliances.* (i) LP-Gas appliances shall be approved for use on commercial vehicles.

(ii) In the case of vehicles not intended for human occupancy and where the gas-fired heating appliance is used to protect the cargo, such heater may be of the unvented type but provision shall be made to dispose of the products of combustion to the outside.

(iii) In the case of vehicles intended for human occupancy, all gas-fired heating appliances, including water heaters, shall be designed or installed to provide for complete separation of the combustion system from the atmosphere of the living space. Such appliances shall be installed with the combustion air inlet assembly furnished as a component of the appliance and, also, with either—

(*a*) The flue gas outlet assembly furnished as a component of the appliance, or

(*b*) A listed roof jack if the appliance is listed for such use.

The combustion air inlet assembly, flue gas outlet assembly, and roof jack shall extend to the outside atmosphere.

(iv) Provision shall be made to insure an adequate supply of outside air for combustion.

(v) All gas-fired heating appliances and water heaters shall be equipped with an approved automatic device designed to shut off the flow of gas to the main burner and to the pilot in the event the pilot flame is extinguished.

(vi) Gas-fired appliances installed in the cargo space shall be located so they are readily accessible.

(vii) Appliances shall be constructed or protected to reduce to a minimum possible damage or impaired operation resulting from cargo shifting or handling.

(viii) Appliances inside the vehicle shall be located so that a fire at an appliance will not block egress of persons therefrom.

(12) *General precautions.* (i) DOT containers shall be marked, maintained, and requalified for use in accordance with the regulations of DOT.

(ii) Requalification of containers for continued service is the responsibility of the owner; containers shall be stamped with the date of requalification. When DOT cylinders are requalified by retesting, such retest shall be made in accordance with DOT regulations.

(iii) Containers shall not be charged with fuel unless they bear the proper markings of the code or specifications under which they were constructed, and

in addition, with their water capacity. In the case of cylinders or portable containers filled by weight, the container shall be marked with its tareweight.

(iv) DOT containers which have been involved in a fire shall not be recharged until they have been requalified for service according to DOT regulations.

(v) American Petroleum Institute-American Society of Mechanical Engineers (API-ASME) containers or ASME containers which have been involved in a fire shall not be recharged until they have been retested in accordance with the requirements for their original hydrostatic test and found to be suitable for continued service.

(vi) Containers shall not be charged without the consent of the owner.

(vii) A permanent caution plate shall be provided on the appliance or adjacent to the container outside of any enclosure. It shall include the word "Caution" and following instructions, or instructions embodying substantially similar language.

(a) Be sure all appliance valves are closed before opening container valve.

(b) Connections at appliances, regulators, and containers must be checked periodically for leaks with soapy water or its equivalent.

(c) Never use a match or flame to check for leaks.

(d) Container valves must be closed when the equipment is not in use.

(13) *Charging of containers.* Containers shall be charged as provided in paragraph (b) (12) of this section.

(14) *Fire extinguisher.* Mobile cook-units shall be provided with at least one approved portable fire extinguisher having a minimum rating of 8-B,C.

(h) *Liquefied petroleum gas service stations.*—(1) *Application.* This paragraph applies to storage containers, and dispensing devices, and pertinent equipment in service stations where LP-Gas is stored and is dispensed into fuel tanks of motor vehicles. See paragraph (e) of this section for requirements covering use of LP-Gas as a motor fuel. All requirements of paragraph (b) of this section apply to this paragraph unless otherwise noted.

(2) *Design pressure and classification of storage containers.* Storage containers shall be designed and classified in accordance with Table H-34.

TABLE H-34

Container type	For gases with vapor pressure not to exceed 225 lb. per sq. in. gage at 105° F. (40.5 C.)	Minimum design pressure of container, lb. per sq. in. gage	
		1949 and earlier editions of ASME Code (Par. U-68, U-69)	1949 (1st) and later editions of ASME Code (Par. U-200, U-201, 1950, 1952, 1956, 1959, 1962, 1965 and 1968 (10th) editions of API-ASME Code, all editions of API-ASME Code [3]
[1] 200	215	250	250

[1] Container type may be increased by increments of 25. The minimum design pressure of containers shall be 100 percent of the container type designation when constructed under ASME or earlier editions of the ASME Code (Par. U-68 and U-69). The minimum design pressure of containers shall be 125 percent of the container type designation when constructed under: (1) the 1949 ASME Code (Paragraphs U-200 and U-201), (2) 1950, 1952, 1956, 1959, 1962, 1965, and 1968 (10th)[2] editions of the ASME Code, and (3) all editions of the API-ASME Code.

[2] Construction of containers under the API-ASME Code is not authorized after July 1, 1951.

(3) *Container valves and accessories.* (i) A filling connection on the container shall be fitted with one of the following:

(a) A combination back-pressure check and excess flow valve.

(b) One double or two single back-pressure valves.

(c) A positive shutoff valve, in conjunction with either,

(1) An internal back-pressure valve, or

(2) An internal excess flow valve.

In lieu of an excess flow valve, filling connections may be fitted with a quick-closing internal valve, which shall remain closed except during operating periods. The mechanism for such valves may be provided with a secondary control which will cause it to close automatically in case of fire. When a fusible plug is used its melting point shall not exceed 220° F.

(ii) A filling pipe inlet terminal not on the container shall be fitted with a positive shutoff valve in conjunction with either;

(a) A back pressure check valve, or

(b) An excess flow check valve.

(iii) All openings in the container except those listed below shall be equipped with approved excess flow check valves:

(a) Filling connections as provided in subdivision (i) of this subparagraph.

(b) Safety relief connections as provided in paragraph (b) (7) (ii) of this section.

(c) Liquid-level gaging devices as provided in paragraphs (b) (7) (iv) and (19) (iv) of this section.

(d) Pressure gage connections as provided in paragraph (b) (7) (v) of this section.

(iv) All container inlets and outlets except those listed below shall be labeled to designate whether they connect with vapor or liquid (labels may be on valves):

(a) Safety relief valves.

(b) Liquid-level gaging devices.

(c) Pressure gages.

(v) Each storage container shall be provided with a suitable pressure gage.

(4) *Safety-relief valves.* (i) All safety-relief devices shall be installed as follows:

(a) On the container and directly connected with the vapor space.

(b) Safety-relief valves and discharge piping shall be protected against physical damage. The outlet shall be provided with loose-fitting rain caps. There shall be no return bends or restrictions in the discharge piping.

(c) The discharge from two or more safety relief valves having the same pressure settings may be run into a common discharge header. The cross-sectional area of such header shall be at least equal to the sum of the cross-sectional areas of the individual discharges.

(d) Discharge from any safety relief device shall not terminate in any building nor beneath any building.

(ii) Aboveground containers shall be provided with safety relief valves as follows:

(a) The rate of discharge, which may be provided by one or more valves, shall be not less than that specified in paragraph (b) (10) (ii) of this section.

(b) The discharge from safety relief valves shall be vented to the open air unobstructed and vertically upwards in such a manner as to prevent any impingement of escaping gas upon the container; loose-fitting rain caps shall be used. On a container having a water capacity greater than 2,000 gallons, the discharge from the safety relief valves shall be vented away from the container vertically upwards to a point at least 7 feet above the container. Suitable provisions shall be made so that any liquid or condensate that may accumulate inside of the relief valve or its discharge pipe will not render the valve inoperative. If a drain is used, a means shall be provided to protect the container, adjacent containers, piping, or equipment against impingement of flame resulting from ignition of the product escaping from the drain.

(iii) Underground containers shall be provided with safety relief valves as follows:

(a) The discharge from safety-relief valves shall be piped vertically upward to a point at least 10 feet above the ground. The discharge lines or pipes shall be adequately supported and protected against physical damage.

(b) Where there is a probability of the manhole or housing becoming flooded, the discharge from regulator vent lines should be above the highest probable water level.

(c) If no liquid is put into a container until after it is buried and covered, the rate of discharge of the relief valves may be reduced to not less than 30 percent of the rate shown in paragraph (b) (10) (ii) of this section. If liquid fuel is present during installation of containers, the rate of discharge shall be the same as for aboveground containers. Such containers shall not be uncovered until emptied of liquid fuel.

(5) *Capacity of liquid containers.* Individual liquid storage containers shall not exceed 30,000 gallons water capacity.

(6) *Installation of storage containers.* (i) (a) Each storage container used exclusively in service station operation shall comply with the following table which specifies minimum distances to a building, groups of buildings, and adjoining property lines which may be built upon.

Water capacity per container (gallons)	Minimum distances: Aboveground and underground (feet)	Minimum distances: Between aboveground containers (feet)
Up to 2,000	25	3
Over 2,000	50	5

NOTE: The above distances may be reduced to not less than 10 feet for service station buildings of other than wood frame construction.

(b) Readily ignitible material including weeds and long dry grass, shall be removed within 10 feet of containers.

(c) The minimum separation between LP-Gas containers and flammable liquid tanks shall be 20 feet and the minimum separation between a container and the centerline of the dike shall be 10 feet.

(d) LP-Gas containers located near flammable liquid containers shall be protected against the flow or accumulation of flammable liquids by diking, diversion curbs, or grading.

(e) LP-Gas containers shall not be located within diked areas for flammable liquid containers.

(f) Field welding is permitted only on saddle plates or brackets which were applied by the container manufacturer.

(g) When permanently installed containers are interconnected, provision shall be made to compensate for expansion, contraction, vibration, and settling of containers and interconnecting piping. Where flexible connections are used, they shall be of an approved type and shall be designed for a bursting pressure of not less than five times the vapor pressure of the product at 100° F. The use of nonmetallic hose is prohibited for interconnecting such containers.

(h) Where high water table or flood conditions may be encountered protection against container flotation shall be provided.

(i) Aboveground containers shall be installed in accordance with this subdivision.

(a) Containers may be installed horizontally or vertically.

(b) Containers shall be protected by crash rails or guards to prevent physical damage unless they are so protected by virtue of their location. Vehicles shall not be serviced within 10 feet of containers.

(c) Container foundations shall be of substantial masonry or other noncombustible material. Containers shall be mounted on saddles which shall permit expansion and contraction, and shall provide against the excessive concentration of stresses. Corrosion protection shall be provided for tank-mounting areas. Structural metal container supports shall be protected against fire. This protection is not required on prefabricated storage and pump assemblies, mounted on a common base, with container bottom not more than 24 inches above ground and whose water capacity is 2,000 gallons or less if the piping connected to the storage and pump assembly is sufficiently flexible to minimize the possibility of breakage or leakage in the event of failure of the container supports.

(ii) Underground containers shall be installed in accordance with this subdivision.

(a) Containers shall be given a protective coating before being placed under ground. This coating shall be equivalent to hot-dip galvanizing or to two coatings of red lead followed by a heavy coating of coal tar or asphalt. In lowering the container into place, care shall be exercised to minimize abrasion or other damage to the coating. Damage to the coating shall be repaired before backfilling.

(b) Containers shall be set on a firm foundation (firm earth may be used) and surrounded with earth or sand firmly tamped in place. Backfill should be free of rocks or other abrasive materials.

(c) A minimum of 2 feet of earth cover shall be provided. Where ground conditions make compliance with this requirement impractical, equivalent protection against physical damage shall be provided. The portion of the container to which manhole and other connections are attached need not be covered. If the location is subjected to vehicular traffic, containers shall be protected by a concrete slab or other cover adequate to prevent the weight of a loaded vehicle imposing concentrated direct loads on the container shell.

(7) *Protection of container fittings.* Valves, regulators, gages, and other container fittings shall be protected against tampering and physical damage.

(8) *Transport truck unloading point.* (i) During unloading, the transport truck shall not be parked on public thoroughfares and shall be at least 5 feet from storage containers, and shall be positioned so that shutoff valves are readily accessible.

(ii) The filling pipe inlet terminal shall not be located within a building nor within 10 feet of any building or driveway. It shall be protected against physical damage.

(9) *Piping, valves, and fittings.* (i) Piping may be underground, above ground, or a combination of both. It shall be well supported and protected against physical damage and corrosion.

(ii) Piping laid beneath driveways shall be installed to prevent physical damage by vehicles.

(iii) Piping shall be wrought iron or steel (black or galvanized), brass or copper pipe; or seamless copper, brass, or steel tubing and shall be suitable for a minimum pressure of 250 p.s.i.g. Pipe joints may be screwed, flanged, brazed, or welded. The use of aluminum alloy piping or tubing is prohibited.

(iv) All shutoff valves (liquid or gas) shall be suitable for liquefied petroleum gas service and designed for not less than the maximum pressure to which they may be subjected. Valves which may be subjected to container pressure shall have a rated working pressure of at least 250 p.s.i.g.

(v) All materials used for valve seats, packing, gaskets, diaphragms, etc., shall be resistant to the action of LP-Gas.

(vi) Fittings shall be steel, malleable iron, or brass having a minimum working pressure of 250 p.s.i.g. Cast iron pipe fittings, such as ells, tees, and unions shall not be used.

(vii) All piping shall be tested after assembly and proved free from leaks at not less than normal operating pressures.

(viii) Provision shall be made for expansion, contraction, jarring, and vibration, and for settling. This may be accomplished by flexible connections.

(10) *Pumps and accessories.* All pumps and accessory equipment shall be suitable for LP-Gas service, and designed for not less than the maximum pressure to which they may be subjected. Accessories shall have a minimum rated working pressure of 250 p.s.i.g. Positive displacement pumps shall be equipped with suitable pressure actuated bypass valves permitting flow from pump discharge to storage container or pump suction.

(11) *Dispensing devices.* (i) Meters, vapor separators, valves, and fittings in the dispenser shall be suitable for LP-Gas service and shall be designed for a minimum working pressure of 250 p.s.i.g.

(ii) Provisions shall be made for venting LP-Gas contained in a dispensing device to a safe location.

(iii) Pumps used to transfer LP-Gas shall be equipped to allow control of the flow and to prevent leakage or accidental discharge. Means shall be provided outside the dispensing device to readily shut off the power in the event of fire or accident.

(iv) A manual shutoff valve and an excess flow check valve shall be installed downstream of the pump and ahead of the dispenser inlet.

(v) (a) Dispensing hose shall be resistant to the action of LP-Gas in the liquid phase and designed for a minimum bursting pressure of 1,250 p.s.i.g.

(b) An excess flow check valve or automatic shutoff valve shall be installed at the terminus of the liquid line at the point of attachment of the dispensing hose.

(vi) (a) LP-Gas dispensing devices shall be located not less than 10 feet from aboveground storage containers greater than 2,000 gallons water capacity. The dispensing devices shall not be less than 20 feet from any building (not including canopies), basement, cellar, pit, or line of adjoining property which may be built upon and not less than 10 feet from sidewalks, streets, or thoroughfares. No drains or blowoff lines shall be directed into or in proximity to the sewer systems used for other purposes.

(b) LP-Gas dispensing devices shall be installed on a concrete foundation or as part of a complete storage and dispensing assembly mounted on a common base, and shall be adequately protected from physical damage.

(c) LP-Gas dispensing devices shall not be installed within a building except that they may be located under a weather shelter or canopy provided this area is not enclosed on more than two sides. If the enclosing sides are adjacent to each other, the area shall be properly ventilated.

(vii) The dispensing of LP-Gas into the fuel container of a vehicle shall be performed by a competent attendant who shall remain at the LP-Gas dispenser during the entire transfer operation.

(12) *Additional rules.* There shall be no smoking on the driveway of service stations in the dispensing areas or transport truck unloading areas. Conspicuous signs prohibiting smoking shall be posted within sight of the customer being served. Letters on such signs shall be not less than 4 inches high. The motors of all vehicles being fueled shall be shut off during the fueling operations.

(13) *Electrical.* Electrical equipment and installations shall conform to paragraphs (b) (17) and (18) of this section.

(14) *Fire protection.* Each service station shall be provided with at least one approved portable fire extinguisher having at least an 8-B, C, rating.

(i) *Scope.*—(1) *Application.* (i) Paragraph (b) of this section applies to installations made in accordance with the requirements of paragraphs (c), (d), (e), (g), and (h) of this section, except as noted in each of those paragraphs.

(ii) Paragraphs (c) through (h) of this section apply as provided in each of those paragraphs.

(2) *Inapplicability.* This section does not apply to:

(i) Marine and pipeline terminals, natural gas processing plants, refineries, or tank farms other than those at industrial sites.

(ii) LP-Gas refrigerated storage systems;

(iii) LP-Gas when used with oxygen. The requirements of § 1910.252 shall apply to such use;

(iv) LP-Gas when used in utility gas plants. The National Fire Protection Association Standard for the Storage and Handling of Liquefied Petroleum Gases at Utility Gas Plants, NFPA No. 59–1968, shall apply to such use;

(v) Low-pressure (not in excess of one-half pound per square inch or 14 inches water column) LP-Gas piping systems, and the installation and operation of residential and commercial appliances including their inlet connections, supplied through such systems. For such systems, the National Fire Protection Association Standard for the Installation of Gas Appliances and Gas Piping, NFPA 54–1969 shall apply.

(3) *Retroactivity.* Unless otherwise stated, it is not intended that the provisions of this section be retroactive.

(i) Existing plants, appliances, equipment, buildings, structures, and installations for the storage, handling or use of LP-Gas, which were in compliance with the current provisions of the National Fire Protection Association Standard for the Storage and Handling of Liquefied Petroleum Gases NFPA No. 58, at the time of manufacture or installation may be continued in use, if such continued use does not constitute a recognized hazard that is causing or is likely to cause death or serious physical harm to employees.

(ii) Stocks of equipment and appliances on hand in such locations as manufacturers' storage, distribution warehouses, and dealers' storage and showrooms, which were in compliance with the current provisions of the National Fire Protection Association Standard for the Storage and Handling of Liquefied Petroleum Gases, NFPA No. 58, at the time of manufacture, may be placed in service, if such use does not constitute a recognized hazard that is causing or is likely to cause death or serious physical harm to employees.

§ 1910.111 Storage and handling of anhydrous ammonia.

(a) *General*—(1) *Scope.* (i) This standard is intended to apply to the design, construction, location, installation, and operation of anhydrous ammonia systems including refrigerated ammonia storage systems.

(ii) This standard does not apply to:

(a) Ammonia manufacturing plants.

(b) Refrigeration plants where ammonia is used solely as a refrigerant.

(2) *Definitions.* As used in this section.

(i) "Appurtenances"—All devices such as pumps, compressors, safety relief devices, liquid-level gaging devices, valves and pressure gages.

(ii) "Cylinder"—A container of 1,000 pounds of water capacity or less constructed in accordance with Department of Transportation specifications.

(iii) "Code"—The Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels of the American Society of Mechanical Engineers (ASME)—1968.

(iv) "Container"—Includes all vessels, tanks, cylinders, or spheres used for transportation, storage, or application of anhydrous ammonia.

(v) "DOT"—U.S. Department of Transportation.

(vi) "Design pressure" is identical to the term "Maximum Allowable Working Pressure" used in the Code.

(vii) "Farm vehicle" (implement of husbandry)—A vehicle for use on a farm on which is mounted a container of not over 1,200 gallons water capacity.

(viii) "Filling density"—the percent ratio of the weight of the gas in a container to the weight of water at 60° F. that the container will hold.

(ix) "Gas"—Anhydrous ammonia in either the gaseous or liquefied state.

(x) "Gas mask"—Gas masks approved by the Bureau of Mines, U.S. Department of the Interior.

(xi) "Capacity"—Total volume of the container in standard U.S. gallons.

(xii) DOT specifications—Regulations of the Department of Transportation published in 49 CFR Chapter I.

(xiii) "DOT regulations"—See § 1910.-111(a)(2)(xii).

(xiv) "DOT requirements"—See § 1910.111(a)(2)(xii).

(b) *Basic rules.* This paragraph applies to all paragraphs of this section unless otherwise noted.

(1) *Approval of equipment and systems.* Each appurtenance shall be approved in accordance with paragraph (b)(1)(i), (ii), (iii), or (iv) of this section.

(i) It was installed before February 8, 1973, and was approved, tested, and installed in accordance with either the provisions of the American National Standard for the Storage and Handling of Anhydrous Ammonia, K61.1, or the Fertilizer Institute Standards for the Storage and Handling of Agricultural Anhydrous Ammonia, M–1, in effect at the time of installation; or

(ii) It is accepted, or certified, or listed, or labeled, or otherwise determined to be safe by a nationally recognized testing laboratory, such as, but not limited to, Underwriter's Laboratories Inc. and Factory Mutual Research Corporation; or

(iii) It is a type which no nationally recognized testing laboratory does, or will undertake to, accept, certify, list, label, or determine to be safe; and such equipment is inspected or tested by any Federal, State, municipal, or other local authority responsible for enforcing occupational safety provisions of a Federal, State, municipal or other local law, code, or regulation pertaining to the storage, handling, transport, and use of anhydrous ammonia, and found to be in compliance with either the provisions of the American National Standard for the Storage and Handling of Anhydrous Ammonia, K61.1, or the Fertilizer Institute Standards for the Storage and Handling of Agricultural Anhydrous Ammonia, M–1, in effect at the time of installation; or

(iv) It is a custom-designed and custom-built unit, which no nationally recognized testing laboratory, or Federal, State, municipal or local authority responsible for the enforcement of a Federal, State, municipal, or local law, code or regulation pertaining to the storage, transportation and use of anhydrous ammonia is willing to undertake to accept, certify, list, label or determine to be safe, and the employer has on file a document attesting to its safe condition following the conduct of appropriate tests. The document shall be signed by a registered professional engineer or other person having special training or experience sufficient to permit him to form an opinion as to safety of the unit involved. The document shall set forth the test bases, test data and results, and also the qualifications of the certifying person.

(v) For the purposes of this paragraph (b)(1), the word "listed" means that equipment is of a kind mentioned in a list which is published by a nationally recognized laboratory which makes periodic inspection of the production of such equipment, and states such equipment meets nationally recognized standards or has been tested and found safe for use in a specified manner. "Labeled" means there is attached to it a label, symbol, or other identifying mark of a nationally recognized testing laboratory which, makes periodic inspections of the production of such equipment, and whose labeling indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner. "Certified" means it has been tested and found by a nationally recognized testing laboratory to meet nationally recognized standards or to be safe for use in a specified manner, or is of a kind whose production is periodically inspected by a nationally recognized testing laboratory, and it bears a label, tag, or other record of certification.

(2) *Requirements for construction, original test and requalification of non-refrigerated containers.* (i) Containers used with systems covered in paragraphs (c), (f), (g), and (h) of this section shall be constructed and tested in accordance with the Code except that construction under Table UW12 at a basic joint efficiency of under 80 percent is not authorized.

(ii) Containers built according to the Code do not have to comply with Paragraphs UG125 to UG128 inclusive, and Paragraphs UG132 and UG133 of the Code.

(iii) Containers exceeding 36 inches in diameter or 250 gallons water capacity shall be constructed to comply with one or more of the following:

(a) Containers shall be stress relieved after fabrication in accordance with the Code, or

(b) Cold-formed heads, when used, shall be stress relieved, or

(c) Hot-formed heads shall be used.

(iv) Welding to the shell, head, or any other part of the container subject to internal pressure shall be done in compliance with the Code. Other welding is permitted only on saddle plates, lugs, or brackets attached to the container by the container manufacturer.

(v) Containers used with systems covered in paragraph (e) of this section shall be constructed and tested in accordance with the DOT specifications.

(vi) The provisions of subdivision (i) of this subparagraph shall not be construed as prohibiting the continued use or reinstallation of containers constructed and maintained in accordance with the 1949, 1950, 1952, 1956, 1959, and 1962 editions of the Code or any revisions thereof in effect at the time of fabrication.

(3) *Marking nonrefrigerated containers.* (i) System nameplates, when required, shall be permanently attached to the system so as to be readily accessible for inspection and shall include markings as prescribed in subdivision (ii) of this subparagraph.

(ii) Each container or system covered in paragraphs (c), (f), (g), and (h) of this section shall be marked as specified in the following:

(a) With a notation "Anhydrous Ammonia."

(b) With a marking identifying compliance with the rules of the Code under which the container is constructed.

Under ground: Container and system nameplate.
Above ground: Container.

(c) With a notation whether the system is designed for underground or aboveground installation or both.

(d) With the name and address of the supplier of the system or the trade name of the system and with the date of fabrication.

Under ground and above ground: System nameplate.

(e) With the water capacity of the container in pounds at 60° F. or gallons, U.S. Standard.

Under ground: Container and system nameplate.
Above ground: Container.

(f) With the design pressure in pounds per square inch.

Under ground: Container and system nameplate.
Above ground: Container.

(g) With the wall thickness of the shell and heads.

Under ground: Container and system nameplate.
Above ground: Container.

(h) With marking indicating the maximum level to which the container may be filled with liquid anhydrous ammonia at temperatures between 20° F. and 130° F. except on containers provided with fixed level indicators, such as fixed length dip tubes, or containers that are filled with weight. Markings shall be in increments of not more than 20° F.

(Sec. 6, 84 Stat. 1593 (29 U.S.C. 655)) [37 FR 22102, Oct. 18, 1972, as amended at 38 FR 3599, Feb. 8, 1973]

Above ground and under ground: System nameplate or on liquid-level gaging device.

(i) With the total outside surface area of the container in square feet.

Under ground: System nameplate.
Above ground: No requirement.

(j) Marking specified on the container shall be on the container itself or on a nameplate permanently attached to it.

(4) *Marking refrigerated containers.* Each refrigerated container shall be marked with nameplate on the outer covering in an accessible place as specified in the following:

(i) With the notation, "Anhydrous Ammonia."

(ii) With the name and address of the builder and the date of fabrication.

(iii) With the water capacity of the container in gallons, U.S. Standard.

(iv) With the design pressure.

(v) With the minimum temperature in degrees Fahrenheit for which the container was designed.

(vi) The maximum allowable water level to which the container may be filled for test purposes.

(vii) With the density of the product in pounds per cubic foot for which the container was designed.

(viii) With the maximum level to which the container may be filled with liquid anhydrous ammonia.

(5) *Location of containers.* (i) Consideration shall be given to the physiological effects of ammonia as well as to adjacent fire hazards in selecting the location for a storage container. Containers shall be located outside of buildings or in buildings or sections thereof especially provided for this purpose.

(ii) Permanent storage containers shall be located at least 50 feet from a duc well or other sources of potable water supply, unless the container is a part of a water-treatment installation.

(iii) Permanent storage containers shall be located outside densely populated areas.

(iv) Container locations shall comply with table H–35:

TABLE H–35

Nominal capacity of container (gallons)	Minimum distances (feet) from container to: Line of adjoining property which may be built upon highway and mainline of railroad	Place of public assembly	Institution occupancy
Over 500 to 2,000	25	150	250
Over 2,000 to 30,000	50	300	500
Over 30,000 to 100,000	50	450	750
Over 100,000	50	600	1,000

(v) Storage areas shall be kept free of readily ignitible materials such as waste, weeds, and long dry grass.

(6) *Container appurtenances.* (i) All appurtenances shall be designed for not less than the maximum working pressure of that portion of the system on which they are installed. All appurtenances shall be fabricated from materials proved suitable for anhydrous ammonia service.

(ii) All connections to containers except safety relief devices, gaging devices, or those fitted with No. 54 drill-size orifice shall have shutoff valves located as close to the container as practicable.

(iii) Excess flow valves where required by these standards shall close automatically at the rated flows of vapor or liquid as specified by the manufacturer. The connections and line including valves and fittings being protected by an excess flow valve shall have a greater capacity than the rated flow of the excess flow valve so that the valve will close in case of failure of the line or fittings.

(iv) Liquid-level gaging devices that require bleeding of the product to the atmosphere and which are so constructed that outward flow will not exceed that passed by a No. 54 drill-size opening need not be equipped with excess flow valves.

(v) Openings from the container or through fittings attached directly on the container to which pressure gage connections are made need not be equipped with excess flow valves if such openings are not larger than No. 54 drill size.

(vi) Excess flow and back pressure check valves where required by the standards in this section shall be located inside of the container or at a point outside as close as practicable to where the line enters the container. In the latter case installation shall be made in such manner that any undue strain beyond the excess flow or back pressure check valve will not cause breakage between the container and the valve.

(vii) Excess flow valves shall be designed with a bypass, not to exceed a No. 60 drill-size opening to allow equalization of pressures.

(viii) All excess flow valves shall be plainly and permanently marked with the name or trademark of the manufacturer, the catalog number, and the rated capacity.

(7) *Piping, tubing, and fittings.* (i) All piping, tubing, and fittings shall be made of material suitable for anhydrous ammonia service.

(ii) All piping, tubing, and fittings shall be designed for a pressure not less than the maximum pressure to which they may be subjected in service.

(iii) All refrigerated piping shall conform to the Refrigeration Piping Code, American National Standards Institute, B31.5–1966 with addenda B31.1a–1968 as it applies to ammonia.

(iv) Piping used on non-refrigerated systems shall be at least American Society for Testing and Materials (ASTM) A–53–69 Grade B Electric Resistance Welded and Electric Flash Welded Pipe or equal. Such pipe shall be at least schedule 40 when joints are welded or welded and flanged. Such pipe shall be at least schedule 80 when joints are threaded. Threaded connections shall not be back-welded. Brass, copper, or galvanized steel pipe shall not be used.

(v) Tubing made of brass, copper, or other material subject to attack by ammonia shall not be used.

(vi) Cast iron fittings shall not be used but this shall not prohibit the use of fittings made specifically for ammonia service of malleable, nodular, or high strength gray iron meeting American Society for Testing and Materials (ASTM) A47–68, ASTM 395–68, or ASTM A126–66 Class B or C.

(vii) Joint compounds shall be resistant to ammonia.

(8) *Hose specifications.* (i) Hose used in ammonia service shall conform to the Joint Agricultural Ammonia Institute—Rubber Manufacturers Association Specifications for Anhydrous Ammonia Hose.

(ii) Hose subject to container pressure shall be designed for a minimum working pressure of 350 p.s.i.g. and a minimum

burst pressure of 1,750 p.s.i.g. Hose assemblies, when made up, shall be capable of withstanding a test pressure of 500 p.s.i.g.

(iii) Hose and hose connections located on the low-pressure side of flow control or pressure-reducing valves shall be designed for a bursting pressure of not less than five times the pressure setting of the safety relief devices protecting that portion of the system but not less than 125 p.s.i.g. All connections shall be so designed and constructed that there will be no leakage when connected.

(iv) Where hose is to be used for transferring liquid from one container to another, "wet" hose is recommended. Such hose shall be equipped with approved shutoff valves at the discharge end. Provision shall be made to prevent excessive pressure in the hose.

(v) On all hose one-half inch outside diameter and larger, used for the transfer of anhydrous ammonia liquid or vapor, there shall be etched, cast, or impressed at 5-foot intervals the following information.

"Anhydrous Ammonia" xxx p.s.i.g. (maximum working pressure), manufacturer's name or trademark, year of manufacture.

In lieu of this requirement the same information may be contained on a nameplate permanently attached to the hose.

TABLE H-36

Minimum required rate of discharge in cubic feet per minute of air at 120 percent of the maximum permitted start to discharge pressure for safety relief valves.

Surface area (sq. ft.)	Flow rate CFM air
20	358
25	316
30	360
35	408
40	455
45	501
50	547
55	591
60	635
65	678
70	720
75	762
80	804
85	845
90	885
95	925
100	965
105	1,010
110	1,050
115	1,090
120	1,130
125	1,160
130	1,200
135	1,240
140	1,280
145	1,310
150	1,350
155	1,390
160	1,420
165	1,460
170	1,500
175	1,530
180	1,570
185	1,600
190	1,640
195	1,670
200	1,710
210	1,780
220	1,850
230	1,920
240	1,990
250	2,050
260	2,120
270	2,180
280	2,250
290	2,320
300	2,380
310	2,450
320	2,510
330	2,570
340	2,640
350	2,700
360	2,760
370	2,830
380	2,890
390	2,950
400	3,010
450	3,320
500	3,620
550	3,910
600	4,200
650	4,480
700	4,760
750	5,040
800	5,300
850	5,590
900	5,850
950	6,120
1,000	6,380
1,050	6,640
1,100	6,900
1,150	7,160
1,200	7,410
1,250	7,360
1,300	7,910
1,350	8,160
1,400	8,410
1,450	8,650
1,500	8,900
1,550	9,140
1,600	9,380
1,650	9,620
1,700	9,860
1,750	10,090
1,800	10,330
1,850	10,560
1,900	10,800
1,950	11,030
2,000	11,260
2,050	11,490
2,100	11,720
2,150	11,950
2,200	12,180
2,250	12,400
2,300	12,630
2,350	12,850
2,400	13,080
2,450	13,300
2,500	13,520

"Surface Area"=total outside surface area of container in square feet. When the surface area is not stamped on the nameplate or when the marking is not legible the area can be calculated by using one of the following formulas:

(1) Cylindrical container with hemispherical heads:

Area=overall length in feet times outside diameter in feet times 3.1416.

(2) Cylindrical container with other than hemispherical heads:

Area=(overall length in feet plus 0.3 outside diameter in feet) times outside diameter in feet times 3.1416.

(3) Spherical container:

Area=outside diameter in feet squared times 3.1416."

"Flow Rate—CFM Air=cubic feet per minute of air required at standard conditions, 60° F. and atmospheric pressure (14.7 p.s.i.a.)"

"The rate of discharge may be interpolated for intermediate values of surface area. For containers with total outside surface area greater than 2,500 square feet, the required flow rate can be calculated using the formula: Flow Rate CFM Air=22.11 $A^{.82}$, where A=outside surface area of the container in square feet."

(9) *Safety relief devices.* (i) Every container used in systems covered by paragraphs (c), (f), (g), and (h) of this section shall be provided with one or more safety relief valves of the spring-loaded or equivalent type. The discharge from safety-relief valves shall be vented away from the container upward and unobstructed to the atmosphere. All relief-valve discharge openings shall have suitable rain caps that will allow free discharge of the vapor and prevent entrance of water. Provision shall be made for draining condensate which may accumulate. The rate of the discharge shall be in accordance with the provisions of Table H-36.

(ii) Container safety-relief valves shall be set to start-to-discharge as follows, with relation to the design pressure of the container:

Containers	Minimum (percent)	Maximum (percent)
ASME—U-68, U-69	110	125
ASME—U-200, U-201	95	100
ASME 1959, 1956, 1962, or 1962	95	100
API-ASME	95	100
U.S. Cast Guard	95	100

As required by DOT Regulations.

(iii) Safety relief devices used in systems covered by paragraphs (c), (f), (g), and (h) of this section shall be constructed to discharge at not less than the rates required in subdivision (i) of this subparagraph before the pressure is in excess of 120 percent (not including the 10 percent tolerance referred to in subdivision (ii) of this subparagraph) of the maximum permitted start-to-discharge pressure setting of the device.

(iv) Safety-relief valves shall be so arranged that the possibility of tampering will be minimized. If the pressure setting adjustment is external, the relief valves shall be provided with means for sealing the adjustment.

(v) Shutoff valves shall not be installed between the safety-relief valves and the container; except, that a shutoff valve may be used where the arrangement of this valve is such as always to afford full required capacity flow through the relief valves.

(vi) Safety-relief valves shall have direct communication with the vapor space of the container.

(vii) Each container safety-relief valve used with systems covered by paragraphs (c), (f), (g), and (h) of this section shall be plainly and permanently marked with the symbol "NH_3" or "AA"; with the pressure in pounds-per-square-inch gage at which the valve is set to start-to-discharge; with the actual rate of discharge of the valve at its full open position in cubic feet per minute of air at 60° F. and atmospheric pressure; and with the manufacturer's name and catalog number. Example: "NH_3 250—4050 Air" indicates that the valve is suitable for use on an anhydrous ammonia container, is set to start-to-discharge at a pressure of 250 p.s.i.g., and that its rate of discharge at full open position (subdivisions (ii) and (iii) of this subparagraph) is 4,050 cubic feet per minute of air.

(viii) The flow capacity of the relief valve shall not be restricted by any connection to it on either the upstream or downstream side.

(ix) A hydrostatic relief valve shall be installed between each pair of valves in the liquid ammonia piping or hose where liquid may be trapped so as to relieve into the atmosphere at a safe location.

(10) *General.* (i) Personnel required to handle ammonia should be trained in safe operating practices and in the proper action to take in the event of emergencies.

(ii) All stationary storage installations shall have at least two suitable gas masks in readily accessible locations. Full face masks with ammonia canisters as approved by the Bureau of Mines, U.S. Department of the Interior, are suitable for emergency action for most leaks, particularly those that occur outdoors. For protection in concentrated ammonia atmospheres self-contained breathing air apparatus is required.

(iii) Stationary storage installations shall have an easily accessible shower or a 50-gallon drum of water.

(iv) Each vehicle transporting ammonia in bulk except farm applicator vehicles shall carry a container of at least 5 gallons of water and shall be equipped with a full face mask.

(11) *Charging of containers.* (i) The filling densities for containers that are not refrigerated shall not exceed the following:

Type of container	Percent by weight	Percent by volume
Aboveground—Uninsulated	56	82
Aboveground—Uninsulated		87.5
Aboveground—Insulated	57	83.5
Underground—Uninsulated	58	85
DOT—In accord with DOT regulations.		

(ii) Aboveground uninsulated containers may be charged 87.5 percent by volume provided the temperature of the anhydrous ammonia being charged is determined to be not lower than 30° F. or provided the charging of the container is stopped at the first indication of frost or ice formation on its outside surface and is not resumed until such frost or ice has disappeared.

(iii) Any container, including DOT cargo and portable tanks, shipped under DOT jurisdiction shall be filled according to DOT regulations.

(iv) Refer to paragraph (d) of this section for filling densities of refrigerated storage containers.

(12) *Transfer of liquids.* (i) Anhydrous ammonia shall always be at a temperature suitable for the material of construction and the design of the receiving container.

(ii) The employer shall require the continuous presence of an attendant in the vicinity of the operation during such time as ammonia is being transferred.

(iii) Containers shall be charged or used only upon authorization of the owner.

(iv) Containers shall be gaged and charged only in the open atmosphere or in buildings or areas thereof provided for that purpose.

(v) Pumps used for transferring ammonia shall be those manufactured for that purpose.

(a) Pumps shall be designed for at least 250 p.s.i.g. working pressure.

(b) Positive displacement pumps shall have, installed off the discharged port, a constant differential relief valve discharging into the suction port of the pump through a line of sufficient size to carry the full capacity of the pump at relief valve setting, which setting and installation shall be according to the pump manufacturer's recommendations.

(c) On the discharge side of the pump, before the relief valve line, there shall be installed a pressure gage graduated from 0 to 400 p.s.i.

(d) Plant piping shall contain shutoff valves located as close as practical to pump connections.

(vi) Compressors used for transferring or refrigerating ammonia shall be recommended for ammonia service by the manufacturer.

(a) Compressors shall be designed for at least 250 p.s.i.g. working pressure.

(b) Plant piping shall contain shutoff valves located as close as practical to compressor connections.

(c) A relief valve large enough to discharge the full capacity of the compressor shall be connected to the discharge before any shutoff valve.

(d) Compressors shall have pressure gages at suction and discharge graduated to at least one and one-half times the maximum pressure that can be developed.

(e) Adequate means, such as drainable liquid trap, shall be provided on the compressor suction to minimize the entry of liquid into the compressor.

(f) Where necessary to prevent contamination, an oil separator shall be provided on the discharge side of the compressor.

(vii) Loading and unloading systems shall be protected by suitable devices to prevent emptying of the storage container or the container being loaded or unloaded in the event of severance of the hose. Backflow check valves or properly sized excess flow valves shall be installed where necessary to provide such protection. In the event that such valves are not practical, remotely operated shutoff valves may be installed.

(13) *Tank car unloading points and operations.* (i) Provisions for unloading tank cars shall conform to the applicable recommendations contained in the DOT regulations.

(ii) The employer shall insure that unloading operations are performed by reliable persons properly instructed and given the authority to monitor careful compliance with all applicable procedures.

(iii) Caution signs shall be so placed on the track or car as to give necessary warning to persons approaching the car from open end or ends of siding and shall be left up until after the car is unloaded and disconnected from discharge connections. Signs shall be of metal or other suitable material, at least 12 by 15 inches in size and bear the words "STOP—Tank Car Connected" or "STOP—Men at Work" the word, "STOP," being in letters at least 4 inches high and the other words in letters at least 2 inches high. The letters shall be white on a blue background.

(iv) The track of a tank car siding shall be substantially level.

(v) Brakes shall be set and wheels blocked on all cars being unloaded.

(14) *Liquid-level gaging device.* (i) Each container except those filled by weight shall be equipped with an approved liquid-level gaging device. A thermometer well shall be provided in all containers not utilizing a fixed liquid-level gaging device.

(ii) All gaging devices shall be arranged so that the maximum liquid level to which the container is filled is readily determined.

(iii) Gaging devices that require bleeding of the product to the atmosphere such as the rotary tube, fixed tube, and slip tube devices shall be designed so that the maximum opening of the bleed valve is not larger than No. 54 drill size unless provided with an excess flow valve. (This requirement does not apply to farm vehicles used for the application of ammonia as covered in paragraph (h) of this section.)

(iv) Gaging devices shall have a design pressure equal to or greater than the design pressure of the container on which they are installed.

(v) Fixed tube liquid-level gages shall be designed and installed to indicate that level at which the container is filled to 85 percent of its water capacity in gallons.

(vi) Gage glasses of the columnar type shall be restricted to stationary storage installations. They shall be equipped with shutoff valves having metallic handwheels, with excess-flow valves, and with extra heavy glass adequately protected with a metal housing applied by the gage manufacturer. They shall be shielded against the direct rays of the sun.

(15) *Painting of containers.* Aboveground uninsulated containers should have a reflective surface maintained in good condition.

(16) *Electrical equipment and wiring.* (i) Electrical equipment and wiring for use in ammonia installations shall be general purpose or weather resistant as appropriate.

(ii) Electrical systems shall be installed and maintained in accordance with Subpart S of this part.

(c) *Systems utilizing stationary, nonrefrigerated storage containers.* This paragraph applies to stationary, nonrefrigerated storage installations utilizing containers other than those covered in paragraph (e) of this section. Paragraph (b) of this section applies to this paragraph unless otherwise noted.

(1) *Design pressure and construction of containers.* The minimum design pressure for nonrefrigerated containers shall be 250 p.s.i.g.

(2) *Container valves and accessories, filling and discharge connections.* (i) Each filling connection shall be provided with combination back-pressure check valve and excess-flow valve; one double or two single back-pressure check valves; or a positive shutoff valve in conjunction with either an internal back-pressure check valve or an internal excess flow valve.

(ii) All liquid and vapor connections to containers except filling pipes, safety relief connections, and liquid-level gag-

ing and pressure gage connections provided with orifices not larger than No. 54 drill size as required in paragraphs (b)(6) (iv) and (v) of this section shall be equipped with excess-flow valves.

(iii) Each storage container shall be provided with a pressure gage graduated from 0 to 400 p.s.i. Gages shall be designated for use in ammonia service.

(iv) All containers shall be equipped with vapor return valves.

(3) *Safety-relief devices.* (i) Every container shall be provided with one or more safety-relief valves of the spring-loaded or equivalent type in accordance with paragraph (b)(9) of this section.

(ii) The rate of discharge of spring-loaded safety relief valves installed on underground containers may be reduced to a minimum of 30 percent of the rate of discharge specified in Table H-36. Containers so protected shall not be uncovered after installation until the liquid ammonia has been removed. Containers which may contain liquid ammonia before being installed underground and before being completely covered with earth are to be considered aboveground containers when determining the rate of discharge requirements of the safety-relief valves.

(iii) On underground installations where there is a probability of the manhole or housing becoming flooded, the discharge from vent lines shall be located above the high water level. All manholes or housings shall be provided with ventilated louvers or their equivalent, the area of such openings equalling or exceeding combined discharge areas of safety-relief valves and vent lines which discharge their content into the manhole housing.

(iv) Vent pipes, when used, shall not be restricted or of smaller diameter than the relief-valve outlet connection.

(v) If desired, vent pipes from two or more safety-relief devices located on the same unit, or similar lines from two or more different units may be run into a common discharge header, provided the capacity of such header is at least equal to the sum of the capacities of the individual discharge lines.

(4) *Reinstallation of containers.* (i) Containers once installed under ground shall not later be reinstalled above ground or under ground, unless they successfully withstand hydrostatic pressure retests at the pressure specified for the original hydrostatic test as required by the code under which constructed and show no evidence of serious corrosion.

(ii) Where containers are reinstalled under ground, the corrosion-resistant coating shall be put in good condition; see subparagraph (5)(iv) of this paragraph. Where containers are reinstalled above ground, safety devices or gaging devices shall comply with paragraph (b)(9) of this section and this subparagraph respectively for aboveground containers.

(5) *Installation of storage containers.* (i) Containers installed above ground, except as provided in subdivision (v) of this subparagraph shall be provided with substantial concrete or masonry supports, or structural steel supports on firm concrete or masonry foundations. All foundations shall extend below the frost line.

(ii) Horizontal aboveground containers shall be so mounted on foundations as to permit expansion and contraction. Every container shall be supported to prevent the concentration of excessive loads on the supporting portion of the shell. That portion of the container in contact with foundations or saddles shall be protected against corrosion.

(iii) Containers installed under ground shall be so placed that the top of the container is below the frost line and in no case less than 2 feet below the surface of the ground. Should ground conditions make compliance with these requirements impracticable, installation shall be made otherwise to prevent physical damage. It will not be necessary to cover the portion of the container to which manhole and other connections are affixed. When necessary to prevent floating, containers shall be securely anchored or weighted.

(iv) Underground containers shall be set on a firm foundation (firm earth may be used) and surrounded with earth or sand well tamped in place. The container, prior to being placed under ground, shall be given a corrosion resisting protective coating. The container thus coated shall be so lowered into place as to prevent abrasion or other damage to the coating.

(v) Containers with foundations attached (portable or semiportable tank containers with suitable steel "runners" or "skids" and commonly known in the industry as "skid tanks") shall be designed and constructed in accordance with subparagraph (1) of this paragraph.

(vi) Secure anchorage or adequate pier height shall be provided against container flotation wherever sufficiently high flood water might occur.

(vii) The distance between underground containers of over 2,000 gallons capacity shall be at least 5 feet.

(6) *Protection of appurtenances.* (i) Valves, regulating, gaging, and other appurtenances shall be protected against tampering and physical damage. Such appurtenances shall also be protected during transit of containers.

(ii) All connections to underground containers shall be located within a dome, housing, or manhole and with access thereto by means of a substantial cover.

(7) *Damage from vehicles.* Precaution shall be taken against damage to ammonia systems from vehicles.

(d) *Refrigerated storage systems.* This paragraph applies to systems utilizing containers with the storage of anhydrous ammonia under refrigerated conditions. All applicable rules of paragraph (b) of this section apply to this paragraph unless otherwise noted.

(1) *Design of containers.* (i) The design temperature shall be the minimum temperature to which the container will be refrigerated.

(ii) Containers with a design pressure exceeding 15 p.s.i.g. shall be constructed in accordance with paragraph (b)(2) of this section, and the materials shall be selected from those listed in API Standard 620, Recommended Rules for Design and Construction of Large, Welded, Low-Pressure Storage Tanks, Fourth Edition, 1970, Tables 2.02, R2.2, R2.2(A), R2.2.1, or R2.3.

(iii) Containers with a design pressure of 15 p.s.i.g. and less shall be constructed in accordance with the applicable requirements of API Standard 620 including its Appendix R.

(iv) When austenitic steels or nonferrous materials are used, the Code shall be used as a guide in the selection of materials for use at the design temperature.

(v) The filling density for refrigerated storage containers shall be such that the container will not be liquid full at a liquid temperature corresponding to the vapor pressure at the start-to-discharge pressure setting of the safety-relief valve.

(2) *Installation of refrigerated storage containers.* (i) Containers shall be supported on suitable noncombustible foundations designed to accommodate the type of container being used.

(ii) Adequate protection against flotation or other water damage shall be provided wherever high flood water might occur.

(iii) Containers for product storage at less than 32° F. shall be supported in such a way, or heat shall be supplied, to prevent the effects of freezing and consequent frost heaving.

(3) *Shutoff valves.* When operating conditions make it advisable, a check valve shall be installed on the fill connection and a remotely operated shutoff valve on other connections located below the maximum liquid level.

(4) *Safety relief devices.* (i) Safety relief valves shall be set to start-to-discharge at a pressure not in excess of the design pressure of the container and shall have a total relieving capacity sufficient to prevent a maximum pressure in the container of more than 120 percent of the design pressure. Relief valves for refrigerated storage containers shall be self-contained spring-loaded, weight-loaded, or self-contained pilot-operated type.

(ii) The total relieving capacity shall be the larger of:

(*a*) Possible refrigeration system upset such as (*1*) cooling water failure, (*2*) power failure, (*3*) instrument air or instrument failure, (*4*) mechanical failure of any equipment, (*5*) excessive pumping rates.

(*b*) Fire exposure determined in accordance with Compressed Gas Association (CGA) S-1, Part 3, Safety Relief Device Standards for Compressed Gas Storage Containers, 1959, except that "A" shall be the total exposed surface area in square feet up to 25 foot above grade or to the equator of the storage container if it is a sphere, whichever is greater. If the relieving capacity required for fire exposure is greater than that required by (*a*) of this subdivision, the additional capacity may be provided by weak roof to shell seams in containers operating at essentially atmospheric pressure and having an inherently weak roof-to-shell seam. The weak roof-to-shell seam is not to be considered as providing any of the capacity required in (*a*) of this subdivision.

(iii) If vent lines are installed to conduct the vapors from the relief valve, the back pressure under full relieving conditions shall not exceed 50 percent of the start-to-discharge pressure for pressure balanced valves or 10 percent of the start-to-discharge pressure for conventional valves. The vent lines shall be installed to prevent accumulation of liquid in the lines.

(iv) The valve or valve installation shall provide weather protection.

(v) Atmospheric storage shall be provided with vacuum breakers. Ammonia gas, nitrogen, methane, or other inert gases can be used to provide a pad.

(5) *Protection of container appurtenances.* Appurtenances shall be protected against tampering and physical damage.

(6) *Reinstallation of refrigerated storage containers.* Containers of such size as to require field fabrication shall, when moved and reinstalled, be reconstructed and reinspected in complete accordance with the requirements under which they were constructed. The containers shall be subjected to a pressure retest and if rerating is necessary, rerating shall be in accordance with applicable requirements.

(7) *Damage from vehicles.* Precaution shall be taken against damage from vehicles.

(8) *Refrigeration load and equipment.* (i) The total refrigeration load shall be computed as the sum of the following:

(*a*) Load imposed by heat flow into the container caused by the temperature differential between design ambient temperature and storage temperature.

(*b*) Load imposed by heat flow into the container caused by maximum sun radiation.

(*c*) Maximum load imposed by filling the container with ammonia warmer than the design storage temperature.

(ii) More than one storage container may be handled by the same refrigeration system.

(9) *Compressors.* (i) A minimum of two compressors shall be provided either of which shall be of sufficient size to handle the loads listed in subparagraphs (8)(i) (*a*) and (*b*) of this paragraph. Where more than two compressors are provided minimum standby equipment equal to the largest normally operating equipment shall be installed. Filling compressors may be used as standby equipment for holding compressors.

(ii) Compressors shall be sized to operate with a suction pressure at least 10 percent below the minimum setting of the safety valve(s) on the storage container and shall withstand a suction pressure at least equal to 120 percent of the design pressure of the container.

(10) *Compressor drives.* (i) Each compressor shall have its individual driving unit.

(ii) An emergency source of power of sufficient capacity to handle the loads listed in subparagraphs (8)(i) (*a*) and (*b*) of this paragraph shall be provided unless facilities are available to safely dispose of vented vapors while the refrigeration system is not operating.

(11) *Automatic control equipment.* (i) The refrigeration system shall be arranged with suitable controls to govern the compressor operation in accordance with the load as evidenced by the pressure in the container(s).

(ii) An emergency alarm system shall be installed to function in the event the pressure in the container(s) rises to the maximum allowable operating pressure.

(iii) An emergency alarm and shutoff shall be located in the condenser system to respond to excess discharge pressure caused by failure of the cooling medium.

(iv) All automatic controls shall be installed in a manner to preclude operation of alternate compressors unless the controls will function with the alternate compressors.

(12) *Separators for compressors.* (i) An entrainment separator of suitable size and design pressure shall be installed in the compressor suction line of lubricated compression. The separator shall be equipped with a drain and gaging device.

(ii) An oil separator of suitable size shall be installed in the compressor discharge line. It shall be designed for at least 250 p.s.i.g. and shall be equipped with a gaging device and drain valve.

(13) *Condensers.* The condenser system may be cooled by air or water or both. The condenser shall be designed for at least 250 p.s.i.g. Provision shall be made for purging noncondensibles either manually or automatically.

(14) *Receiver and liquid drain.* A receiver shall be provided with a liquid-level control to discharge the liquid ammonia to storage. The receiver shall be designed for at least 250 p.s.i.g. and be equipped with the necessary connections, safety valves, and gaging device.

(15) *Insulation.* Refrigerated containers and pipelines which are insulated shall be covered with a material of suitable quality and thickness for the temperatures encountered. Insulation shall be suitably supported and protected against the weather. Weatherproofing shall be of a type which will not support flame propagation.

(e) *Systems utilizing portable DOT containers.* (1) *Conformance.* Cylinders shall comply with DOT specifications and shall be maintained, filled, packaged, marked, labeled, and shipped to comply with 49 CFR Chapter I and Marking Portable Compressed Gas Containers to Identify the Material Contained, ANSI Z48.1–1954 (R1970).

(2) *Storage.* Cylinders shall be stored in an area free from ignitable debris and in such manner as to prevent external corrosion. Storage may be indoors or outdoors.

(3) *Heat protection.* Cylinders filled in accordance with DOT regulations will become liquid full at 145° F. Cylinders shall be protected from heat sources such as radiant flame and steampipes. Heat shall not be applied directly to cylinders to raise the pressure.

(4) *Protection.* Cylinders shall be stored in such manner as to protect them from moving vehicles or external damage.

(5) *Valve cap.* Any cylinder which is designed to have a valve protection cap shall have the cap securely in place when the cylinder is not in service.

(f) *Tank motor vehicles for the transportation of ammonia.* (1) This paragraph applies to containers and pertinent equipment mounted on tank motor vehicles including semitrailers and full trailers used for the transportation of ammonia. This paragraph does not apply to farm vehicles. For requirements covering farm vehicles, refer to paragraphs (g) and (h) of this section.

Paragraph (b) of this section applies to this paragraph unless otherwise noted. Containers and pertinent equipment for tank motor vehicles for the transportation of anhydrous ammonia, in addition to complying with the requirements of this section, shall also comply with the requirements of DOT.

(2) *Design pressure and construction of containers.* (i) The minimum design pressure for containers shall be that specified in the regulations of the DOT.

(ii) The shell or head thickness of any container shall not be less than three-sixteenth inch.

(iii) All container openings, except safety relief valves, liquid-level gaging devices, and pressure gages, shall be labeled to designate whether they communicate with liquid or vapor space.

(3) *Container appurtenances.* (i) All appurtenances shall be protected against physical damage.

(ii) All connections to containers, except filling connections, safety relief devices, and liquid-level and pressure gage connections, shall be provided with suitable automatic excess flow valves, or in lieu thereof, may be fitted with quick-closing internal valves, which shall remain closed except during delivery operations. The control mechanism for such valves may be provided with a secondary control remote from the delivery connections and such control mechanism shall be provided with a fusible section (melting point 208° F. to 220° F.) which will permit the internal valve to close automatically in case of fire.

(iii) Filling connections shall be provided with automatic back-pressure check valves, excess-flow valves, or quick-closing internal valves, to prevent backflow in case the filling connection is broken. Where the filling and discharge connect to a common opening in the container shell and that opening is fitted with a quick-closing internal valve as specified in subdivision (ii) of this subparagraph, the automatic valve shall not be required.

(iv) All containers shall be equipped for spray loading (filling in the vapor space) or with an approved vapor return valve of adequate capacity.

(4) *Piping and fittings.* (i) All piping, tubing, and fittings shall be securely mounted and protected against damage. Means shall be provided to protect hoses while the vehicle is in motion.

(ii) Fittings shall comply with paragraph (b)(6) of this section. Pipe shall be Schedule 80.

(5) *Safety relief devices.* (i) The discharge from safety relief valves shall be vented away from the container upward and unobstructed to the open air in such a manner as to prevent any impingement of escaping gas upon the container; loose-fitting rain caps shall be used. Size of discharge lines from safety valves shall not be smaller than the nominal size of the safety-relief valve outlet connection. Suitable provision shall be made for draining condensate which may accumulate in the discharge pipe.

(ii) Any portion of liquid ammonia piping which at any time may be closed at both ends shall be provided with a hydrostatic relief valve.

(6) *Transfer of liquids.* (i) The content of tank motor vehicle containers shall be determined by weight, by a suitable liquid-level gaging device, or other approved methods. If the content of a container is to be determined by liquid-level measurement, the container shall have a thermometer well so that the internal liquid temperature can be easily determined. This volume when converted to weight shall not exceed the filling density specified by the DOT.

(ii) Any pump, except a constant speed centrifugal pump, shall be equipped with a suitable pressure actuated bypass valve permitting flow from discharge to suction when the discharge pressure rises above a predetermined point. Pump discharge shall also be equipped with a spring-loaded safety relief valve set at a pressure not more than 135 percent of the setting of the bypass valve or more than 400 p.s.i.g., whichever is larger.

(iii) Compressors shall be equipped with manually operated shutoff valves on both suction and discharge connections. Pressure gages of bourdon-tube type shall be installed on the suction and discharge of the compressor before the shutoff valves. The compressor shall not be operated if either pressure gage is removed or is inoperative. A spring-loaded, safety-relief valve capable of discharging to atmosphere the full flow of gas from the compressor at a pressure not exceeding 300 p.s.i.g. shall be connected between the compressor discharge and the discharge shutoff valve.

(iv) Valve functions shall be clearly and legibly identified by metal tags or nameplates permanently affixed to each valve.

(7) *Full trailers and semitrailers.* (i) All full trailers shall be firmly and securely attached to the vehicle drawing them by means of suitable drawbars supplemented by a safety chain (or chains) or safety cables.

(ii) Every full trailer or semitrailer shall have a reliable system of brakes, and adequate provision shall be made to operate the brakes from the driver's seat.

(iii) Every full trailer shall be equipped with self-energizing brakes.

(iv) Full trailers shall be so designed that the towed vehicle will follow substantially in the path of the towing vehicle and will not whip or swerve dangerously from side to side.

(v) Where a fifth wheel is employed, it shall be ruggedly designed, securely fastened to both units, and equipped with a positive locking mechanism which will prevent separation of the two units except by manual release.

(8) *Protection against collision.* Each tank motor vehicle shall be provided with properly attached bumpers or chassis extension arranged to protect the tank, piping, valves, and fittings from physical damage in case of collision.

(9) *Chock blocks.* At least two chock blocks shall be provided. These blocks shall be placed to prevent rolling of the vehicle whenever it is parked during loading and unloading operations.

(10) *Portable tank containers (skid tanks).* Where portable tank containers are used for farm storage they shall comply with paragraph (c) (1) of this section. When portable tank containers are used in lieu of cargo tanks and are permanently mounted on tank motor vehicles for the transportation of ammonia, they shall comply with the requirements of this paragraph.

(g) *Systems mounted on farm vehicles other than for the application of ammonia.*—(1) *Application.* This paragraph applies to containers of 1,200 gallons capacity or less and pertinent equipment mounted on farm vehicles (implements of husbandry) and used other than for the application of ammonia to the soil. Paragraph (b) of this section applies to this paragraph unless otherwise noted.

(2) *Design pressure and classification of containers.* (i) The minimum design pressure for containers shall be 250 p.s.i.g.

(ii) The shell or head thickness of any container shall be not less than three-sixteenths of an inch.

(3) *Mounting containers.* (i) A suitable "stop" or "stops" shall be mounted on the vehicle or on the container in such a way that the container shall not be dislodged from its mounting due to the vehicle coming to a sudden stop. Back slippage shall also be prevented by proper methods.

(ii) A suitable "hold down" device shall be provided which will anchor the container to the vehicle at one or more places on each side of the container.

(iii) When containers are mounted on four-wheel trailers, care shall be taken to insure that the weight is distributed evenly over both axles.

(iv) When the cradle and the tank are not welded together suitable material shall be used between them to eliminate metal-to-metal friction.

(4) *Container appurtenances.* (i) All containers shall be equipped with a fixed liquid-level gage.

(ii) All containers with a capacity exceeding 250 gallons shall be equipped with a pressure gage having a dial graduated from 0–400 p.s.i.

(iii) The filling connection shall be fitted with combination back-pressure check valve and excess-flow valve; one double or two single back-pressure check valves; or a positive shutoff valve in conjunction with either an internal back-pressure check valve or an internal excess flow valve.

(iv) All containers with a capacity exceeding 250 gallons shall be equipped for spray loading or with an approved vapor return valve.

(v) All vapor and liquid connections except safety-relief valves and those specifically exempted by paragraph (b) (6) (v) of this section shall be equipped with approved excess-flow valves or may be fitted with quick-closing internal valves which, except during operating periods, shall remain closed.

(vi) Fittings shall be adequately protected from damage by a metal box or cylinder with open top securely fastened to the container or by rigid guards, well braced, welded to the container on both sides of the fittings or by a metal dome. If a metal dome is used, the relief valve shall be properly vented through the dome.

(vii) If a liquid withdrawal line is installed in the bottom of a container, the connections thereto, including hose, shall not be lower than the lowest horizontal edge of the vehicle axle.

(viii) Provision shall be made to secure both ends of the hose while in transit.

(5) *Marking the container.* There shall appear on each side and on the rear end of the container in letters at least 4 inches high, the words, "Caution—Ammonia" or the container shall be marked in accordance with DOT regulations.

(6) *Farm vehicles.*

(i) Farm vehicles shall conform with State regulations.

(ii) All trailers shall be securely attached to the vehicle drawing them by means of drawbars supplemented by suitable safety chains.

(iii) A trailer shall be constructed so that it will follow substantially in the path of the towing vehicle and will not whip or swerve dangerously from side to side.

(iv) All vehicles shall carry a can containing 5 gallons or more of water.

(h) *Systems mounted on farm vehicles for the application of ammonia.* (1) This paragraph applies to systems utilizing containers of 250 gallons capacity or less which are mounted on farm vehicles (implement of husbandry) and used for the application of ammonia to the soil. Paragraph (b) of this section applies to this paragraph unless otherwise noted. Where larger containers are used, they shall comply with paragraph (g) of this section.

(2) *Design pressure and classification of containers.* (i) The minimum design pressure for containers shall be 250 p.s.i.g.

(ii) The shell or head thickness of any container shall not be less than three-sixteenths inch.

(3) *Mounting of containers.* All containers and flow-control devices shall be securely mounted.

(4) *Container valves and accessories.* (i) Each container shall have a fixed liquid-level gage.

(ii) The filling connection shall be fitted with a combination back-pressure check valve and an excess-flow valve; one double or two single back-pressure check valves; or a positive shutoff valve in conjunction with an internal back-pressure check valve or an internal excess-flow valve.

(iii) The applicator tank may be filled by venting to open air provided the bleeder valve orifice does not exceed seven-sixteenths inch in diameter.

(iv) Regulation equipment may be connected directly to the tank coupling or flange, in which case a flexible connection shall be used between such regulating equipment and the remainder of the liquid withdrawal system. Regulating equipment not so installed shall be flexibly connected to the container shut-off valve.

(v) No excess flow valve is required in the liquid withdrawal line provided the controlling orifice between the contents of the container and the outlet of the shutoff valve does not exceed seven-sixteenths inch in diameter.

§ 1910.112 [Reserved]

§ 1910.113 [Reserved]

§ 1910.114 Effective dates.

(a) The provisions of this Subpart H shall become effective on August 27, 1971, except as provided in the remaining paragraphs of this section.

(b) The following provisions shall become effective on February 15, 1972:

§ 1910.101(b).
§ 1910.102.
§ 1910.103 (a)(2), (b)(1)(i), (b)(1)(iii), (b)(2)(ii), and (b)(3).
§ 1910.105.
§ 1910.106 (b)(1), (b)(2), (b)(3), and (b)(4).
§ 1910.106 (b)(5), (c)(1), (c)(3), (c)(3), (c)(4), (c)(5), (c)(6), (d)(2), (d)(3)(ii), (d)(4)(i), (d)(4)(iii), (d)(4)(iv), (d)(5)(v), (d)(5)(vi)(a), (e)(3)(iii), (e)(5)(v), (e)(6), (e)(7), (f)(2)(iii), (f)(3)(i), (f)(4)(iii), (f)(4)(iv), (f)(4)(viii), (f)(5), (g), (h), and (i).
§ 1910.107 (b)(1), (b)(2), (b)(3), (b)(4), (b)(5)(i), (b)(5)(iii), (b)(5)(iv), (b)(6), (b)(7), (b)(8), (b)(10), (c)(1), (c)(4), (c)(5), (c)(6), (c)(7), (d), (e)(7), (e)(8), (f)(1), (f)(2), (h), (i), (j), (l)(3), (i)(3), (l)(5), (l)(6), (l)(7), and (m)(1).
§ 1910.108 (b), (c), (e)(1), (g)(2), (g)(3), (g)(4), and (g)(5).
§ 1910.108 (g)(6) and (h).
§ 1910.110.
§ 1910.111.

(c) Notwithstanding anything in paragraph (a), (b), or (d) of this section, any provision in any other section of this subpart which contains in itself a specific effective date or time limitation shall become effective on such date or shall apply in accordance with such limitation.

(d) Notwithstanding anything in paragraph (a), or (b) of this section, if any standard in 41 CFR Part 50–204, other than a national consensus standard incorporated by reference in § 50–204.2(a)(1), is or becomes applicable at any time to any employment and place of employment, by virtue of the Walsh-Healey Public Contracts Act, or the Service Contract Act of 1965, or the National Foundation on Arts and Humanities Act of 1965, any corresponding established Federal standard in this Subpart H which is derived from 41 CFR Part 50–204 shall also become effective, and shall be applicable to such employment and place of employment, on the same date.

§ 1910.115 Sources of standards.

Sec.	Source
1910.101	41 CFR 50–204.67, 70, and 71.
1910.102	41 CFR 50–204.66.
1910.103	NFPA No. 50B–1968, Standard for Liquified Hydrogen Systems at Consumer Sites.
1910.104	NFPA No. 566–1965, Standard for the Installation of Bulk Oxygen Systems at Consumer Sites.
1910.105–106	NFPA No. 30–1969, Flammable and Combustible Liquids Code.
1910.107	NFPA No. 33–1969, Standard for Spray Finishing Using Flammable and Combustible Materials.
1910.108	NFPA No. 34–1966, Standard for Dip Tanks Containing Flammable or Combustible Liquids.
1910.109	NFPA No. 495–1970, Code for Manufacture, Transportation, Storage and Use of Explosives and Blasting Agents.
1910.110	NFPA 58–69, Standard for the Handling of Liquified Petroleum Gases.
1910.111	ANSI K61.1–1968, Storage and Handling of Anhydrous Ammonia.

§ 1910.116 Standards organizations.

National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210.
National Plant Food Institute, 1700 K Street NW., Washington, DC 20006.
Compressed Gas Association, Inc., 500 Fifth Avenue, New York, NY 10036.
American Society of Mechanical Engineers Inc., United Engineering Center, 345 East 47th Street, New York, NY 10017.
American Petroleum Institute, 1801 K Street NW., Washington, DC 20006.
National Board of Boiler and Pressure Vessel Inspectors, 1455 North High Street, Columbus, OH 43201.
American National Standards Institute, 1430 Broadway, New York, NY 10018.
American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103.
Underwriters' Laboratories, Inc. (UL), 207 East Ohio Street, Chicago, IL 60611.
Fertilizer Institute, 1015 18th Street NW., Washington, DC 20036.

(Sec. 6, 84 Stat. 1593 (29 U.S.C. 655))

[39 FR 23502, June 27, 1974, as amended at 40 FR 18420, April 28, 1975]

Subpart I—Personal Protective Equipment

§ 1910.132 General requirements.

(a) *Application.* Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

(b) *Employee-owned equipment.* Where employees provide their own protective equipment, the employer shall be responsible to assure its adequacy, including proper maintenance, and sanitation of such equipment.

(c) *Design.* All personal protective equipment shall be of safe design and construction for the work to be performed.

§ 1910.133 Eye and face protection.

(a) *General.* (1) Protective eye and face equipment shall be required where there is a reasonable probability of injury that can be prevented by such equipment. In such cases, employers shall make conveniently available a type of protector suitable for the work to be performed, and employees shall use such protectors. No unprotected person shall knowingly be subjected to a hazardous environmental condition. Suitable eye protectors shall be provided where machines or operations present the hazard of flying objects, glare, liquids, injurious radiation, or a combination of these hazards.

(2) Protectors shall meet the following minimum requirements:

(i) They shall provide adequate protection against the particular hazards for which they are designed.

(ii) They shall be reasonably comfortable when worn under the designated conditions.

(iii) They shall fit snugly and shall not unduly interfere with the movements of the wearer.

(iv) They shall be durable.

(v) They shall be capable of being disinfected.

(vi) They shall be easily cleanable.

(vii) Protectors should be kept clean and in good repair.

(3) Persons whose vision requires the use of corrective lenses in spectacles, and who are required by this standard to wear eye protection, shall wear goggles or spectacles of one of the following types:

(i) Spectacles whose protective lenses provide optical correction.

(ii) Goggles that can be worn over corrective spectacles without disturbing the adjustment of the spectacles.

(iii) Goggles that incorporate corrective lenses mounted behind the protective lenses.

(4) Every protector shall be distinctly marked to facilitate identification only of the manufacturer.

(5) When limitations or precautions are indicated by the manufacturer, they shall be transmitted to the user and care taken to see that such limitations and precautions are strictly observed.

(6) Design, construction, testing, and use of device, for eye and face protection shall be in accordance with American National Standard for Occupational and Educational Eye and Face Protection, Z87.1–1968.

§ 1910.134 Respiratory protection.

(a) *Permissible practice.* (1) In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to the following requirements.

(2) Respirators shall be provided by the employer when such equipment is necessary to protect the health of the employee. The employer shall provide the respirators which are applicable and suitable for the purpose intended. The employer shall be responsible for the establishment and maintenance of a respiratory protective program which shall include the requirements outlined in paragraph (b) of this section.

(3) The employee shall use the provided respiratory protection in accord-

ance with instructions and training received.

(b) *Requirements for a minimal acceptable program.* (1) Written standard operating procedures governing the selection and use of respirators shall be established.

(2) Respirators shall be selected on the basis of hazards to which the worker is exposed.

(3) The user shall be instructed and trained in the proper use of respirators and their limitations.

(4) Where practicable, the respirators should be assigned to individual workers for their exclusive use.

(5) Respirators shall be regularly cleaned and disinfected. Those issued for the exclusive use of one worker should be cleaned after each day's use, or more often if necessary. Those used by more than one worker shall be thoroughly cleaned and disinfected after each use.

(6) Respirators shall be stored in a convenient, clean, and sanitary location.

(7) Respirators used routinely shall be inspected during cleaning. Worn or deteriorated parts shall be replaced. Respirators for emergency use such as self-contained devices shall be thoroughly inspected at least once a month and after each use.

(8) Appropriate surveillance of work area conditions and degree of employee exposure or stress shall be maintained.

(9) There shall be regular inspection and evaluation to determine the continued effectiveness of the program.

(10) Persons should not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. The local physician shall determine what health and physical conditions are pertinent. The respirator user's medical status should be reviewed periodically (for instance, annually).

(11) Approved or accepted respirators shall be used when they are available. The respirator furnished shall provide adequate respiratory protection against the particular hazard for which it is designed in accordance with standards established by competent authorities. The U.S. Department of Interior, Bureau of Mines, and the U.S. Department of Agriculture are recognized as such authorities. Although respirators listed by the U.S. Department of Agriculture continue to be acceptable for protection against specified pesticides, the U.S. Department of the Interior, Bureau of Mines, is the agency now responsible for testing and approving pesticide respirators.

(c) *Selection of respirators.* Proper selection of respirators shall be made according to the guidance of American National Standard Practices for Respiratory Protection Z88.2-1969.

(d) *Air quality.* (1) Compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration shall be of high purity. Oxygen shall meet the requirements of the United States Pharmacopoeia for medical or breathing oxygen. Breathing air shall meet at least the requirements of the specification for Grade D breathing air as described in Compressed Gas Association Commodity Specification G-7.1-1966. Compressed oxygen shall not be used in supplied-air respirators or in open circuit self-contained breathing apparatus that have previously used compressed air. Oxygen must never be used with air line respirators.

(2) Breathing air may be supplied to respirators from cylinders or air compressors.

(i) Cylinders shall be tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR Part 178).

(ii) The compressor for supplying air shall be equipped with necessary safety and standby devices. A breathing air-type compressor shall be used. Compressors shall be constructed and situated so as to avoid entry of contaminated air into the system and suitable in-line air purifying sorbent beds and filters installed to further assure breathing air quality. A receiver of sufficient capacity to enable the respirator wearer to escape from a contaminated atmosphere in event of compressor failure, and alarms to indicate compressor failure and overheating shall be installed in the system. If an oil-lubricated compressor is used, it shall have a high-temperature or carbon monoxide alarm, or both. If only a high-temperature alarm is used, the air from the compressor shall be frequently tested for carbon monoxide to insure that it meets the specifications in subparagraph (1) of this paragraph.

(3) Air line couplings shall be incompatible with outlets for other gas systems to prevent inadvertent servicing of air line respirators with nonrespirable gases or oxygen.

(4) Breathing gas containers shall be marked in accordance with American National Standard Method of Marking Portable Compressed Gas Containers to Identify the Material Contained, Z48.1-1954; Federal Specification BB-A-1034a, June 21, 1968, Air, Compressed for Breathing Purposes; or Interim Federal Specification GG-B-00675b, April 27 1965, Breathing Apparatus, Self-Contained.

(e) *Use of respirators.* (1) Standard procedures shall be developed for respirator use. These should include all information and guidance necessary for their proper selection, use, and care. Possible emergency and routine uses of respirators should be anticipated and planned for.

(2) The correct respirator shall be specified for each job. The respirator type is usually specified in the work procedures by a qualified individual supervising the respiratory protective program. The individual issuing them shall be adequately instructed to insure that the correct respirator is issued. Each respirator permanently assigned to an individual should be durably marked to indicate to whom it was assigned. This mark shall not affect the respirator performance in any way. The date of issuance should be recorded.

(3) Written procedures shall be prepared covering safe use of respirators in dangerous atmospheres that might be encountered in normal operations or in emergencies. Personnel shall be familiar with these procedures and the available respirators.

(i) In areas where the wearer, with failure of the respirator, could be overcome by a toxic or oxygen-deficient atmosphere, at least one additional man shall be present. Communications (visual, voice, or signal line) shall be maintained between both or all individuals present. Planning shall be such that one individual will be unaffected by any likely incident and have the proper rescue equipment to be able to assist the other(s) in case of emergency.

(ii) When self-contained breathing apparatus or hose masks with blowers are used in atmospheres immediately dangerous to life or health, standby men must be present with suitable rescue equipment.

(iii) Persons using air line respirators in atmospheres immediately hazardous to life or health shall be equipped with safety harnesses and safety lines for lifting or removing persons from hazardous atmospheres or other and equivalent provisions for the rescue of persons from hazardous atmospheres shall be used. A standby man or men with suitable self-contained breathing apparatus shall be at the nearest fresh air base for emergency rescue.

(4) Respiratory protection is no better than the respirator in use, even though it is worn conscientiously. Frequent random inspections shall be conducted by a qualified individual to assure that respirators are properly selected, used, cleaned, and maintained.

(5) For safe use of any respirator, it is essential that the user be properly instructed in its selection, use, and maintenance. Both supervisors and workers shall be so instructed by competent persons. Training shall provide the men an opportunity to handle the respirator, have it fitted properly, test its face-piece-to-face seal, wear it in normal air for a long familiarity period, and, finally, to wear it in a test atmosphere.

(i) Every respirator wearer shall receive fitting instructions including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly. Respirators shall not be worn when conditions prevent a good face seal. Such conditions may be a growth of beard, sideburns, a skull cap that projects under the facepiece, or temple pieces on glasses. Also, the absence of one or both dentures can seriously affect the fit of a facepiece. The worker's diligence in observing these factors shall be evaluated by periodic check. To assure proper protection, the facepiece fit shall be checked by the wearer each time he puts on the respirator. This may be done by following the manufacturer's facepiece fitting instructions.

(ii) Providing respiratory protection for individuals wearing corrective glasses is a serious problem. A proper seal cannot be established if the temple bars of eye glasses extend through the sealing edge of the full facepiece. As a temporary measure, glasses with short temple bars or without temple bars may be taped to the wearer's head. Wearing of contact lenses in contaminated atmospheres with a respirator shall not be allowed. Systems have been developed for mounting corrective lenses inside full facepieces. When a workman must wear corrective lenses as part of the facepiece, the facepiece and lenses shall be fitted by qualified individuals to provide good vision, comfort, and a gas-tight seal.

(iii) If corrective spectacles or goggles are required, they shall be worn so as not to affect the fit of the facepiece. Proper selection of equipment will minimize or avoid this problem.

(f) *Maintenance and care of respirators.* (1) A program for maintenance and care of respirators shall be adjusted to the type of plant, working conditions, and hazards involved, and shall include the following basic services:

(i) Inspection for defects (including a leak check).
(ii) Cleaning and disinfecting.
(iii) Repair.
(iv) Storage

Equipment shall be properly maintained to retain its original effectiveness.

(2) (i) All respirators shall be inspected routinely before and after each use. A respirator that is not routinely used but is kept ready for emergency use shall be inspected after each use and at least monthly to assure that it is in satisfactory working condition.

(ii) Self-contained breathing apparatus shall be inspected monthly. Air and oxygen cylinders shall be fully charged according to the manufacturer's instructions. It shall be determined that the regulator and warning devices function properly.

(iii) Respirator inspection shall include a check of the tightness of connections and the condition of the facepiece, headbands, valves, connecting tube, and canisters. Rubber or elastomer parts shall be inspected for pliability and signs of deterioration. Stretching and manipulating rubber or elastomer parts with a massaging action will keep them pliable and flexible and prevent them from taking a set during storage.

(iv) A record shall be kept of inspection dates and findings for respirators maintained for emergency use.

(3) Routinely used respirators shall be collected, cleaned, and disinfected as frequently as necessary to insure that proper protection is provided for the wearer. Each worker should be briefed on the cleaning procedure and be assured that he will always receive a clean and disinfected respirator. Such assurances are of greatest significance when respirators are not individually assigned to workers. Respirators maintained for emergency use shall be cleaned and disinfected after each use.

(4) Replacement or repairs shall be done only by experienced persons with parts designed for the respirator. No attempt shall be made to replace components or to make adjustment or repairs beyond the manufacturer's recommendations. Reducing or admission valves or regulators shall be returned to the manufacturer or to a trained technician for adjustment or repair.

(5) (i) After inspection, cleaning, and necessary repair, respirators shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respirators placed at stations and work areas for emergency use should be quickly accessible at all times and should be stored in compartments built for the purpose. The compartments should be clearly marked. Routinely used respirators, such as dust respirators, may be placed in plastic bags. Respirators should not be stored in such places as lockers or tool boxes unless they are in carrying cases or cartons.

(ii) Respirators should be packed or stored so that the facepiece and exhalation valve will rest in a normal position and function will not be impaired by the elastomer setting in an abnormal position.

(iii) Instructions for proper storage of emergency respirators, such as gas masks and self-contained breathing apparatus, are found in "use and care" instructions usually mounted inside the carrying case lid.

(g) *Identification of gas mask canisters.* (1) The primary means of identifying a gas mask canister shall be by means of properly worded labels. The secondary means of identifying a gas mask canister shall be by a color code.

(2) All who issue or use gas masks falling within the scope of this section shall see that all gas mask canisters purchased or used by them are properly labeled and colored in accordance with these requirements before they are placed in service and that the labels and colors are properly maintained at all times thereafter until the canisters have completely served their purpose.

(3) On each canister shall appear in bold letters the following:

(i)—
Canister for .....
(Name for atmospheric contaminant)
or
Type N Gas Mask Canister

(ii) In addition, essentially the following wording shall appear beneath the appropriate phrase on the canister label: "For respiratory protection in atmospheres containing not more than ..... percent by volume of .....
(Name of atmospheric contaminant)"

(iii) All of the markings specified above should be placed on the most conspicuous surface or surfaces of the canister.

(4) Canisters having a special high-efficiency filter for protection against radionuclides and other highly toxic particulates shall be labeled with a statement of the type and degree of protection afforded by the filter. The label shall be affixed to the neck end of, or to the gray stripe which is around and near the top of, the canister. The degree of protection shall be marked as the percent of penetration of the canister by a 0.3-micron-diameter dioctyl phthalate (DOP) smoke at a flow rate of 85 liters per minute.

(5) Each canister shall have a label warning that gas masks should be used only in atmospheres containing sufficient oxygen to support life (at least 16 percent by volume), since gas mask canisters are only designed to neutralize or remove contaminants from the air.

(6) Each gas mask canister shall be painted a distinctive color or combination of colors indicated in Table I-1. All colors used shall be such that they are clearly identifiable by the user and clearly distinguishable from one another. The color coating used shall offer a high degree of resistance to chipping, scaling, peeling, blistering, fading, and the effects of the ordinary atmospheres to which they may be exposed under normal conditions of storage and use. Appropriately colored pressure sensitive tape may be used for the stripes.

TABLE I-1

Atmospheric contaminants to be protected against	*Colors assigned**
Acid gases	White.
Hydrocyanic acid gas	White with ½-inch green stripe completely around the canister near the bottom.
Chlorine gas	White with ½-inch yellow stripe completely around the canister near the bottom.
Organic vapors	Black.
Ammonia gas	Green.
Acid gases and ammonia gas	Green with ½-inch white stripe completely around the canister near the bottom.
Carbon monoxide	Blue.
Acid gases and organic vapors	Yellow.
Hydrocyanic acid gas and chloropicrin vapor.	Yellow with ½-inch blue stripe completely around the canister near the bottom.
Acid gases, organic vapors, and ammonia gases.	Brown.
Radioactive materials, excepting tritium and noble gases.	Purple (Magenta).
Particulates (dusts, fumes, mists, fogs, or smokes) in combination with any of the above gases or vapors.	Canister color for contaminant, as designated above, with ½-inch gray stripe completely around the canister near the top.
All of the above atmospheric contaminants	Red with ½-inch gray stripe completely around the canister near the top.

*Gray shall not be assigned as the main color for a canister designed to remove acids or vapors.

NOTE: Orange shall be used as a complete body, or stripe color to represent gases not included in this table. The user will need to refer to the canister label to determine the degree of protection the canister will afford.

§ 1910.135 Occupational head protection.

Helmets for the protection of heads of occupational workers from impact and penetration from falling and flying objects and from limited electric shock and burn shall meet the requirements and specifications established in American National Standard Safety Requirements for Industrial Head Protection, Z89.1-1969.

§ 1910.136 Occupational foot protection.

Safety-toe footwear for employees shall meet the requirements and specifications in American National Stand-

ard for Men's Safety-Toe Footwear, Z41.1-1967.

§ 1910.137 Electrical protective devices.

Rubber protective equipment for electrical workers shall conform to the requirements established in the American National Standards Institute Standards as specified in the following list:

Item	Standard
Rubber insulating gloves.	J6.6-1967.
Rubber matting for use around electric apparatus.	J6.7-1935 (R1962).
Rubber insulating blankets.	J6.4-1970.
Rubber insulating hoods.	J6.3-1950 (R1962).
Rubber insulating line hose.	J6.1-1950 (R1962).
Rubber insulating sleeves.	J6.5-1962.

§ 1910.138 Effective dates.

(a) The provisions of this Subpart I shall become effective on August 27, 1971, except that:

(1) Any provision in any other section of this subpart which contains in itself a specific effective date or time limitation shall become effective on such date or shall apply in accordance with such limitation; and

(2) If any standard in 41 CFR Part 50-204, other than a national consensus standard incorporated by reference in § 50-204.2(a)(1), is or becomes applicable at any time to any employment and place of employment, by virtue of the Walsh-Healey Public Contracts Act, or the Service Contract Act of 1965, or the National Foundation on Arts and Humanities Act of 1965, any corresponding established Federal standard in this Subpart I which is derived from 41 CFR Part 50-204 shall also become effective, and shall be applicable to such employment and place of employment, on the same date.

§ 1910.139 Sources of standards.

Sec.	Source
1910.132	41 CFR 50-204.7.
1910.133(a)	ANSI Z87.1-1968, Eye and Face Protection.
1910.134	ANSI Z88.2-1969, Standard Practice for Respiratory Protection.
1910.134 Table I-I.	ANSI K13.1-1967, Identification of Gas Mask Canister.
1910.135	ASNI Z89.1-1969, Safety Requirements for Industrial Head Protection.
1910.136	ANSI Z41.1-1967, Men's Safety-Toe Footwear.
1910.137	ANSI Z9.4-1968, Ventilation and Safe Practices of Abrasive Blasting Operations.

§ 1910.140 Standards organization.

Specific standards of the following organization have been referenced in this part. Copies of the referenced materials may be obtained from the issuing organization.

American National Standards Institute, 1430 Broadway, New York, NY 10018.

Subpart J—General Environmental Controls

§ 1910.141 Sanitation.

(a) *General.*—(1) *Scope.* This section applies to permanent places of employment.

(2) *Definitions applicable to this section.* (i) "Lavatory" means a basin or similar vessel used exclusively for washing of the hands, arms, faces, and head.

(ii) "Nonwater carriage toilet facility," means a toilet facility not connected to a sewer.

(iii) "Number of employees" means, unless otherwise specified, the maximum number of employees present at any one time on a regular shift.

(iv) "Personal service room," means a room used for activities not directly connected with the production or service function performed by the establishment. Such activities include, but are not limited to, first-aid, medical services, dressing, showering, toilet use, washing, and eating.

(v) "Potable water" means water which meets the quality standards prescribed in the U.S. Public Health Service Drinking Water Standards, published in 42 CFR part 72, or water which is approved for drinking purposes by the State or local authority having jurisdiction.

(vi) "Toilet facility," means a fixture maintained within a toilet room for the purpose of defecation or urination, or both.

(vii) "Toilet room," means a room maintained within or on the premises of any place of employment, containing toilet facilities for use by employees.

(viii) "Toxic material" means a material in concentration or amount which exceeds the applicable limit established by a standard, such as §§ 1910.1000 and 1910.1001 or, in the absence of an applicable standard, which is of such toxicity so as to constitute a recognized hazard that is causing or is likely to cause death or serious physical harm.

(ix) "Urinal" means a toilet facility maintained within a toilet room for the sole purpose of urination.

(x) "Water closet" means a toilet facility maintained within a toilet room for the purpose of both defecation and urination and which is flushed with water.

(xi) "Wet process" means any process or operation in a workroom which normally results in surfaces upon which employees may walk or stand becoming wet.

(3) *Housekeeping.* (i) All places of employment shall be kept clean to the extent that the nature of the work allows.

(ii) The floor of every workroom shall be maintained, so far as practicable, in a dry condition. Where wet processes are used, drainage shall be maintained and false floors, platforms, mats, or other dry standing places shall be provided, where practicable, or appropriate waterproof footgear shall be provided.

(iii) To facilitate cleaning, every floor, working place, and passageway shall be kept free from protruding nails, splinters, loose boards, and unnecessary holes and openings.

(4) *Waste disposal.* (i) Any receptacle used for putrescible solid or liquid waste or refuse shall be so constructed that it does not leak and may be thoroughly cleaned and maintained in a sanitary condition. Such a receptacle shall be equipped with a solid tight-fitting cover, unless it can be maintained in a sanitary condition without a cover. This requirement does not prohibit the use of receptacles which are designed to permit the maintenance of a sanitary condition without regard to the aforementioned requirements.

(ii) All sweepings, solid or liquid wastes, refuse, and garbage shall be removed in such a manner as to avoid creating a menace to health and as often as necessary or appropriate to maintain the place of employment in a sanitary condition.

(5) *Vermin control.* Every enclosed workplace shall be so constructed, equipped, and maintained, so far as reasonably practicable, as to prevent the entrance or harborage of rodents, insects, and other vermin. A continuing and effective extermination program shall be instituted where their presence is detected.

(b) *Water supply.*—(1) *Potable water.* (i) Potable water shall be provided in all places of employment, for drinking, washing of the person, cooking, washing of foods, washing of cooking or eating utensils, washing of food preparation or processing premises, and personal service rooms.

(ii) Drinking fountain surfaces which become wet during fountain operation shall be constructed of materials impervious to water and not subject to oxidation. The nozzle of the fountain shall be at an angle and so located to prevent the return of water in the jet or bowl to the nozzle orifice. A guard shall be provided over the nozzle to prevent contact with the nozzle by the mouth or nose of persons using the drinking fountain. The drain from the bowl of the fountain shall not have a direct physical connection with a waste pipe, unless it is trapped.

(iii) Portable drinking water dispensers shall be designed, constructed, and serviced so that sanitary conditions are maintained, shall be capable of being closed, and shall be equipped with a tap.

(iv) Ice in contact with drinking water shall be made of potable water and maintained in a sanitary condition.

(v) Open containers such as barrels, pails, or tanks for drinking water from which the water must be dipped or poured, whether or not they are fitted with a cover, are prohibited.

(vi) A common drinking cup and other common utensils are prohibited.

(vii) Where single service cups (to be used but once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups shall be provided.

(2) *Nonpotable water.* (i) Outlets for nonpotable water, such as water for industrial or firefighting purposes, shall be posted or otherwise marked in a manner that will indicate clearly that the water is unsafe and is not to be used for drinking, washing of the person, cooking, washing of food, washing of cooking or eating utensils, washing of food preparation or processing premises, or personal service rooms, or for washing clothes.

(ii) Construction of nonpotable water systems or systems carrying any other nonpotable substance shall be such as to prevent backflow or backsiphonage into a potable water system.

(iii) Nonpotable water shall not be used for washing any portion of the person, cooking or eating utensils, or

clothing. Nonpotable water may be used for cleaning work premises, other than food processing and preparation premises and personal service rooms: *Provided*, That this nonpotable water does not contain concentrations of chemicals, fecal coliform, or other substances which could create insanitary conditions or be harmful to employees.

(c) *Toilet facilities.*—(1) *General.* (i) Except as otherwise indicated in this subdivision (c) toilet facilities in toilet rooms separate for each sex shall be provided in all places of employment in accordance with table J-1 of this section. The number of facilities to be provided for each sex shall be based on the number of employees of that sex for whom the facilities are furnished. Where toilet rooms will be occupied by no more than one person at a time, can be locked from the inside, and contain at least one water closet, separate toilet rooms for each sex need not be provided. Where such single-occupancy rooms have more than one toilet facility, only one such facility in each toilet room shall be counted for the purpose of table J-1.

TABLE J-1

Number of employees:	Minimum number of water closets [1]
1 to 15	1.
16 to 35	2.
36 to 55	3.
56 to 80	4.
81 to 110	5.
111 to 150	6.
Over 150	1 additional fixture for each additional 40 employees.

[1] Where toilet facilities will not be used by women, urinals may be provided instead of water closets, except that the number of water closets in such cases shall not be reduced to less than ⅔ of the minimum specified.

(ii) The requirements of subdivision (i) of this subparagraph do not apply to mobile crews or to normally unattended work locations so long as employees working at these locations have transportation immediately available to nearby toilet facilities which meet the other requirements of this subparagraph.

(iii) The sewage disposal method shall not endanger the health of employees.

(iv) When persons other than employees are permitted the use of toilet facilities on the premise, the number of such facilities shall be appropriately increased in accordance with table J-1 of this section in determining the minimum number of toilet facilities required.

(v) Toilet paper with holder shall be provided for every water closet.

(vi) Covered receptacles shall be kept in all toilet rooms used by women.

(vii) For each three required toilet facilities at least one lavatory shall be located either in the toilet room or adjacent thereto. Where only one or two toilet facilities are provided at least one lavatory so located shall be provided.

(2) *Construction of toilet rooms.* (i) Each water closet shall occupy a separate compartment with a door and walls or partitions between fixtures sufficiently high to assure privacy.

(ii) In all toilet rooms installed on or after August 31, 1971, the floor and sidewalls, including the angle formed by the floor and sidewalls, and excluding doorways and entrances, shall be watertight. The sidewalls shall be watertight to a height of at least 5 inches.

(iii) The floors, walls, ceilings, partitions, and doors of all toilet rooms shall be of a finish that can be easily cleaned. In installations made on or after August 31, 1971, cove bases shall be provided to facilitate cleaning.

(3) *Construction and installation of toilet facilities.* (i) Every water carriage toilet facility shall be set entirely free and open from all enclosing structures and shall be so installed that the space around the facility can be easily cleaned. This provision does not prohibit the use of wall-hung-type water closets or urinals.

(ii) Every water closet shall have a hinged seat made of substantial material having a nonabsorbent finish. Seats installed or replaced after June 4, 1973, shall be of the open-front type.

(iii) Nonwater carriage toilet facilities and disposal systems shall be in accordance with § 1910.142.

(d) *Washing facilities.*—(1) *General.* Washing facilities shall be maintained in a sanitary condition.

(2) *Lavatories.* (i) Lavatories shall be made available in all places of employment in accordance with the requirements for lavatories as set forth in table J-2 of this section. In a multiple-use lavatory, 24 lineal inches of wash sink or 20 inches of a circular basin, when provided with water outlets for each space, shall be considered equivalent to one lavatory. The requirements of this subdivision do not apply to mobile crews or to normally unattended work locations if

employees working at these locations have transportation readily available to nearby washing facilities which meet the other requirements of this paragraph.

TABLE J-2

Type of employment	Number of employees	Minimum number of lavatories
Nonindustrial—office buildings, public buildings, and similar establishments.	1-15	1.
	16-35	2.
	36-60	3.
	61-90	4.
	91-125	5.
	Over 125	1 additional fixture for each additional 45 employees.

(ii) Each lavatory shall be provided with hot and cold running water, or tepid running water.

(iii) Hand soap or similar cleansing agents shall be provided.

(iv) Individual hand towels or sections thereof, of cloth or paper, warm air blowers or clean individual sections of continuous cloth toweling, convenient to the lavatories, shall be provided.

(v) Receptacles shall be provided for disposal of used towels.

(vi) Warm air blowers shall provide air at not less than 90° F. and shall have means to automatically prevent the discharge of air exceeding 140° F.

(vii) Electrical components of warm air blowers shall meet the requirements of subpart S of this part.

(3) *Showers.* (i) Whenever showers are required by a particular standard, the showers shall be provided in accordance with subdivisions (ii) through (v) of this subparagraph.

(ii) One shower shall be provided for each 10 employees of each sex, or numerical fraction thereof, who are required to shower during the same shift.

(iii) Body soap or other appropriate cleansing agents convenient to the showers shall be provided as specified in paragraph (d)(2)(iii) of this section.

(iv) Showers shall be provided with hot and cold water feeding a common discharge line.

(v) Employees who use showers shall be provided with individual clean towels.

(e) *Change rooms.* Whenever employees are required by a particular standard to wear protective clothing because of the possibility of contamination with toxic materials, change rooms equipped with storage facilities for street clothes and separate storage facilities for the protective clothing shall be provided.

(f) *Clothes drying facilities.* Where working clothes are provided by the employer and become wet or are washed between shifts, provision shall be made to insure that such clothing is dry before reuse.

(g) *Consumption of food and beverages on the premises.* (1) *Application.* This paragraph shall apply only where employees are permitted to consume food or beverages, or both, on the premises.

(2) *Eating and drinking areas.* No employee shall be allowed to consume food or beverages in a toilet room nor in any area exposed to a toxic material.

(3) *Waste disposal containers.* Receptacles constructed of smooth, corrosion resistant, easily cleanable, or disposable materials, shall be provided and used for the disposal of waste food. The number, size, and location of such receptacles shall encourage their use and not result in overfilling. They shall be emptied not less frequently than once each working day, unless unused, and shall be maintained in a clean and sanitary condition. Receptacles shall be provided with a solid tight-fitting cover unless sanitary conditions can be maintained without use of a cover.

(4) *Sanitary storage.* No food or beverages shall be stored in toilet rooms or in an area exposed to a toxic material.

(h) *Food handling.* All employee food service facilities and operations shall be carried out in accordance with sound hygienic principles. In all places of employment where all or part of the food service is provided, the food dispensed shall be wholesome, free from spoilage, and shall be processed, prepared, handled, and stored in such a manner as to be protected against contamination.

[39 FR 23502, June 27, 1974, as amended at 40 FR 18446, April 28, 1975; 40 FR 23073, May 28, 1975]

§ 1910.142 Temporary labor camps.

(a) *Site.* (1) All sites used for camps shall be adequately drained. They shall not be subject to periodic flooding, nor located within 200 feet of swamps, pools, sink holes, or other surface collections of water unless such quiescent water surfaces can be subjected to mosquito control measures. The camp shall be located so the drainage from and through the

camp will not endanger any domestic or public water supply. All sites shall be graded, ditched, and rendered free from depressions in which water may become a nuisance.

(2) All sites shall be adequate in size to prevent overcrowding of necessary structures. The principal camp area in which food is prepared and served and where sleeping quarters are located shall be at least 500 feet from any area in which livestock is kept.

(3) The grounds and open areas surrounding the shelters shall be maintained in a clean and sanitary condition free from rubbish, debris, waste paper, garbage, or other refuse.

(4) Whenever the camp is closed for the season or permanently, all garbage, manure, and other refuse shall be collected and so disposed of as to prevent nuisance. All abandoned privy pits shall be filled with earth and the grounds and buildings left in a clean and sanitary condition. If privy buildings remain, they shall be locked or otherwise secured to prevent entrance.

(b) *Shelter.* (1) Every shelter in the camp shall be constructed in a manner which will provide protection against the elements.

(2) Each room used for sleeping purposes shall contain at east 50 square feet of floor space for each occupant. At least a 7-foot ceiling shall be provided.

(3) Beds, cots, or bunks, and suitable storage facilities such as wall lockers for clothing and personal articles shall be provided in every room used for sleeping purposes. Such beds or similar facilities shall be spaced not closer than 36 inches both laterally and end to end, and shall be elevated at least 12 inches from the floor. If double-deck bunks are used, they shall be spaced not less than 48 inches both laterally and end to end. The minimum clear space between the lower and upper bunk shall be not less than 27 inches. Triple-deck bunks are prohibited.

(4) The floors of each shelter shall be constructed of wood, asphalt, or concrete. Wooden floors shall be of smooth and tight construction. The floors shall be kept in good repair.

(5) All wooden floors shall be elevated not less than 1 foot above the ground level at all points to prevent dampness and to permit free circulation of air beneath.

(6) Nothing in this section shall be construed to prohibit "banking" with earth or other suitable material around the outside walls in areas subject to extreme low temperatures.

(7) All living quarters shall be provided with windows the total of which shall be not less than one-tenth of the floor area. At least one-half of each window shall be so constructed that it can be opened for purposes of ventilation.

(8) All exterior openings shall be effectively screened with 16-mesh material. All screen doors shall be equipped with self-closing devices.

(9) In a room where workers cook, live, and sleep a minimum of 100 square feet per person shall be provided. Sanitary facilities shall be provided for storing and preparing food.

(10) In camps where cooking facilities are used in common, stoves (in ratio of one stove to 10 persons or one stove to two families) shall be provided in an enclosed and screened shelter. Sanitary facilities shall be provided for storing and preparing food.

(11) All heating, cooking, and water heating equipment shall be installed in accordance with State and local ordinances, codes, and regulations governing such installations. If a camp is used during cold weather, adequate heating equipment shall be provided.

(c) *Water supply.* (1) An adequate and convenient water supply, approved by the appropriate health authority, shall be provided in each camp for drinking, cooking, bathing, and laundry purposes.

(2) A water supply shall be deemed adequate if it is capable of delivering 35 gallons per person per day to the campsite at a peak rate of 2½ times the average hourly demand.

(3) The distribution lines shall be capable of supplying water at normal operating pressures to all fixtures for simultaneous operation. Water outlets shall be distributed throughout the camp in such a manner that no shelter is more than 100 feet from a yard hydrant if water is not piped to the shelters.

(4) Where water under pressure is available, one or more drinking fountains shall be provided for each 100 occupants or fraction thereof. The construction of drinking fountains shall comply with ANSI Standard Specifications for Drinking Fountains, 24.2-1942 Common drinking cups are prohibited.

(d) *Toilet facilities.* (1) Toilet facilities adequate for the capacity of the camp shall be provided.

(2) Each toilet room shall be located so as to be accessible without any individual passing through any sleeping room. Toilet rooms shall have a window not less than 6 square feet in area opening directly to the outside area or otherwise be satisfactorily ventilated. All outside openings shall be screened with 16-mesh material. No fixture, water closet, chemical toilet, or urinal shall be located in a room used for other than toilet purposes.

(3) A toilet room shall be located within 200 feet of the door of each sleeping room. No privy shall be closer than 100 feet to any sleeping room, dining room, lunch area, or kitchen.

(4) Where the toilet rooms are shared, such as in multifamily shelters and in barracks type facilities, separate toilet rooms shall be provided for each sex. These rooms shall be distinctly marked "for men" and "for women" by signs printed in English and in the native language of the persons occupying the camp, or marked with easily understood pictures or symbols. If the facilities for each sex are in the same building, they shall be separated by solid walls or partitions extending from the floor to the roof or ceiling.

(5) Where toilet facilities are shared, the number of water closets or privy seats provided for each sex shall be based on the maximum number of persons of that sex which the camp is designed to house at any one time, in the ratio of one such unit to each 15 persons, with a minimum of two units for any shared facility.

(6) Urinals shall be provided on the basis of one unit or 2 linear feet of urinal trough for each 25 men. The floor from the wall and for a distance not less than 15 inches measured from the outward edge of the urinals shall be constructed of materials impervious to moisture. Where water under pressure is available, urinals shall be provided with an adequate water flush. Urinal troughs in privies shall drain freely into the pit or vault and the construction of this drain shall be such as to exclude flies and rodents from the pit.

(7) Every water closet installed on or after August 31, 1971, shall be located in a toilet room.

(8) Each toilet room shall be lighted naturally, or artificially by a safe type of lighting at all hours of the day and night.

(9) An adequate supply of toilet paper shall be provided in each privy, water closet, or chemical toilet compartment.

(10) Privies and toilet rooms shall be kept in a sanitary condition. They shall be cleaned at least daily.

(e) *Sewage disposal facilities.* In camps where public sewers are available, all sewer lines and floor drains from buildings shall be connected thereto.

(f) *Laundry, handwashing, and bathing facilities.* (1) Laundry, handwashing, and bathing facilities shall be provided in the following ratio:

(i) Handwash basin per family shelter or per six persons in shared facilities.

(ii) Shower head for every 10 persons.

(iii) Laundry tray or tub for every 30 persons.

(iv) Slop sink in each building used for laundry, hand washing, and bathing.

(2) Floors shall be of smooth finish but not slippery materials; they shall be impervious to moisture. Floor drains shall be provided in all shower baths, shower rooms, or laundry rooms to remove waste water and facilitate cleaning. All junctions of the curbing and the floor shall be coved. The walls and partitions of shower rooms shall be smooth and impervious to the height of splash.

(3) An adequate supply of hot and cold running water shall be provided for bathing and laundry purposes. Facilities for heating water shall be provided.

(4) Every service building shall be provided with equipment capable of maintaining a temperature of at least 70° F. during cold weather.

(5) Facilities for drying clothes shall be provided.

(6) All service buildings shall be kept clean.

(g) *Lighting.* Where electric service is available, each habitable room in a camp shall be provided with at least one ceiling-type light fixture and at least one separate floor- or wall-type convenience outlet. Laundry and toilet rooms and rooms where people congregate shall contain at least one ceiling- or wall-type fixture. Light levels in toilet and storage rooms shall be at least 20 foot-candles 30 inches from the floor. Other rooms, including kitchens and living quarters, shall be at least 30 foot-candles 30 inches from the floor.

(h) *Refuse disposal.* (1) Fly-tight, rodent-tight, impervious, cleanable or single service containers, approved by the appropriate health authority shall be provided for the storage of garbage. At least one such container shall be provided for each family shelter and shall be located within 100 feet of each shelter on a wooden, metal, or concrete stand.

(2) Garbage containers shall be kept clean.

(3) Garbage containers shall be emptied when full, but not less than twice a week.

(i) *Construction and operation of kitchens, dining hall, and feeding facilities.* (1) In all camps where central dining or multiple family feeding operations are permitted or provided, the food handling facilities shall comply with the requirements of the "Food Service Sanitation Ordinance and Code," Part V of the "Food Service Sanitation Manual," U.S. Public Health Service Publication 934 (1965).

(2) A properly constructed kitchen and dining hall adequate in size, separate from the sleeping quarters of any of the workers or their families, shall be provided in connection with all food handling facilities. There shall be no direct opening from living or sleeping quarters into a kitchen or dining hall.

(3) No person with any communicable disease shall be employed or permitted to work in the preparation, cooking, serving, or other handling of food, foodstuffs, or materials used therein, in any kitchen or dining room operated in connection with a camp or regularly used by persons living in a camp.

(j) *Insect and rodent control.* Effective measures shall be taken to prevent infestation by and harborage of animal or insect vectors or pests.

(k) *First aid.* (1) Adequate first aid facilities approved by a health authority shall be maintained and made available in every labor camp for the emergency treatment of injured persons.

(2) Such facilities shall be in charge of a person trained to administer first aid and shall be readily accessible for use at all times.

(l) *Reporting communicable disease.* (1) It shall be the duty of the camp superintendent to report immediately to the local health officer the name and address of any individual in the camp known to have or suspected of having a communicable disease.

(2) Whenever there shall occur in any camp a case of suspected food poisoning or an unusual prevalence of any illness in which fever, diarrhea, sore throat, vomiting, or jaundice is a prominent symptom, it shall be the duty of the camp superintendent to report immediately the existence of the outbreak to the health authority by telegram or telephone.

1910.143 Nonwater carriage disposal systems.

(a) *Acceptable industrial disposal systems.* (1) The waste disposal systems described in subparagraphs (2), (3), (4), (5), (6), or (7) of this paragraph, may be used only where not prohibited by codes and regulations of local authorities, and where water closets are not feasible due either to the lack of an adequate water supply or to the location or temporary nature of the operation requiring the facility. The number of units required for a place of employment shall be as specified in §§ 1910.141 and 1910.142.

(2) Privies constructed in conformity with paragraph (b) of this section may be used for the disposal of human excreta where their use will not contaminate ground or surface water because of privy location, type of soil, or ground-water table.

(3) Chemical toilets constructed in conformity with paragraph (c) of this section may be used in place of privies or where a privy is not permitted due to possible contamination of ground and surface water.

(4) Recirculating toilets constructed in conformity with paragraph (f) of this section may be used in place of privies or chemical toilets.

(5) Combustion toilets constructed in conformity with paragraph (e) of this section may be used in place of privies, chemical toilets, or recirculating toilets.

(6) Portable toilets constructed in conformity with paragraph (g) of this section may be used for temporary or mobile installations. Such temporary units may be:

(i) Chemical, recirculating, or combustion toilets designed for installation in or as an integral part of a skid mounted portable privy building, or in a separate toilet room, or

(ii) Portable privies designed for installation over a manhole of a sanitary or a combined waste water sewer system

(7) A seepage pit constructed in conformity with paragraph (d) of this section may be used for the disposal of waste water from culinary activity, temporary bathing facilities, and clothes washing facilities where there is no available piped water supply. Human excreta shall not be discharged into a seepage pit. All units described in this paragraph shall comply with applicable codes and regulations of local authorities.

(b) *Privy specifications.* (1) A privy pit shall be separated by a minimum distance of 100 feet between the privy and a well, spring, or other source of water supply for drinking, bathing, or culinary purposes.

(i) At no time shall the pit bottom of a privy extend into ground water, nor shall it be constructed within 100 feet of the shoreline of any open body of water. Phreatic water, such as may be found in surface soil at depths of 10 feet or less, shall not be interpreted as ground water unless there is evidence of positive directional flow through the pit.

(ii) The privy shall be so located and so constructed that no surface water may enter into the pit either as runoff or as flood water.

(iii) The pit shall be constructed of such materials and in such a manner as to prevent rapid deterioration, provide adequate capacity, and facilitate maintenance in a satisfactory manner under ordinary conditions of usage.

(iv) The pit and seat area shall be vented by a flue or vent pipe having not less than 7 square inches cross-sectional area, so as to provide a continuous escape of odors.

(v) The pit shall provide a capacity of 50 cubic feet for each seat installed in the privy building. The vault within 16 inches of the surface grade shall not be counted as part of the 50-cubic-foot capacity.

(vi) Pit cribbing shall fit firmly and be in uniform contact with the earth walls on all sides, and shall rise at least 6 inches above the original ground line and descend to the full depth of the pit. However, pit cribbing below the soil line may be omitted in rock formations.

(vii) An earth plateau shall be constructed level with the top of the pit cribbing and extend horizontally for a distance of at least 18 inches before sloping to the original ground level.

(2) Privy building shall be firmly anchored, rigidly constructed, and free from hostile surface features, such as exposed nail points, sharp edges, rough or broken boards, etc., and shall provide privacy and protection from the elements. It shall be ventilated by leaving a 4-inch opening at the top of all the walls just beneath the roof.

(i) The building shall be of fly-tight construction, doors shall be self-closing, and vent and building openings shall be screened with 16-mesh screen of durable material. The vent shall extend 12 inches above the roof.

(ii) The seat shall be so spaced as to provide a minimum clear space of 24 inches between each seat in multiple unit installations, and shall provide 12 inches clear space from the seat opening to the side wall in single and multiple units.

(iii) The seat riser shall have an inside clearance of not less than 21 inches from the front wall and not less than 24 inches from the rear wall of the privy building.

(iv) The seat top shall be not less than 12 inches nor more than 16 inches above the floor.

(v) The seat opening shall be covered with an attached, movable toilet seat and lid, so constructed and installed that when closed it will limit access of insects, and which can be raised to allow sanitary use as a urinal.

(vi) The floor and riser shall be built of impervious material or tongue and groove lumber, and in a manner to deny access of insects.

(vii) Where electricity is available, lighting shall be provided with an intensity of not less than 10 foot-candles 30 inches above the floor.

(viii) A conveniently located receptacle or dispenser containing an adequate supply of toilet paper shall be provided for each seat in each privy building.

(c) *Chemical toilet specifications.* (1) Rooms, buildings, or shelters housing chemical toilets shall be of sound construction and easy to clean, and shall provide shelter and privacy. The toilet rooms shall be ventilated to the outside and adequately lighted, and all openings into the toilet room shall be covered with 16-mesh screen. The minimum requirements given in subparagraphs (2) through (7) of this paragraph shall apply.

(2) Caustic receptacles shall be durable and corrosion proof, and provide a minimum capacity of 100 gallons per seat.

(3) The caustic receptacle charge per seat shall be a minimum of 25 pounds of caustic dissolved in 10 gallons of water.

(4) The chemical shall be drained and receptacle recharged every 6 months of continuous use, or at the beginning of each season of operation when in intermittent use, or when three-fourths full, whichever occurs first.

(5) Each seat in the building shall be provided with a conveniently located agitator.

(6) Receptacles shall be vented as prescribed in paragraph (b)(1)(iv) of this section.

(7) The receptacle shall be equipped with a manhole external to the privy building for cleaning and caustic removal purposes. The manhole shall be covered so as to prevent the escape of gases and odors.

(d) *Seepage pit construction.* (1) Seepage pit construction shall conform with requirements for privy pit construction in paragraph (b)(1)(i), (ii), (iii), (vi) and (vii) of this section. The seepage pit may be filled with stone or rubble of not less than nominal 1 inch diameter.

(2) Seepage pits shall be of such dimensions as to provide side wall area equal to at least 10 square feet per person served by the facility, or such greater area as may be required by the health agency having jurisdiction.

(3) Temporary piping connections from sinks or shower platforms may be discharged beneath the floor if they have traps in accordance with the provisions of American National Standard National Plumbing Code, A 40.8–1955.

(4) The platform covering the seepage pits shall be built of impervious material and in a manner to exclude insects.

(5) The platform shall be provided with an opening at least 1 foot in each dimension and have a rim at least 1 inch above the floor to prevent precipitation from accumulating on the platform floor.

(6) The platform opening shall be covered with a self-closing lid, so constructed that it can be easily opened by foot or hand, and so installed that when closed it will exclude insects and fit closely over the raised rim of the opening.

(e) *Combustion toilet.* (1) Combustion toilets and combustion toilet buildings, rooms, or shelters shall conform to the applicable specifications given for chemical toilets in paragraph (c) of this section.

(2) All external surfaces, including bowl and hopper, shall be easy to clean.

(3) The residue must be sterile and inert.

(4) The flue effluents must be free of bacteria.

(5) The combustion system and all fuel and electrical parts shall be safe and in compliance with applicable gas and electrical codes of local authorities. Where such codes do not exist, the installations shall comply with the National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of 1968).

(f) *Recirculating toilet specifications.* (1) Recirculating toilet buildings, rooms, or shelters shall conform to the applicable specifications given for chemical toilets in paragraph (c) of this section.

(2) All materials, bowl, piping, and fittings shall be corrosion resistant.

(3) Waste passages shall have smooth surfaces and be free of obstructions, recesses, or chambers that would permit fouling.

(4) Flushing shall be accomplished by a single control so arranged as to be operated without special knowledge or effort.

(5) Recirculating toilets shall conform to "Self-Contained, Electrically Operated Recirculating, Chemically Controlled Toilet." International Association of Plumbing and Mechanical Officials Trailer Standard TSC 12–65.

(6) The unit shall be maintained and cleaned; and water, filter, and odor-controlling chemical shall be replaced in accordance with the instructions of the manufacturer.

(g) *Portable toilet construction.* (1) A portable toilet may comprise the seat and its treatment unit to be installed in a structure, or it may comprise an entire prefabricated, skid mounted, or otherwise portable structure containing a seat or treatment units with seat.

(2) No pit, tank, or other subsurface structure shall be construed as part of a portable toilet.

(i) Portable privies must be installed over a pit conforming to paragraph (b)(1) of this section, or a manhole that is part of a sanitary or combined waste water disposal system.

(ii) No portable toilet shall discharge into a storm sewer.

(3) A portable building shall be rigidly constructed, ventilated by a screened opening or a vent having a cross-sectional area of at least 1 square foot per seat, and equipped with a floor, riser, and seat meeting the requirements of paragraph (b)(2) of this section or an equivalent individual stool and seat in prefabricated metal, fiber glass, plastic, or ceramic material.

(i) The structure shall provide privacy and protection from the elements.

(ii) An airtight seal shall be provided between the structure base and any pit, receptacle, or manhole over which it is placed.

(iii) Ventilation of the pit, receptacle, or manhole shall conform to paragraph (b)(1)(iv) of this section.

(4) A portable toilet shall be provided with facilities, requisite to its construction, for the removal of chemicals, ash, or residue. All surfaces subject to soiling shall be readily accessible and easily cleaned.

§ 1910.144 Safety color code for marking physical hazards.

(a) *Color identification.*—(1) *Red.* Red shall be the basic color for the identification of:

(i) *Fire protection equipment and apparatus.* (a) Fire alarm boxes (pull boxes).

(b) Fire blanket boxes.

(c) Fire buckets or pails.

(d) Fire exit signs.

(e) Fire extinguishers (if painting the extinguisher is impractical or undesirable, color should be used on the housing, wall, or support to identify the location).

(f) Fire hose locations (color should be used on the reel, supports, or housing but not on the hose).

(g) Fire hydrants (industrial).

(h) Fire pumps.

(i) Fire sirens.

(j) Post indicator valves for sprinkler system (it is suggested that if a traffic hazard is involved, the top should be colored red, and the barrel or post yellow and black stripes).

(k) Sprinkler piping. (See ANSI Standard Scheme for the Identification of Piping Systems, A13.1–1956.)

(ii) *Danger.* Safety cans or other portable containers of flammable liquids having a flashpoint at or below 80° F. table containers of flammable liquids (open cup tester), excluding shipping containers, shall be painted red with some additional clearly visible identification either in the form of a yellow band around the can or the name of the contents conspicuously stenciled or painted on the can in yellow. Red lights shall be provided at barricades and at temporary obstructions, as specified in ANSI Safety Code for Building Construction, A10.2–1944. Danger signs shall be painted red.

(iii) *Stop.* Emergency stop bars on hazardous machines such as rubber mills, wire blocks, flat work ironers, etc., shall be red. Stop buttons or electrical switches which letters or other markings appear, used for emergency stopping of machinery shall be red.

(2) *Orange.* Orange shall be used as the basic color for designating dangerous parts of machines or energized equipment which may cut, crush, shock, or otherwise injure and to emphasize such hazards when enclosure doors are open or when gear belt, or other guards around moving equipment are open or removed, exposing unguarded hazards.

(3) *Yellow.* Yellow shall be the basic color for designating caution and for marking physical hazards such as: Striking against, stumbling, falling, tripping, and "caught in between." Solid yellow, yellow and black stripes, yellow and black checkers (or yellow with suitable contrasting background) should be used interchangeably, using the combination which will attract the most attention in the particular environment.

(4) *Green.* Green shall be used as the basic color for designating "Safety" and the location of first aid equipment (other than firefighting equipment).

(5) *Blue.* Blue shall be the basic color for designating caution, limited to warning against the starting, the use of, or the movement of equipment under repair or being worked upon.

(6) *Purple.* Purple shall be the basic color for designating radiation hazards. "Radiation" as used in this subparagraph refers to radiation types such as X-ray, alpha, beta, gamma, neutron, proton, deuteron, and meson. Yellow should be used in combination with purple for markers such as tags, labels, signs, and floor markers.

(7) *Black, white, or combinations of black and white.* Black, white, or a combination of these two, shall be the basic colors for the designation of traffic and housekeeping markings. Solid white, solid black, single color striping, alternate stripes of black and white, or black and white checkers should be used in accordance with local conditions.

(b) *Color specifications.* Colors shall meet the tests specified in section 3,

Color Definitions, of ANSI Z53.1–1967, Safety Color Code for Marking Physical Hazards.

§ 1910.145 Specifications for accident prevention signs and tags.

(a) *Scope.* (1) These specifications apply to the design, application, and use of signs or symbols (as included in paragraphs (c) through (e) of this section) intended to indicate and, insofar as possible, to define specific hazards of a nature such that failure to designate them may lead to accidental injury to workers or the public, or both, or to property damage. These specifications are intended to cover all safety signs except those designed for streets, highways, railroads, and marine regulations. These specifications do not apply to plant bulletin boards or to safety posters.

(2) All new signs and replacements of old signs on or after August 31, 1971, shall be in accordance with these specifications.

(b) *Definitions.* As used in this section, the word "sign" refers to a surface on prepared for the warning of, or safety instructions of, industrial workers or members of the public who may be exposed to hazards. Excluded from this definition, however, are news releases, displays commonly known as safety posters, and bulletins used for employee education.

(c) *Classification of signs according to use.*—(1) *Danger signs.* (i) Danger signs should be used only where an immediate hazard exists. There shall be no variation in the type of design of signs posted to warn of specific dangers and radiation hazards.

(ii) All employees shall be instructed that danger signs indicate immediate danger and that special precautions are necessary.

(2) *Caution signs.* (i) Caution signs shall be used only to warn against potential hazards or to caution against unsafe practices.

(ii) All employees shall be instructed that caution signs indicate a possible hazard against which proper precaution should be taken.

(3) *Safety instruction signs.* Safety instruction signs shall be used where there is a need for general instructions and suggestions relative to safety measures.

(d) *Sign design and colors.*—(1) *Design features.* The colors, proportions, and location of the identification panels on each sign shall be in accordance with this paragraph. All signs shall be furnished with rounded or blunt corners and shall be free from sharp edges, burrs, splinters, or other sharp projections. The ends or heads of bolts or other fastening devices shall be located in such a way that they do not constitute a hazard. When conditions warrant the use of a sign size not covered in the following tables, the ratio of the depth of the identifying panel (Danger, Caution, etc.) to the width of the sign shall be as established in Tables J–1 to J–4.

TABLE J–1—STANDARD PROPORTIONS FOR DANGER SIGNS

Sign size, inches height, width	Black rectangular panel, inches height, width	Red oval, inches height, width	Word danger, height inches	Maximum space available for sign wording, inches
HORIZONTAL PATTERN				
7 x 10	3¼ x 9½	2¾ x 8½	1⅝	3¾ x 9½
10 x 14	4¾ x 13½	4¼ x 11⅞	2⅛	4½ x 13½
14 x 20	6½ x 19½	5¾ x 17	2¾	6½ x 19½
20 x 28	9¼ x 27½	8¼ x 23¾	4¼	9½ x 27½
UPRIGHT PATTERN				
10 x 7	2¾ x 6¼	2¼ x 5½	1⅛	6¼ x 6¼
14 x 10	3¾ x 9½	2¾ x 8½	1⅝	9½ x 9½
20 x 14	4½ x 13½	4½ x 11⅞	2⅛	14 x 13½
28 x 36	6½ x 19½	5¾ x 17	2¾	20¾ x 19½

(2) *Danger signs.* (i) The colors red, black, and white shall be those of opaque glossy samples as specified in Table 1 of Fundamental Specification of Safety Colors for CIE Standard Source "C", American National Standard Z53.1–1967.

(ii) Standard Proportions shall be as indicated in Table J–1, and format shall be as in Fig. J–1.

Fig. J–1
Danger Sign

(3) *Radiation warning signs.* (i) Standard color of the background shall be yellow; the panel, reddish purple with yellow letters; the symbol, reddish purple; any letters used against the yellow background shall be black. The colors shall be those of opaque glossy samples as specified in Table 1 of American National Standard, Z53.1–1967.

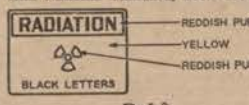


Fig. J–2
Radiation Warning Sign

(ii) The standard symbol shall be as in Figure J–3. Method of dimensioning, design, and orientation of the standard symbol (one blade pointed downward and centered on the vertical axis) shall be executed as illustrated. The symbol shall be prominently displayed, and of a size consistent with the size of the equipment or material or area to which it is attached.

(iii) Format shall be as in Figure J–2. Sign proportions shall be the same as those for danger signs in Table J–1.

(4) *Caution signs.* (i) Standard color of the background shall be yellow; and the panel, black with yellow letters. Any letters used against the yellow background shall be black. The colors shall be those of opaque glossy samples as specified in Table 1 of American National Standard, Z53.1–1967.

(ii) Standard proportions shall be as indicated in Table J–2, and format shall be as in Figure J–4.

TABLE J–2—STANDARD PROPORTIONS FOR CAUTION SIGNS

Sign size inches height width	Black rectangular panel, inches height width	Word "Caution" height of letter, inches	Maximum space available for sign wording below panel inches height width
HORIZONTAL PATTERN			
7 x 10	3¼ x 9½	1⅝	3¼ x 9½
10 x 14	4¾ x 13½	2⅛	6½ x 13½
14 x 20	6½ x 19½	2¾	9 x 19½
20 x 28	9¼ x 27½	4¼	14½ x 27½
UPRIGHT PATTERN			
10 x 7	4¾ x 6½	1⅛	7 x 6½
14 x 10	6½ x 9½	1⅝	10½ x 9½
20 x 14	9¼ x 13½	2⅛	16½ x 13½
28 x 20	13¼ x 19½	2¾	24 x 19½

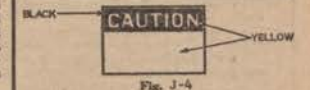
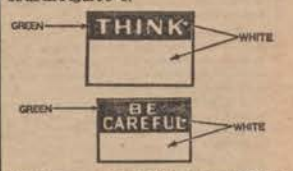


Fig. J–4
Caution Sign

(5) *Exit signs.* Exit signs shall be in accordance with § 1910.37(q).

(6) *Safety instruction signs.* (i) Standard color of the background shall be white; and the panel, green with white letters. Any letters used against the white background shall be black. The colors shall be those of opaque glossy samples as specified in Table 1 of American National Standard, Z53.1–1967.

(ii) Standard proportions shall be as indicated in Table J–3, and format shall be as in Figure J–5.



(Note: The words "Think" and "Be Careful," given here, are only illustrations. Other wordings may be used.)

Fig. J–5
Safety Instruction Signs

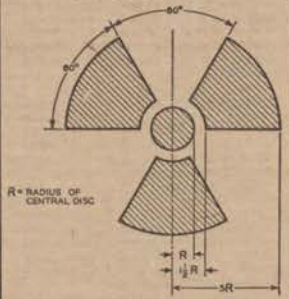


Fig. J–3
Standard Radiation Symbol

(7) *Directional signs.* (i) Standard color of the background shall be white; and the panel, black with white directional symbol. Any letters used against the white background shall be black. The colors shall be those of opaque glossy samples as specified in Table 1 of American National Standard Z53.1–1967.

(ii) Standard proportions shall be as indicated in Table J–4, and format shall be as in Figure J–6.

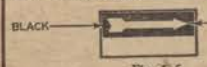
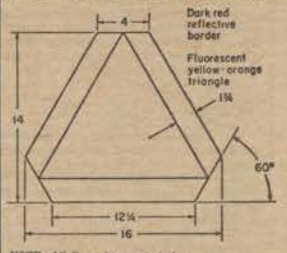


Fig. J–6
Directional Signs

(8) *In-plant traffic signs.* Regulatory and control signs required for the safe movement of vehicles and pedestrians on thoroughfares on plant property shall conform to the standards established in American National Standard Manual on Uniform Traffic Control Devices for Streets and Highways, D6.1–1961.

(9) *Informational signs.* Blue shall be the standard color for informational signs. It may be used as the background color for the complete sign or as a panel at the top of such types of "Notice" signs, which have a white background. The colors shall be those of opaque glossy samples as specified in Table 1 of American National Standard Z53.1–1967.

(10) *Slow-moving vehicle emblem.* This emblem (see fig. J–7) consists of a fluorescent yellow-orange triangle with a dark red reflective border. The yellow-orange fluorescent triangle is a highly visible color for daylight exposure. The reflective border defines the shape of the fluorescent color in daylight and creates a hollow red triangle in the path of motor vehicle headlights at night. The emblem is intended as a unique identification for, and it shall be used only on, vehicles which by design move slowly (25 m.p.h. or less)



NOTE: All dimensions are in inches.

Fig. J–7
Slow-Moving Vehicle Emblem

Table J–3—Standard Proportions for Safety Instruction Signs

Sign size, inches, height, width	Green rectangular panel, inches, height, width	Word "Think" height of letters, inches	Maximum space available for sign wording below panel, inches height, width	Sign size, inches height, width	Green panel, inches, height, width	Word "Be" height of letters, inches	Word "Careful" height of letters, inches	Maximum space available for sign wording below panel, inches, height, width
7 x 10	2¼ x 9¼	1⅛	3½ x 9¼	7 x 10	3½ x 9¼	1¼	1⅜	2½ x 9¼
10 x 14	3¼ x 13⅜	2⅛	6¼ x 13¼	10 x 14	4¾ x 13¼	1⅞	2⅛	4 x 13¼
14 x 20	3¼ x 19⅛	2⅛	1 x 19⅛	14 x 20	6¼ x 19⅛	2⅝	3⅛	6 x 19⅛
20 x 28	4¼ x 27¼	3¼	14½ x 27¼	20 x 28	9½ x 27¼	3¾	4¼	9¼ x 27¼

Table J–4—Standard Proportions for Directional Signs

Sign size, inches height, width	Black rectangular panel, inches height, width	White arrow, inches				Maximum space for sign wording below panel height
		Overall length	Arrow head height, width	Arrow shaft height	Arrow tail height, width	
6½ x 14	3¼ x 13¾	12¼	2¾ x 3	1¼	2¾ x 3½	2¼ x 12¾
9 x 20	4½ x 19¼	18½	3¾ x 4¼	1¾	3¼ x 4½	3½ x 19¼
12 x 28	6 x 27¾	26¾	5¼ x 5¼	2¼	4¼ x 6	4¼ x 27¾
18 x 36	7½ x 36½	34½	6¾ x 6½	3¼	5¼ x 7½	6¾ x 36½

on the public roads. The emblem is not a clearance marker for wide machinery nor is it intended to replace required lighting or marking of slow-moving vehicles. Neither the color film pattern and its dimensions nor the backing shall be altered to permit use of advertising or other markings. The material, location, mounting, etc., of the emblem shall be in accordance with the

American Society of Agricultural Engineers Emblem for Identifying Slow-Moving Vehicles, ASAE R276, 1967, or ASAE S276.2 (ANSI B)14.1–1971).

(11) *Symbols.* Symbols used on signs shall follow recognized practices, such as in Figure J–8. For radioactive materials, see symbol in Figure J–3.

Fig. J–8
Symbols Used on Signs

(e) *Sign wordings*—(1) *Examples of wordings.* The lists in subparagraphs (3) through (7) of this paragraph are intended to serve as a guide for choosing the correct sign design for the message to be displayed.

(2) *Nature of wording.* The wording of any sign should be easily read and concise. The sign should contain sufficient information to be easily understood. The wording should make a positive, rather than negative suggestion and should be accurate in fact.

(3) *Danger signs.*

Danger—Keep Off, Electric Current.
Danger—No Smoking, Matches, or Open Lights.
Danger—Men Working Above.
Danger—Not Room Enough Here to Clear Men on Cars.
Danger—Keep Away.
Danger—Men in Boiler.
Danger—Insufficient Clearance.
Danger—2,300 Volts.
Danger—Keep Out.
Danger—Crane Overhead.
Danger—Keep Off.

(4) *Biological hazard signs.* The biological hazard warning shall be used to signify the actual or potential presence of a biohazard and to identify equipment, containers, rooms, materials, experimental animals, or combinations thereof, which contain, or are contaminated with, viable hazardous agents. For the purpose of this subparagraph the term "biological hazard," or "biohazard," shall include only those infectious agents presenting a risk or potential risk to the well-being of man. The biohazard symbol shall be designed and proportioned as illustrated in figure J–9.

The symbol design shall be a fluorescent orange or orange-red color. Background color is optional as long as there is sufficient contrast for the symbol to be clearly defined. Appropriate wording may be used in association with the symbol to indicate the nature or identity of the hazard, name of individual responsible for its control, precautionary informa-

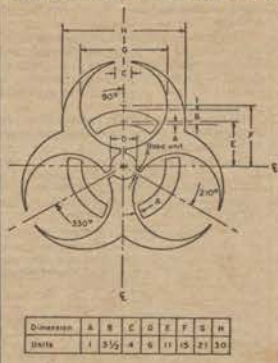


Fig. J–9
Symbol for Biological Hazard

tion, etc., but never should this information be superimposed on the symbol.

(5) *Caution signs.*

Caution—Do Not Operate, Men Working on Repairs.
Caution—Hands Off Switch, Men Working on Line.
Caution—Working on Machines, Do Not Start.
Caution—Goggles Must Be Worn When Operating This Machine.
Caution—This Door Must Be Kept Closed.
Caution—Electric Trucks, Go Slow.
Caution—This Space Must Be Kept Clear at All Times.
Caution—Stop Machinery to Clean, Oil, or Repair.
Caution—Keep Aisles Clear.
Caution—Operators of This Machine Shall Wear Snug Fitting Clothing—No Gloves.

Caution—Close Clearance.
Caution—Watch Your Step.
Caution—Electric Fence.

(6) *Safety instruction signs.*

Report All Injuries to the First-Aid Room at Once.
Walk—Don't Run.
Report All Injuries No Matter How Slight
Think, If Safe Go Ahead.
Make Your Work Place Safe Before Starting the Job.
Report All Unsafe Conditions to Your Foreman.
Help Keep This Plant Safe and Clean.

(7) *Directional signs.*

This Way Out (below arrow panel).
This Way (inside arrow) Out (below arrow panel).
Fire Exit (below arrow panel).
Fire (inside arrow) Extinguisher (below arrow panel).
To the (inside arrow) Fire Escape (below arrow panel).
To the (inside arrow) First Aid (below arrow panel).
Manway (below arrow panel).
This Way to (inside arrow) First-Aid Room (below arrow panel).

(8) *Informational signs.*

No Trespassing Under Penalty of the Law.
This Elevator Is for Freight Only, Not for Passengers.
No Admittance Except to Employees on Duty.
No Admittance.
No Admittance, Apply at Office.
No Trespassing.
Men.
Women.
For Employees Only.
Office.

NOTE: When sign wordings such as those listed in this section are contemplated, care should be taken to be sure that they are suitable for the particular location at which the sign is to be placed and that wording meets the requirements of the intended purpose. When there is a reasonable doubt, a sign of a standard design should be used.

(f) *Accident prevention tags*—(1) *Scope and purpose.* (i) The tags are a temporary means of warning all concerned of a hazardous condition, defective equipment, radiation hazards, etc. The tags are not to be considered as a complete warning method, but should be used until a positive means can be employed to eliminate the hazard; for example, a "Do Not Start" tag on power equipment shall be used for a few moments or a very short time until the switch in the system can be locked out, a "Defective Equipment" tag shall be placed on a damaged ladder and immediate arrangements made for the ladder to be taken out of service and sent to the repair shop.

(ii) The purpose of this paragraph is to establish a set of specifications for tags based on experience and previous use. The tags are to be used in industry, mercantile establishments, or wherever such tags can be utilized to help prevent accidental injury to personnel or damage to property, or both.

(2) *Definitions.* The word "tag" as used in this paragraph refers to a surface (usually card, paper, pasteboard, or some temporary or nonpermanent material) on which letters or markings, or both, appear. These letters or markings, or both, are for warning (cautioning) or safety instruction of employees who may be exposed to hazards. They are to be affixed to the device in question by string, wire, or adhesive.

(3) *Do not start tags.* (i) The standard background color for Do Not Start tags shall be red. (See Fig. J–10.)

(ii) Letters shall be white or grey or etched, provided that a long lasting and sharp contrast results.

(iii) Do Not Start tags shall be placed in a conspicuous location or shall be placed in such a manner that they effectively block the starting mechanism which would cause hazardous conditions should the equipment be energized.

(4) *Danger tags.* (i) Danger tags should be used only where an immediate hazard exists. There should be no variation in the type of design of tags posted or hung to warn of specific dangers. (See Fig. J–11.)

(ii) All employees should be instructed that Danger tags indicate immediate danger and that special precautions are necessary.

(5) *Caution tags.* (i) Caution tags should be used only to warn against potential hazards or to caution against unsafe practices. (See Fig. J–12.)

(ii) All employees should be instructed that Caution tags indicate a possible hazard against which proper precautions should be taken.

(6) *Out of order tags.* Out of Order tags should be used only for the specific purpose of indicating that a piece of equipment, machinery, etc., is out of order and to attempt to use it might present a hazard. (See Fig. J–13.)

(7) *Radiation tags.* (i) The standard background for Radiation tags shall be yellow; the panel shall be reddish purple. Any letters used against the yellow

background shall be black. The colors shall be those of opaque glossy samples as specified in Table 1, Fundamental Specification of Safety Colors for CIE Standard Source "C" American National Standard Safety Color Code for Marking Physical Hazards and the Identification of Certain Equipment, Z53.1–1967.

(ii) The method of dimension, design, and orientation of the standard symbol (one blade pointed downward and centered on the vertical axis) shall be exe-

White tag
white letters on red square

Fig. J–10
Do Not Start Tag

White tag
white letters on red oval with a black square

Fig. J–11
Danger Tag

Yellow tag
yellow letters on a black background

Fig. J–12
Caution Tag

White tag
white letters on black background

Fig. J–13
Out of Order Tag

Yellow tag
yellow letters in reddish-purple panel
(Added wording in black on yellow background)

Fig. J–14
Radiation Tag

White tag
black letters on fluorescent-orange background and symbol

Fig. J–15
Biological Hazard Tag

cuted as illustrated in Figure J-14. The symbol shall be prominently displayed and of a size consistent with the size of the equipment or area in which it is to be used.

(8) *Biological hazard tags.* (i) The standard background color for the Biological Hazard symbol is optional as long as there is sufficient contrast for the symbol to be clearly defined. The symbol design (see Fig. J-15) shall be a fluorescent orange or orange-red color.

(ii) The biological Hazard tag shall be used to signify the actual or potential presence of a biohazard, to identify equipment, containers, rooms, materials, experimental animals, or combinations thereof, which contain or are contaminated with viable hazardous agents.

(iii) For the purpose of this subparagraph the term "biological hazard" shall include only those infectious agents presenting a risk or potential risk to the well-being of man.

§ 1910.146 [Reserved]

§ 1910.147 Sources of standards.

The standards in this Subpart J are derived from the following sources:

Sec.	Source
1910.141	ANSI Z4.1-1968, Minimum Requirements for Sanitation in Places of Employment.
1910.142	ANSI Z4.4-1968, Minimum Requirements for Sanitation in Temporary Labor Camps.
1910.143	ANSI Z4.3-1970, Minimum requirements for Nonwater Carriage, Disposal Systems.
1910.144	ANSI Z53.1-1967, Safety Color Code for Marking Physical Hazards.
1910.145 (a)-(e)	ANSI Z35.1-1968, Specifications for Accident Prevention Signs, and ANSI B114.1-1971, Slow-Moving Vehicle Identification Emblem.
1910.145(f)	ANSI Z35.2-1968, Specifications for Accident Prevention Tags.

§ 1910.148 Standards organizations.

Standard and specifications of the following organizations have been referenced in this Subpart J:

American Nations' Standards Institute, 1430 Broadway, New York, NY 10018

National Association of Plumbing and Mechanical Officials, 5032 Alhambra Avenue, Los Angeles, CA 90032.

American Society of Agricultural Engineers, 2950 Niles Road, Post Office Box 229, St. Joseph, MI 49085.

§ 1910.149 Effective dates.

(a) The provisions of this Subpart J shall become effective on August 27, 1971, except as provided in the remaining paragraphs of this section.

(b) The following provisions shall become effective on February 15, 1972:

§ 1910.142(b)(2), (b)(5), (b)(7), (d)(6), (f), (g), (i) (1) and (2).

(c) Notwithstanding anything in paragraph (a), (b), or (d) of this section, any provision in any other section of this subpart which contains in itself a specific effective date or time limitation shall become effective on such date or shall apply in accordance with such limitation.

(d) Notwithstanding anything in paragraph (a) of this section, if any standard in 41 CFR Part 50-204, other than a national consensus standard incorporated by reference in 50-204.2 (a)(1), is or becomes applicable at any time to any employment and place of employment, by virtue of the Walsh-Healey Public Contracts Act, or the Service Contract Act of 1965, or the National Foundation on Arts and Humanities Act of 1965, any corresponding established Federal standard in this Subpart J which is derived from 41 CFR Part 50-204 shall also become effective, and shall be applicable to such employment and place of employment, on the same date.

Subpart K—Medical and First Aid

§ 1910.151 Medical services and first aid.

(a) The employer shall ensure the ready availability of medical personnel for advice and consultation on matters of plant health.

(b) In the absence of an infirmary, clinic, or hospital in near proximity to the workplace which is used for the treatment of all injured employees, a person or persons shall be adequately trained to render first aid. First aid supplies approved by the consulting physician shall be readily available.

(c) Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.

§ 1910.152 [Reserved]

§ 1910.153 Sources of standards.

The standard in § 1910.151 is derived from 41 CFR 50-204.6.

Subpart L—Fire Protection

§ 1910.156 Definitions applicable to this subpart.

(a) "Class A fires" are fires in ordinary combustible materials, such as wood, cloth, paper, and rubber.

(b) "Class B fires" are fires in flammable liquids, gases, and greases.

(c) "Class C fires" are fires which involve energized electrical equipment where the electrical nonconductivity of the extinguishing media is of importance. (When electrical equipment is deenergized, extinguishers for Class A or B fires may be used safely.)

(d) "Class D fires" are fires in combustible metals, such as magnesium, titanium, zirconium, sodium, and potassium.

(e) Classification of portable fire extinguishers: "Portable fire extinguishers" are classified for use on certain classes of fires and rated for relative extinguishing effectiveness at a temperature of plus 70° F. by nationally recognized testing laboratories. This is based upon the preceding classification of fires and the fire extinguishment potentials as determined by fire tests.

NOTE: The classification and rating system described in this section is that used by Underwriters' Laboratories, Inc. and Underwriters Laboratories of Canada and is based on extinguishing preplanned fires of determined size and description as follows:

(i) Class A rating—Wood and excelsior fires excluding deep-seated conditions.

(ii) Class B rating—Two-inch depth gasoline fires in square pans.

(iii) Class C rating—No fire test. Agent must be a nonconductor of electricity.

(iv) Class D rating—Special tests on specific combustible metal fires.

(f) A "light hazard" is a situation where the amount of combustibles or flammable liquids present is such that fires of small size may be expected. These may include offices, schoolrooms, churches, assembly halls, telephone exchanges, etc.

(g) An "ordinary hazard" is a situation where the amount of combustibles or flammable liquids present is such that fires of moderate size may be expected. These may include mercantile storage and display, auto showrooms, parking garages, light manufacturing, warehouses not classified as extra hazard, school shop areas, etc.

(h) An "extra hazard" is a situation where the amount of combustibles or flammable liquids present is such that fires of severe magnitude may be expected. These may include woodworking, auto repair, aircraft servicing, warehouses with high-piled (14 feet or higher) combustibles, and processes such as flammable liquid handling, painting, dipping, etc.

(i) Sprinkler system: A "sprinkler system," for fire protection purposes, is an integrated system of underground and overhead piping designed in accordance with fire protection engineering standards. The system includes a suitable water supply, such as a gravity tank, fire pump, reservoir, or pressure tank and/or connection by underground piping to a city main. The portion of the sprinkler system above ground is a network of specially sized or hydraulically designed piping installed in a building, structure or area, generally overhead, and to which sprinklers are connected in a systematic pattern. The system includes a controlling valve and a device for actuating an alarm when the system is in operation. The system is usually activated by heat from a fire and discharges water over the fire area.

NOTE: The design and installation of water supply facilities such as gravity tanks, fire pumps, reservoirs, or pressure tanks, and underground piping are covered by NFPA Standards No. 22-1970, Water Tanks For Private Fire Protection; No. 20-1970, Installation of Centrifugal Fire Pumps and No. 24-1970, Outside Protection.

(j) Sprinkler alarms: A "sprinkler alarm" unit is an assembly of apparatus approved for the service and so constructed and installed that any flow of water from a sprinkler system equal to or greater than that from a single automatic sprinkler will result in an audible alarm signal on the premises.

(k) Class of service—standpipe systems: "Standpipe systems" are grouped into three general classes of service for the intended used in the extinguishment of fire.

(1) Class I: For use by fire departments and those trained in handling heavy fire streams (2½-inch hose).

(2) Class II: For use primarily by the building occupants until the arrival of the fire department (small hose).

(3) Class III: For use by either fire departments and those trained in han-

dling heavy hose streams or by the building occupants.

(l) Class I service: "Class I service" is a standpipe system capable of furnishing the effective fire streams required during the more advanced stages of fire on the inside of buildings or for exposure fire.

(m) Class II service: "Class II service" is a standpipe system which affords a ready means for the control of incipient fires by the occupants of buildings during working hours and by watchmen and those present during the night time and holidays.

(n) Class III service: "Class III service" is a standpipe system capable of furnishing the effective fire streams required during the more advanced stages of fire on the inside of buildings as well as providing a ready means for the control of fires by the occupants of the building.

(o) Standpipe systems: "Standpipe systems" are usually of the following types:

(1) A wet standpipe system having a supply valve open and water pressure maintained at all times.

(2) A standpipe system so arranged through the use of approved devices as to admit water to the system automatically by opening a hose valve.

(3) A standpipe system arranged to admit water to the system through manual operation of approved remote control devices located at each hose station.

(4) Dry standpipe having no permanent water supply.

See also paragraph (k) of this section.

(p) Type I storage: "Type I storage" is that in which combustible commodities or noncombustible commodities involving combustible packaging or storage aids are stored over 15 feet but not more than 21 feet high in solid piles or over 12 feet but not more than 21 feet high in piles that contain horizontal channels. Minor quantities of commodities of hazard greater than ordinary combustibles may be included without affecting this general classification.

(q) Type II storage: "Type II storage" is that in which combustible commodities or noncombustible commodities involving combustible packaging or storage aids are stored not over 15 feet high in solid piles or not over 12 feet high in piles that contain horizontal channels. Minor quantities of commodities of hazard greater than ordinary combustibles may be included without affecting this general classification.

(r) Type III storage: "Type III storage" is that in which the stored commodities, packaging, and storage aids are noncombustible or contain only a small concentration of combustibles which are incapable of producing a fire that would cause appreciable damage to the commodities stored or to noncombustible wall, floor or roof construction. Ordinary combustible commodities in completely sealed noncombustible containers may qualify in this classification. General commodity storage that is subject to frequent changing and storage of combustible packaging and storage aids is excluded from this category.

(s) "Approved": "Approved" means listed or approved by: (1) At least one of the following nationally recognized testing laboratories: Factory Mutual Engineering Corp.; Underwriters' Laboratories, Inc., or (2) Federal agencies such as Bureau of Mines, Department of the Interior; Department of Transportation, or U.S. Coast Guard, which issue approvals for such equipment.

PORTABLE FIRE SUPPRESSION EQUIPMENT

§ 1910.157 Portable fire extinguishers.

(a) *General requirements*—(1) *Operable condition.* Portable extinguishers shall be maintained in a fully charged and operable condition, and kept in their designated places at all times when they are not being used.

(2) *Location.* Extinguishers shall be conspicuously located where they will be readily accessible and immediately available in the event of fire. They shall be located along normal paths of travel.

(3) *Marking of location.* Extinguishers shall not be obstructed or obscured from view. In large rooms, and in certain locations where visual obstruction cannot be completely avoided, means shall be provided to indicate the location and intended use of extinguishers conspicuously.

(4) *Marking of extinguishers.* If extinguishers intended for different classes of fire are grouped, their intended use shall be marked conspicuously to insure choice of the proper extinguisher at the time of a fire.

(5) *Mounting of Extinguishers.* Extinguishers shall be installed on the hangers or in the brackets supplied, mounted in cabinets, or set on shelves unless the extinguishers are of the wheeled type.

(6) *Height of mounting.* Extinguishers having a gross weight not exceeding 40 pounds shall be installed so that the top of the extinguisher is not more than 5 feet above the floor. Extinguishers having a gross weight greater than 40 pounds (except wheeled types) shall be so installed that the top of the extinguisher is not more than 3½ feet above the floor.

(7) *Cabinet mounting.* Extinguisher mounted in cabinets or wall recesses or set on shelves shall be placed in a manner such that the extinguisher operating instructions face outward. The location of such extinguishers shall be marked conspicuously.

(8) *Vibrating locations.* Extinguishers installed under conditions where they are subject to severe vibration shall be installed in brackets specifically designed to cope with this vibration.

(9) *Temperature range.* Extinguishers shall be suitable for use within a temperature range of at least plus 40° to 120° Fahrenheit.

(10) *Extreme temperature exposure.* When extinguishers are installed in locations subjected to temperatures outside the range prescribed in this subparagraph, they shall be of a type approved or listed for the temperature to which they will be exposed, or placed in an enclosure capable of maintaining the temperature within the range prescribed in this subparagraph.

(b) *Selection of extinguishers*—(1) *General.* The selection of extinguishers for a given situation will depend upon the character of the fires anticipated, the construction and occupancy of the individual property, the vehicle or hazard to be protected, ambient-temperature conditions, and other factors. The number of extinguishers required shall be determined by reference to paragraph (c) of this section. Approved fire extinguishers shall be used to meet the requirements of this section.

(2) *Selection by hazard.* (i) Extinguishers shall be selected for the specific class or classes of hazards to be protected in accordance with the following paragraphs.

(ii) Extinguishers for protecting Class A hazards shall be selected from among the following: foam, loaded stream, multipurpose dry chemical, and water types. Certain smaller extinguishers which are charged with multipurpose dry chemical are rated on Class B and Class C fires, but have insufficient effectiveness to earn the minimum 1-A rating even though they have value in extinguishing smaller Class A fires.

Such smaller extinguishers shall not be used to meet the requirements of paragraph (c)(2)(i) of this section.

(iii) Extinguishers for protection of Class B hazards shall be selected from the following: bromotrifluoromethane, carbon dioxide, dry chemical, foam, loaded stream, and multipurpose dry chemical Extinguishers with ratings less than 1-B shall not be considered in determining suitability.

(iv) Extinguishers for protection of Class C hazards shall be selected from the following: bromotrifluoromethane, carbon dioxide, dry chemical, and multipurpose dry chemical.

NOTE: Carbon dioxide extinguishers equipped with metal horns are not considered safe for use on fires in energized electrical equipment and, therefore, are not classified for use on Class C hazards.

(v) Extinguishers and extinguishing agents for the protection of Class D hazards shall be of types approved for use on the specific combustible-metal hazard.

(c) *Distribution of portable fire extinguishers*—(1) *General.* (i) The number of fire extinguishers needed to protect a property shall be determined as prescribed herein, considering the area and arrangement of the building or occupancy, the severity of the hazard, the anticipated classes of fires, and the distances to be traveled to reach extinguishers.

(ii) Fire extinguishers shall be provided for the protection of both the building structure, if combustible and the occupancy hazards contained therein.

(iii) Required building protection shall be provided by fire extinguishers suitable for Class A fires.

(iv) Occupancy hazard protection shall be provided by fire extinguishers suitable for such Class A, B, C, or D fire potentials as may be present.

(v) Extinguishers provided for building protection may be considered also for the protection of occupancies having a Class A fire potential.

(vi) Combustible buildings having an occupancy hazard subject to Class B, and/or Class C fires, shall have a standard complement of Class A fire extinguishers as required by Table L-1 for building protection, plus additional Class B and/or Class C extinguishers. Where fire extinguishers have more than one letter classification (such as 2-A: 20-B:C), they may be considered to

satisfy the requirements of each letter class.

(vii) Rooms or areas shall be graded generally as light hazard, ordinary hazard, or extra hazard. Limited areas of greater or lesser hazard shall be protected as required.

(2) *Fire extinguisher size and placement for Class A hazards.* (i) Minimal sizes of fire extinguishers for the listed grades of hazard shall be provided on the basis of Table L–1. Extinguishers shall be located so that the maximum travel distances shall not exceed those specified in Table L–1.

TABLE L–1

Basic minimum extinguisher rating for area specified	Maximum travel distance to extinguishers (feet)	Area to be protected per extinguisher		
		Light hazard occupancy (square feet)	Ordinary hazard occupancy (square feet)	Extra hazard occupancy (square feet)
1-A	75	3,000	Note 1	Note 1
2-A	75	6,000	3,000	Note 1
3-A	75	9,000	4,500	3,000
4-A	75	11,250	6,000	4,000
6-A	75	11,250	9,000	6,000

NOTE 1: Not permitted except as specified in subdivision (ii) of this subparagraph.

(ii) The protection requirements specified in Table L–1 may be fulfilled by several extinguishers of lower ratings for ordinary or extrahazard occupancies.

(iii) Where the floor area of a building is less than that specified in Table L–1, at least one extinguisher of the minimum size recommended shall be provided.

(iv) The protection requirements may be fulfilled with extinguishers of higher rating provided the travel distance to such larger extinguishers shall not exceed 75 feet.

(3) *Fire extinguisher size and placement for Class B fires other than for fires in flammable liquids of appreciable depth.* (i) Minimal sizes of fire extinguishers for the listed grades of hazard shall be provided on the basis of Table L–2. Extinguishers shall be located so that the maximum travel distances shall not exceed those specified in Table L–2.

(ii) Two or more extinguishers of lower rating, except for foam extinguishers, shall not be used to fulfill the protection requirements of Table L–2. Up to three foam extinguishers may be used to fulfill these requirements.

(iii) The protection requirements may be fulfilled with extinguishers of higher ratings provided the travel distance to such larger extinguishers shall not exceed 50 feet.

TABLE L–2

Type of hazard	Basic minimum extinguisher rating	Maximum travel distance to extinguishers (feet)
Light	4B	50
Ordinary	8B	50
Extra	12B	50

NOTE: Where this section calls for minimum extinguisher ratings of 4–B, 8–B, or 12–B, the requirements may be met by existing extinguishers of multiple foam extinguishers as allowed by paragraph (e)(2)(ii) of this section. However, if a single extinguisher must be purchased to fulfill such requirements, the next higher rating shall be used.

(4) *Fire extinguisher size and placement for Class B fires in flammable liquids of appreciable depth.* (i) For flammable liquid hazards of appreciable depth (Class B), such as in dip or quench tanks, Class B fire extinguishers shall be provided on the basis of one numerical unit of Class B extinguishing potential per square foot of flammable liquid surface of the largest tank hazard within the area.

NOTE: Appreciable depth is defined as a depth of a liquid greater than one-quarter inch.

(ii) Two or more extinguishers of lower ratings except for foam extinguishers, shall not be used in lieu of the extinguisher required for the largest tank. Up to three foam extinguishers may be used to fulfill these requirements.

(iii) Scattered or widely separated hazards shall be individually protected if the specified travel distances in subdivisions (i) and (iii) of subparagraph (3) of this paragraph (c) are exceeded. Likewise, extinguishers in the proximity of a hazard shall be carefully located so as to be accessible in the presence of a fire without undue danger to the operator.

(5) *Fire extinguisher size and placement for Class C hazards.* (i) Extinguishers with Class C ratings shall be required where energized electrical equipment may be encountered which would require a nonconducting extinguishing media. This will include fire either directly involving or surrounding electrical equipment. Since the fire itself is a Class A or Class B hazard the extinguishers are sized and located on the basis of the anticipated Class A or B hazard.

(d) *Inspection, maintenance, and hydrostatic tests*—(1) *General.* (i) The employer shall be responsible for such inspection, maintenance, and testing.

(ii) For details of conducting needed inspections, proper maintenance operations, and required tests, see NFPA No. 10A–1970, Maintenance and Use of Portable Fire Extinguishers.

(2) *Inspection.* (i) Extinguishers shall be inspected monthly, or at more frequent intervals when circumstances require, to insure they are in their designated places, to insure they have not been actuated or tampered with, and to detect any obvious physical damage, corrosion, or other impairments.

(ii) Any extinguishers showing defects shall be given a complete maintenance check.

(3) *Maintenance.* (i) At regular intervals, not more than 1 year apart, or when specifically indicated by an inspection, extinguishers shall be thoroughly examined and/or recharged or repaired to insure operability and safety; or replaced as needed.

(ii) Extinguishers removed from the premises to be recharged shall be replaced by spare extinguishers during the period they are gone.

(iii) Pails or drums of powder-extinguishing agents for scoop or shovel application to metal fires shall be kept full at all times.

(iv) Each extinguisher shall have a durable tag securely attached to show the maintenance or recharge date and the initials or signature of the person who performs this service.

(4) *Hydrostatic tests.* (i) If, at any time, an extinguisher shows evidence of corrosion or mechanical injury, it shall be subjected to a hydrostatic pressure test, or replaced.

(ii) For evaluating the condition of extinguisher cylinders made to Department of Transportation specifications (cf. 49 CFR Chapter I), see the Standard for Visual Inspection of Compressed Gas Cylinders (CGA C–6), published by the Compressed Gas Association, 500 Fifth Avenue, New York, NY 10036.

(iii) At intervals not exceeding those specified in Table L–3 and subdivision (iv) of this subparagraph, extinguishers shall be hydrostatically tested. The first hydrostatic retest may be conducted between the fifth and sixth years for those with a designated test interval of 5 years.

TABLE L–3

HYDROSTATIC TEST INTERVAL FOR EXTINGUISHERS

Extinguisher type:	Test interval, year
Soda-acid	5
Cartridge-operated water and/or antifreeze	5
Stored-pressure water and/or antifreeze	5
Wetting agent	5
Foam	5
Loaded stream	5
Dry chemical extinguishers with stainless steel shells, or soldered-brass shells	5
Carbon dioxide extinguishers	5
Dry chemical extinguishers with brazed-brass shells, mild-steel shell, or aluminum shells	12
Bromotrifluoromethane	12
Dry powder extinguishers for metal fires	12

NOTE: Cylinders under jurisdiction of the U.S. Department of Transportation (formerly Interstate Commerce Commission) may require hydrostatic testing at more frequent periods.

(iv) Nitrogen cylinders (or other cylinders used for inert-gas storage), such as found on wheeled extinguishers, shall be tested at a 5-year interval.

(v) On those extinguishers which are equipped with a shutoff nozzle at the outlet end of the hose, a hydrostatic test shall be performed on the hose with its couplings (but without the discharge nozzle) at the test interval specified for the unit on which the hose is installed.

(vi) The test pressure for dry chemical and dry powder hose assemblies requiring a hydrostatic test shall be at a test pressure of 300 pounds per square inch for a 1-minute period. Carbon dioxide hose assemblies requiring a hydrostatic test shall be at test pressure of 1,250 p.s.i. for a 1-minute period.

(vii) Hydrostatic tests are not required on fire pails, pump-type water and/or antifreeze extinguishers, and factory-sealed disposable (nonrefillable) containers. If such an extinguisher or water pail shows evidence of corrosion or mechanical injury, it may be unsafe or unsuitable for further use and shall be replaced with a new unit.

(viii) The hydrostatic test date shall be recorded on a record tag of metal or equally durable material, or a suitable metallized decal which shall be affixed (by a heatless process) to the shell of an extinguisher which favorably passes the hydrostatic test. The record tag shall contain the following information: Date of test, test pressure, and name or initials of person or agency making the test.

(ix) For extinguishers subjected to an original factory test pressure of 350 p.s.i. or greater, the test pressure shall be 75 percent of the factory test pressure (as noted on the extinguisher nameplate), but in no case less than 300 p.s.i., see Table L–4. For extinguishers subjected to an original factory test pressure of less than 350 p.s.i., the test pressure shall be 75 percent of the factory test pressure; see Table L–4. Pressure shall be applied at a rate of rise to reach the test pressure in approximately 1 minute, and the pressure shall be held for 1 minute, after which it shall be released.

TABLE L–4

HYDROSTATIC TEST PRESSURE REQUIREMENTS—NON-ICC SHELLS, SHELLS NOT SPECIFIED IN U.S. DEPARTMENT OF TRANSPORTATION REGULATIONS, (FORMERLY INTERSTATE COMMERCE COMMISSION)

Extinguisher type	Original factory test pressure	Requires hydrostatic test pressure
All dry chemical and dry powder.	400 p.s.i. or greater.	75% of factory test pressure.
	350–399 p.s.i.	300 p.s.i.
	below 350 p.s.i.	75% of factory test pressure.
Foam—500 p.s.i. factory test.	500	375.
Foam—350 p.s.i. factory test.	350	300.
Soda-acid—500 p.s.i. factory test.	500	375.
Soda-acid—350 p.s.i. factory test.	350	300.
Stored-pressure or cartridge-operated water-type (including antifreeze and loaded-stream).	400 p.s.i. or greater.	75% of factory test pressure.
	350–399 p.s.i.	300 p.s.i.
	below 350.	75% of factory test pressure.

(x) Carbon dioxide extinguishers, nitrogen cylinders, and other cylinders or cartridges used for the storage of inert, compressed gases shall be hydrostatically tested in accordance with the requirements of the U.S. Department of Transportation (formerly Interstate Commerce Commission); see 49 CFR Parts 171–190.

(xi) Extinguisher shells, cartridges, or cylinders which show leakage or permanent distortion in excess of specified limits, or which rupture, shall be removed from service.

(a) *General requirements*—(1) *Application.* Where standpipe and hose systems are provided they shall meet the design requirements of the National Fire Protection Association's Standard for the Installation of Standpipe and Hose Systems NFPA 14–1970 and the requirements of this section.

(2) *Closets and cabinets.* Closets and cabinets used to contain fire hose shall be of sufficient size to permit the installation of the necessary equipment at hose stations, and so designed as not to interfere with the prompt handling of the hose and equipment at time of fire. They shall be used for fire equipment only.

(3) *Protection of standpipes.* Standpipes shall be so located that they are protected against mechanical and fire damage.

(b) *Hose outlets*—(1) *Location of hose.* (i) Hose outlets shall be within easy reach of a person standing on the floor and in no case shall be over 6 feet from the floor. Hose stations shall be located conspicuously within the immediate area and where not likely to be obstructed. Hose may be located at one side of the standpipe and supplied by short lateral connections to the standpipe where necessary to avoid obstructions.

(ii) For Class III service, the outlets for large hose shall be located in a stairway enclosure, and for small hose the outlets shall be located in the corridor or space adjacent to the stairway enclosure.

(2) *Hose connections.* (i) Standpipes for Class I service shall be provided with 2½-inch hose connections on each floor.

(ii) Standpipes for Class II service shall be provided with 1½-inch hose connections on each floor.

(iii) Standpipes for Class III service shall be provided with both a 2½-inch and 1½-inch hose connection on each floor. The hose connections may be through one 2½-inch hose valve and an easily removable 2½-inch by 1½-inch adapter.

(3) *Hose.* Each hose outlet provided for the use of building occupants (Class II and III services) shall be equipped with approved small fire hose attached and ready for use. The maximum total length of unlined hose shall be 75 feet. The maximum total length of lined hose shall be 100 feet.

(4) *Hose racks or reels.* Each station provided with small hose shall be equipped with an approved rack, or an approved reel, securely fastened in position; provided, that an employer may continue to use a reel acquired prior to May 20, 1974, even though it is not approved, so long as it is in good working condition.

(5) *Hose valves.* (i) An approved hose valve shall be provided at each outlet for attachment of hose.

(ii) Where the static pressure at any standpipe outlet for small hose exceeds 100 pounds per square inch, an approved device shall be installed at the outlet to reduce the pressure so that the nozzle pressure will be approximately 80 pounds per square inch.

NOTE: Pressure reducers are not required on standpipe outlets for 2½-inch hose because it is assumed 2½-inch hose will be attached only when the persons likely to use it are trained in handling large streams.

(iii) National (American) Standard Fire Hose Coupling Screw Threads shall be used whenever they will fit existing equipment; see Standard for Screw Threads Gaskets for Fire Hose Couplings, NFPA No. 194–1968.

(6) *Nozzles.* Nozzles shall be of an approved type. Size of nozzles for small hose shall be not larger than one-half inch.

(7) *Dry standpipe identification.* Each hose connection on dry standpipes shall be provided with a conspicuous, durable, and permanently legible sign reading "Dry Standpipe for Fire Department Use Only."

(c) *Water supplies*—(1) *Minimum supply for Class I service.* (i) The minimum supply for Class I service shall be sufficient to provide 500 gallons per minute for a period of at least thirty (30) minutes.

(ii) Where more than one standpipe is required, the minimum supply shall be 500 gallons per minute for the first standpipe and 250 gallons per minute for each additional standpipe, the total supply not to exceed 2,500 gallons a minute, for a period of at least thirty (30) minutes.

(iii) The supply shall be sufficient to maintain a residual pressure of 65 pounds per square inch at the topmost outlet of each standpipe (including the roof outlet) with 500 gallons per minute flowing.

(2) *Minimum supply for Class II service.* The minimum supply for Class II service shall be sufficient to provide 100 gallons per minute for a period of at least thirty (30) minutes. The supply shall be sufficient to maintain a residual pressure of 65 pounds per square inch at the topmost outlet of each standpipe (including the roof outlet) with 100 gallons per minute flowing.

(3) *Minimum supply for Class III service.* The minimum supply for Class III service shall be the same as for Class I service.

(4) *Fire department connections.* (i) One or more fire department connections shall be provided for each Class I or Class III standpipe system.

(ii) In high-rise buildings having two or more zones, a fire department connection shall be provided for each zone.

(iii) Fire department connections shall be properly supported.

(iv) There shall be no shutoff valve in the fire department connection.

(v) An approved straightway check valve shall be installed in each fire department connection, located as near as practicable to the point where it joins the system.

(vi) The pipe between the check valve and the outside hose coupling shall be equipped with an approved automatic drip, arranged to discharge to a proper place.

(vii) Hose connections shall be approved type and shall be equipped with standard caps, properly secured and arranged for easy removal by fire departments.

(viii) Hose coupling threads shall conform to those used by the local fire department. (American) National Standard Fire-Hose Coupling Screw Threads shall be used whenever they will fit the local fire department hose threads; see standard for Screw Threads and Gaskets for Fire Hose Couplings, NFPA No. 194—1968.

(ix) Hose connections should be on the street side of buildings and shall be located and arranged so that hose lines can be readily and conveniently attached to the inlets without interference from any nearby objects including buildings, fences, posts, or other fire department connections.

(x) Hose connections shall be designated by a sign having raised letters at least one inch in size cast on a plate or fitting, reading "Standpipe."

(xi) If hose connection does not serve all of the building an appropriate and durable sign shall be attached indicating the portions of the building served.

(d) *Tests and maintenance.*—(1) *Tests.* All new systems including yard piping shall be tested hydrostatically at not less than 200 pounds per square inch pressure for 2 hours, or at 50 pounds per square inch in excess of the normal pressure when the normal pressure is in excess of 150 pounds per square inch.

(2) *Periodic inspection.* (i) The tanks shall be kept properly filled, and where pressure tanks are employed, a pressure of at least 75 pounds per square inch shall be maintained at all times.

NOTE: For further details, see Standard for Water Tanks for Private Fire Protection, NFPA No. 22–1970.

(ii) The valves in the main connection to the automatic sources of water supply shall be open at all times. The hose valves should be frequently examined to see that they are tight.

NOTE: For further details, see Care of Fire Hose, NFPA No. 198–1969.

FIXED FIRE SUPPRESSION EQUIPMENT

§ 1910.159 Automatic sprinkler systems.

(a) *General requirements.*—(1) *Design.* When automatic sprinkler systems are provided they shall meet design requirements of the National Fire Protection Association's Standard for the Installation of Sprinkler Systems NFPA No. 13–1969 and the requirements of this section.

(2) *Water supply.* Every automatic sprinkler system shall have at least one automatic water supply of adequate pressure, capacity and reliability.

(3) *Fire department connection.* A connection through which a fire department can pump water into the sprinkler system makes a desirable auxiliary supply. For this purpose, one or more fire department connections shall be provided in all cases.

(b) *Fire department connections.*—(1) *Size.* Pipe size shall not be less than 4 inches for fire engine connections and not less than 6 inches for fireboat connections, except that 3-inch pipe may be used to connect a single hose connection to a 3-inch or smaller riser.

(2) *Valves.* (i) An approved straight-away check valve shall be installed in each fire department connection, located as near as practicable to the point where it joins the system.

(ii) There shall be no shutoff valve in the fire department connection.

(3) *Support.* Fire department connections shall be properly supported.

(4) *Hose connections.* (i) Hose connections shall be of approved type.

(ii) Hose coupling threads shall conform to those used by the local fire department. National (American) Standard Fire Hose Coupling Screw Threads shall be used whenever they will fit the local fire department hose.

(iii) Hose connections shall be equipped with caps, properly secured and arranged for easy removal by fire departments.

(iv) Hose connections shall be located and arranged so that hose lines can be readily and conveniently attached to the inlets without interference from any nearby objects including buildings, fences, posts, or other fire department connections.

(v) Hose connections shall be designated by a sign having raised letters at least 1 inch in size cast on plate or fitting reading for service designated. Viz—"AUTO-SPKR." or "OPEN SPKR."

(c) *Sprinkler alarms.*—(1) *General.* (i) Waterflow alarms shall be provided on all sprinkler installations.

(ii) An alarm unit shall include an approved mechanical alarm, horn, or siren, or an approved weatherproof electric gong, bell, horn, or siren on the outside of the building or approved electric gongs, bells, horns, or sirens inside the building, or a combination of such devices.

(iii) All alarm apparatus shall be so located and installed that all parts are readily accessible for inspection, removal, and repair, and shall be substantially supported. Outdoor mechanical or electrically operated bells shall be of weatherproof and guarded type. On each alarm check valve used under conditions of variable water pressure, a retarding device shall be installed. Suitable valves shall be provided in the connections to retarding chambers, to permit repair or removal without shutting off sprinklers; these valves shall be so arranged that they may be locked or sealed in the open position.

(2) *Waterflow detecting devices.* (i) The alarm apparatus for a wet-pipe system shall consist of an approved alarm check valve or other approved water flow detecting alarm device with the necessary attachments required to give an alarm.

(ii) The alarm apparatus for a dry-pipe system shall consist of approved alarm attachments to the dry-pipe valve. When a dry-pipe valve is located on the system side of an alarm valve, the actuating device of the alarms for the dry-pipe valve may be connected to the alarms on the wet-pipe system.

(iii) The alarm apparatus for preaction and deluge systems shall consist of approved electric alarm attachments, actuated by a thermostatic system independently of flow of water in the system.

(3) *Drains.* Drains from alarm devices shall be so arranged that there will be no danger of freezing, and so that there will be no overflowing at the alarm apparatus, at domestic connections or elsewhere with the sprinkler drains wide open and under pressure.

(d) *Maintenance of sprinkler system.* A sprinkler system installed under this Standard must be properly maintained for efficient service. The employer is responsible for the condition of his sprinkler system and must use due diligence in keeping the system in good operating condition.

(e) *Sprinkler head clearance.*—(1) *Type I storage.* Clearance of at least 36 inches shall be maintained between sprinkler deflectors and top of storage to reduce the possibility of obstruction to the distribution of water.

(2) *Type II storage.* Clearance of at least 18 inches shall be maintained between sprinkler deflectors and top of storage to reduce the possibility of obstruction to the distribution of water.

(3) *Type III storage.* In sprinklered buildings, at least 18 inches clearance between sprinkler deflectors and top of storage shall be maintained.

§ 1910.160 Fixed dry chemical extinguishing systems.

(a) *General requirements.*—(1) *Design.* When dry chemical extinguishing systems are provided they shall meet Fire Protection Association's "Standard for Dry Chemical Extinguishing Systems" NFPA No. 17–1969 and the re the design requirements of the National quirements of this section.

(2) *Safety requirements.* Where there is a possibility that personnel may be exposed to a dry chemical discharge, suitable safeguards shall be provided to insure prompt evacuation of such locations, and also to provide means for prompt rescue of any trapped personnel.

(b) *Alarms and indicators.*—(1) *General.* Alarms and/or indicators are used to indicate the operation of the system, hazard to personnel, or failure of any supervised device or equipment. The devices may be audible or visual. The type, number, and location of the devices shall be such that their purpose is satisfactorily accomplished.

(2) *Operation alarm.* (i) An alarm or indicator shall be provided to show that the system has operated, that personnel response may be needed, and that the system should be charged.

(ii) Alarms indicating failure of supervised devices or equipment shall give prompt and positive indication of any failure and shall be distinctive from alarms indicating operation or hazardous conditions.

(c) *Inspection and maintenance.*—(1) *Inspection and tests.* (i) At least annually, all dry chemical systems including alarms, shutdowns, and other associated equipment, shall be thoroughly inspected and checked for proper operation by a competent inspector.

(ii) The purpose of the inspection and testing prescribed by paragraph (c) of this section shall be not only to insure that the system is in full operating condition but also to indicate the probable continuance of that condition until the next inspection. Attention at this inspection shall be given to any extension of the hazard protected by the system.

(iii) The inspector's report, with recommendations, if any, shall be filed with the employer or with whomever is designated by the employer.

(iv) Between the regular annual inspection or tests, the system shall be inspected visually or otherwise by competent personnel, following a predetermined schedule.

(v) At least semiannually, all expellant gas containers shall be checked by pressure or weight against the required minimums.

(vi) At least semiannually, all stored pressure dry chemical containers shall be checked by pressure and weight against the required minimums.

(vii) Except for stored pressure systems, at least annually the dry chemical in the system storage container shall be sampled from the top center and also near the wall to determine the existence of lumps harder than will be friable when dropped from a height of 4 inches.

(2) *Maintenance.* (i) These fixed dry chemical systems shall be maintained in full operating condition at all times. Use,

impairment, and restoration of this protection shall be reported promptly to the employer.

(ii) Any troubles or impairments shall be corrected at once by competent personnel.

§ 1910.161 Carbon dioxide extinguishing systems.

(a) *General requirements.*—(1) *Design.* When carbon dioxide extinguishing systems are provided they shall meet the design requirements of the National Fire Protection Association's "Standard on Carbon Dioxide Extinguishing Systems" NFPA No. 12–1969 and the requirements of this section.

(2) *Safety requirements.* In any use of carbon dioxide where there is a possibility that employees may be trapped in, or enter into atmospheres made hazardous by a carbon dioxide discharge, suitable safeguards shall be provided to insure prompt evacuation of and to prevent entry into such atmospheres and also to provide means for prompt rescue of any trapped personnel. Such safety items as personnel training, warning signs, discharge alarms, predischarge alarms, and breathing apparatus shall be considered.

(b) *Inspection and maintenance.*—(1) *Inspection and tests.* (i) At least annually, all carbon dioxide systems shall be thoroughly inspected and tested for proper operation by a competent engineer or inspector.

(ii) The goal of this inspection and testing shall be not only to insure that the system is in full operating condition but shall indicate the probable continuance of that condition until the next inspection.

(iii) Suitable discharge tests shall be made when any inspection indicates their advisability.

(iv) Between the regular service contract inspection or tests, the system shall be inspected visually or otherwise by competent personnel, following a schedule.

(v) At least semiannually, all high pressure cylinders shall be weighed. If, at any time, a container shows a loss in net content of more than 10 percent, it shall be refilled or replaced.

(vi) If, at any time, a low pressure container shows a loss of more than 10 percent, it shall be refilled, unless the minimum gas requirements are still provided.

(2) *Maintenance.* (i) These carbon dioxide systems shall be maintained in full operating condition at all times.

(ii) Any troubles or impairments shall be corrected at once by competent personnel.

§ 1910.162 Other special fixed extinguishing systems. [Reserved]

OTHER FIRE PROTECTION SYSTEMS

§ 1910.163 Local fire alarm signaling systems.

(a) *General requirements.* Where local fire alarm signaling systems are provided they shall meet the design requirements of the National Fire Protection Association's "Standard for the Installation, Maintenance, and Use of Local Protective Signaling Systems for Watchman, Fire Alarm and Supervisory Service." NFPA No. 72A–1967 and the requirements of this section.

(b) *Fire alarm boxes.*—(1) *General.* Manual fire alarm boxes shall be approved for the particular application and shall be used only for fire protective signaling purposes. Combined fire alarm and watchman's signaling boxes are acceptable.

(2) *Mounting.* Each box shall be securely mounted.

(3) *Distribution.* Manual fire alarm boxes shall be distributed throughout the protected area so that they are unobstructed, readily accessible, and located in the normal path of exit from the area. Additional boxes shall be provided on each floor to obtain a maximum horizontal travel distance of 200 feet to the nearest box.

(c) *Maintenance.* All systems shall be under the supervision of qualified persons. These persons shall cause tests and inspections to be made at weekly intervals, and shall have general charge of all alterations and additions to the systems under their supervision.

§ 1910.164 Fire brigades. [Reserved]

§ 1910.165 Effective dates.

(a) The provisions of this Subpart L shall become effective on August 27, 1971, except as provided in the remaining paragraphs of this section.

(b) The following provisions shall become effective on February 15, 1972:

§ 1910.157(c).
§ 1910.158 (b) and (c).
§ 1910.159 (a), (b), and (c).
§ 1910.160(a).
§ 1910.161(a).

(c) Notwithstanding anything in paragraph (a), (b), or (d) of this section, any provision in any other section of this subpart which contains in itself a specific effective date or time limitation shall become effective on such date or shall apply in accordance with such limitation.

(d) Notwithstanding anything in paragraph (a) of this section, if any standard in 41 CFR Part 50–204, other than a national consensus standard incorporated by reference in § 50–204.2(a)(1), is or becomes applicable at any time to any employment and place of employment, by virtue of the Walsh-Healey Public Contracts Act, or the Service Contract Act of 1965, or the National Foundation on Arts and Humanities Act of 1965, any corresponding established Federal standard in this Subpart L which is derived from 41 CFR Part 50–204 shall also become effective, and shall be applicable to such employment and place of employment, on the same date.

§ 1910.165a Sources of standards.

Section	Source
1910.156(a)–(h)	NFPA No. 10–1970, Standard for the Installation of Portable Fire Extinguishers.
1910.156(i)–(j)	NFPA No. 13–1969, Standard for the Installation of Sprinkler Systems
1910.156(k)–(o)	NFPA No. 14–1970, Standard for the Installation of Standpipe and Hose Systems.
1910.156(p)–(s)	NFPA No. 231–1970, Standard for Indoor General Storage.
1910.157	NFPA No. 10–1970, Standard for the Installation of Portable Fire Extinguishers.
1910.158	NFPA No. 14–1970, Standard for the Installation of Standpipe and Hose Systems.
1910.159(a)–(d)	NFPA No. 13–1969, Standard for the Installation of Sprinkler Systems
1910.159(e)	NFPA No. 231–1970, Standard for Indoor General Storage.
1910.160	NFPA No. 17–1969, Standard for Dry Chemical Extinguishing Systems.
1910.161	NFPA No. 12–1968, Standard on Carbon Dioxide Extinguishing Systems
1910.163	NFPA No. 72A–1967, Standard for the Installation, Maintenance, and Use of Local Protective Signaling Systems for Watchman, Fire Alarm and Supervisory Service

§ 1910.165b Standards organizations.

Compressed Gas Association, Inc., 500 Fifth Avenue, New York, NY 10036.

National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210.

American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

[39 FR 23502, June 27, 1974, as amended at 40 FR 18426, April 28, 1975]

Subpart M—Compressed Gas and Compressed Air Equipment

§ 1910.166 Inspection of compressed gas cylinders.

(a) *Definitions.* As used in this section:

(1) High- and low-pressure cylinders: High-pressure cylinders means those cylinders with a marked service pressure of 900 p.s.i or greater; low-pressure cylinders are those with a marked service pressure less than 900 p.s.i.

(2) Minimum allowable wall thickness: The minimum allowable wall thickness means the minimum wall thickness required by the specification under which the cylinder was manufactured.

(3) Dents: Dents (in cylinders) means deformations caused by the cylinder coming in contact with a blunt object in such a way that the thickness of metal is not materially impaired.

(4) Cuts, gouges, or digs: Cuts, gouges, or digs (in cylinders) means deformations caused by contact with a sharp object in such a way as to cut into or upset the metal of the cylinder, decreasing the wall thickness at that point.

(5) Corrosion or pitting: Means corrosion or pitting in cylinders involving the loss of wall thickness by corrosive media. There are several kinds of pitting or corrosion to be considered.

(6) Isolated pitting: Means isolated pits of small cross-section which do not effectively weaken the cylinder wall but are indicative of possible complete penetration and leakage. Since the pitting is isolated the original wall is essentially intact.

(7) Line corrosion: Means pits which are not isolated but are connected or nearly connected to others in a narrow

band or line. This condition is more serious than isolated pitting. Line corrosion frequently occurs in the area of intersection of the footring and bottom of a cylinder. This is sometimes referred to as "crevice corrosion."

(8) General corrosion: Means corrosion which covers considerable surface areas of the cylinder. It reduces the structural strength. It is often difficult to measure or estimate the depth of general corrosion because direct comparison with the original wall cannot always be made. General corrosion is often accompanied by pitting.

(9) "DOT" means the U.S. Department of Transportation.

(b) *General requirements*—(1) *Application.* (i) Each employer shall determine that compressed gas cylinders under his control are in a safe condition to the extent that this can be determined by visual and other inspection required by this subparagraph.

(ii) The requirements contained in this section are not intended to apply to cylinders manufactured under specification DOT (ICC)-3HT (49 CFR Ch. 1). Separate requirements covering service life and standards for visual inspection of these cylinders are contained in Compressed Gas Association Pamphlet C-8, "Standard for Requalification of ICC-3HT Cylinders."

(2) *Quality of inspection.* Experience in the inspection of cylinders is an important factor in determining the acceptability of a given cylinder for continued service. Users lacking this experience and having doubtful cylinders should return them to a manufacturer of the same type of cylinders for reinspection.

(c) *Inspection of low-pressure cylinders exempt from the hydrostatic test including acetylene cylinders*—(1) *Application.* This section covers cylinders of the type that are exempt from the hydrostatic retest requirements of the DOT by virtue of their exclusive use in certain noncorrosive gas service. They are not subject to internal corrosion and do not require internal shell inspection.

(2) *Preparation for inspection.* Rust, scale, caked paint, etc., shall be removed from the exterior surface so that the surface can be adequately observed. Facilities shall be provided for inverting the cylinder to facilitate inspection of the bottom. This is important because experience has shown this area to be the most susceptible to corrosion.

(3) *Exterior inspection.* Cylinders shall be checked as outlined below for corrosion, general distortion, or any other defect that might indicate a weakness which would render it unfit for service.

(i) To fix corrosion limits for all types, designs, and sizes of cylinders, and include them in this section is not practicable. Cylinders shall meet the requirements of this subdivision. Failure to meet any of the requirements of this subdivision is of itself cause for rejection of a cylinder.

(a) A cylinder shall be rejected when the tare weight is less than 95 percent of the original tare weight marked on the cylinder. When determining tare weight, be sure that the cylinder is empty.

(b) A cylinder shall be rejected when the remaining wall in an area having isolated pitting only is less than one-third of the minimum allowable wall thickness as determined under subdivision (ii), (iii), or (iv) of this subparagraph.

(c) A cylinder shall be rejected when line corrosion on the cylinder is 3 inches in length or over and the remaining wall is less than three-fourths of the minimum allowable wall thickness or when line corrosion is less than 3 inches in length and the remaining wall thickness is less than one-half the minimum allowable wall thickness as determined under subdivision (ii), (iii), or (iv) of this subparagraph.

(d) A cylinder shall be rejected when the remaining wall in an area of general corrosion is less than one-half of the minimum allowable wall thickness as determined under subdivision (ii), (iii), or (iv) of this subparagraph.

(ii) To use the criteria in subdivision (i) of this subparagraph, it is necessary to know the original wall thickness of the cylinder or the minimum allowable wall thickness. Table M-1 lists the minimum allowable wall thickness under DOT specifications (49 CFR Ch. 1) for a number of common size low-pressure cylinders.

(iii) When the wall thickness of the cylinder at manufacture is not known, and the actual wall thickness cannot be measured, this cylinder shall be rejected when the inspection reveals that the deepest pit in a general corrosion area exceeds three sixty-fourths inch. This is arrived at by considering that in no case shall the pitting exceed one-half the minimum allowable wall thickness

TABLE M-1

Cylinder size O.D. x length (inches)	DOT Specification marking	Nominal water capacity (pounds)	Minimum allowable wall thickness (inches)
18 x 46	1 4B240	230	0.128
14 1/4 x 47	4E240	230	.140
14 1/4 x 46	4BA240	230	.086
14 1/4 x 29 3/4	4BA240	143	.088
11 7/8 x 22 1/16	4BA240	95	.078
11 7/8 x 18 1/32	4BA240	48	.078

1 Without longitudinal seam.

which is 0.064 inch. When a pit measures 0.043 inch (approximately three sixty-fourths inch) in a corrosion area, general corrosion will already have removed 0.021 inch of the original wall and the total pit depth as compared to the initial wall will be 0.064 inch.

(iv) When the original wall thickness at manufacture is known, or the actual wall thickness is measured, this thickness less one and one-half times the maximum measured pit depth shall be 0.064 inch or greater. If it is less, the cylinder shall be rejected.

(v) Dents are of concern where the metal deformation is sharp and confined, or where they are near a weld. Where metal deformation is not sharp, dents of larger magnitude can be tolerated.

(vi) Where denting occurs so that any part of the deformation includes a weld, the maximum allowable dent depth shall be one-fourth inch.

(vii) When denting occurs so that no part of the deformation includes a weld, the cylinder shall be rejected if the depth of the dent is greater than one-tenth of the mean diameter of the dent.

(viii) Cuts, gouges, or digs reduce the wall thickness of the cylinder and in addition are considered to be stress raisers. Depth limits are set in this subparagraph; however, cylinders shall be rejected at one-half of the limit set whenever the length of the defect is 3 inches or more.

(a) When the original wall thickness at manufacture is not known, and the actual wall thickness cannot be measured a cylinder shall be rejected if the cut, gouge, or dig exceeds one-half of the minimum allowable wall thickness as determined under subdivision (ii), (iii), or (iv) of this subparagraph.

(b) When the original wall thickness at manufacture is known, or the actual wall thickness is measured, a cylinder shall be rejected if the original wall thickness minus the depth of the defect is less than one-half of the minimum allowable wall thickness as determined under subdivision (ii), (iii), or (iv) of this subparagraph.

(ix) Leaks can originate from a number of sources, such as defects in a welded or brazed seam, defects at the threaded opening, or from sharp dents, digs, gouges, or pits.

(a) To check for leaks, the cylinder shall be charged and carefully examined. All seams and pressure openings shall be coated with a soap or other suitable solution to detect the escape of gas. Any leakage is cause for rejection.

(b) Safety relief devices as defined in § 1910.167(a)(1) shall be tested for leaks before a charged cylinder is shipped from the cylinder filling plant.

(x) After fire damage, cylinders shall be carefully inspected for evidence of exposure to fire.

(a) Common evidences of exposure to fire are:

(1) Charring or burning of the paint or other protective coat,

(2) Burning or sintering of the metal,

(3) Distortion of the cylinder,

(4) Melted out fuse plugs,

(5) Burning or melting of valve.

(b) The evaluation of fire damage by DOT Regulations state that, "A cylinder which has been subjected to the action of fire must not again be placed in service until it has been properly reconditioned", in accordance with 49 CFR 173.34(f) The general intent of this requirement is to remove from service cylinders which have been subject to the action of fire which has changed the metallurgical structure or the strength properties of the steel, or in the case of acetylene cylinders caused breakdown of porous filler. This is normally determined by visual examination as covered above with particular emphasis to the condition of the protective coating. If the protective coating has been burnt off or if the cylinder body is burnt, warped, or distorted, it is assumed that the cylinder has been overheated and 49 CFR 173.34(f) shall be complied with. If, however, the protective coating is only dirtied from smoke or other debris, and is found by examination to be intact underneath, the cylinder shall not be considered affected within the scope of this requirement.

(xi) Cylinders are manufactured with a reasonably symmetrical shape. Cylinders which have definite visible bulges

shall be removed from service and evaluated. Cylinders shall be rejected when a variation of 1 percent or more is found in the measured circumferences or in peripheral distances measured from the valve spud to the center seam (or equivalent fixed point).

(xii) Cylinder necks shall be examined for serious cracks, folds, and flaws. Neck cracks are normally detected by testing the neck during charging operations with a soap solution.

(xiii) Cylinder neck threads shall be examined whenever the valve is removed from the cylinder. Cylinders shall be rejected if the required number of effective threads are materially reduced, or if a gas tight seal cannot be obtained by reasonable valving methods. Gages shall be used to measure the number of effective threads.

(xiv) If the valve is noticeably tilted the cylinder shall be rejected.

(xv) The footring and heading of cylinders may become so distorted through service abuse that they no longer perform their functions:

(a) To cause the cylinder to remain stable and upright,

(b) To protect the valve. Rings shall be examined for distortion; for looseness, and for failure of welds. Appearances may often warrant rejection of the cylinder.

(d) *Low-pressure cylinders subject to hydrostatic testing*—(1) *Application.* Cylinders covered in this section are low-pressure cylinders other than those covered in paragraph (c) of this section. They differ essentially from such cylinders in that they require a periodic hydrostatic retest which includes an internal and external examination. Defect limits for the external examination are prescribed in paragraph (c) of this section, with exceptions for aluminum cylinders shown in subparagraph (4) of this paragraph.

(2) *Preparation for inspection.* Flammable gas cylinders shall be purged before being examined with a light. Lamps used for flammable gas cylinder inspection shall be explosion proof.

(3) *Internal inspection.* Cylinders shall be inspected internally at least every time the cylinder is periodically retested. The examination shall be made with a light of sufficient intensity to clearly illuminate the interior walls.

(4) *External inspection of aluminum cylinders.* The inspection requirements of paragraph (c) of this section shall be met, except as follows:

(i) Aluminum cylinders shall be rejected when impairment to the surface (corrosion or mechanical defect) exceeds a depth where the remaining wall is less than three-fourths of the minimum allowable wall thickness required by the specification under which the cylinder was manufactured.

(ii) Aluminum cylinders subjected to the action of fire shall be removed from service.

(e) *High-pressure cylinders*—(1) *Application.* High-pressure cylinders are those with a marked service pressure of 900 p.s.i. or higher. They are seamless; no welding is permitted. The great bulk of such cylinders are of the 3A or 3AA types under DOT Specifications (49 CFR Ch. I).

(2) *Preparation for inspection.* (i) Cylinders shall be cleaned for inspection so that the inside and outside surfaces and all conditions can be observed. This shall include removal of scale and caked paint from the exterior and the thorough removal of internal scale. Cylinders with interior coating shall be examined for defects in the coating. If the coating is defective, it shall be removed.

(ii) A good inspection light of sufficient intensity to clearly illuminate the interior wall is mandatory for internal inspection. Flammable gas cylinders shall be purged before being examined with a light. Lamps for flammable gas cylinder inspection shall be explosion proof.

(3) *Exterior inspection.* (i) To fix corrosion limits for all types, designs, and sizes of cylinders, and include them in this section, is not practicable. Considerable judgment is required in evaluating cylinders fit for service. Experience is a major factor, aside from strength considerations for high pressure cylinders.

(ii) When the original wall thickness of the cylinder is not known, and the actual wall thickness cannot be measured, the cylinder is rejected if corrosion exceeds one thirty-second inch in depth. This is arrived at by subtracting from the minimum allowable wall at manufacture (0.221 inch), the limiting wall in service (0.195 inch), to give the maximum allowable corrosion limit of 0.026 inch, say one thirty-second inch.

(iii) When the wall thickness is known, or the actual wall thickness is measured, the difference between this known wall and the limiting value establishes the maximum corrosion figure. The normal hot forged cylinder of this size will have a measured wall of about 0.250 inch. Comparison of this with the limiting wall thickness shows that defects up to about one-sixteenth inch are allowable provided, of course, that the actual wall is measured or is known.

(iv) Cylinders with general corrosion are evaluated by subjecting them to a hydrostatic test. Thus, a cylinder with an elastic expansion of 227 cc. or greater shall be rejected. If areas of pronounced pitting are included with the general corrosion, the depth of such pitting should also be measured (with the high spots of the actual surface as a reference plane) and the criteria established in the first example apply. Thus, the maximum corrosion limit would be one thirty-second inch when the wall was not known.

(v) Any defect of appreciable depth having a sharp bottom is a stress raiser and even though a cylinder may be acceptable from a stress standpoint, it is common practice to remove such defects. After any such repair operation, verification of the cylinder strength and structure shall be made by a hydrostatic test or other suitable means.

(vi) Dents can be tolerated when the cylinder wall is not deformed excessively or abruptly. Generally speaking, dents are accepted up to a depth of about one-sixteenth inch when the major diameter of the dent is equal to or greater than 32 times the depth of the dent. Sharper dents than this are considered too abrupt and shall require rejection of the cylinder. On small diameter cylinders these general rules may have to be adjusted. Considerations of appearance play a major factor in the evaluation of dents.

(vii) Cylinders with arc or torch burns shall be removed from service. Defects of this nature may be recognized by one of the following conditions:

(a) Removal of metal by scarfing or cratering.

(b) A sintering or burning of the base metal.

(c) A hardened heat affected zone. A simple method for verifying the presence of small arc burns is to file the suspected area. The hardened zone will resist filing as compared to the softer base metal.

(viii) Cylinders are normally produced with a symmetrical shape. Cylinders with distinct visual bulges shall be removed from service until the nature of the defect is determined. Some cylinders may have small discontinuities related to the manufacturing process—mushroomed bottoms, offset shoulders, etc. These usually can be identified and are not normally cause for concern.

(ix) Cylinders shall be carefully inspected for evidences of exposure to fire. See paragraph (c)(3)(x) of this section.

(x) Cylinder necks shall be examined for serious cracks, folds, and flaws. See paragraphs (c)(3) (xii) and (xiii) of this section.

(f) *Internal inspection.* (1) Cylinders shall be inspected internally at least every time the cylinder is periodically retested. This examination shall be made with a light of sufficient intensity to clearly illuminate the interior walls.

(2) A hammer test consists of tapping a cylinder a light blow with a suitably sized hammer. A cylinder, emptied of liquid content, with a clean internal surface, standing free, will have a clear ring. Cylinders with internal corrosion will give a duller ring dependent upon the amount of corrosion and accumulation of foreign material. Such cylinders shall be investigated. The hammer test is very sensitive and is an easy, quick, and convenient test that can be made without removing the valve before each charging. It is an invaluable indicator of internal corrosion.

§ 1910.167 Safety relief devices for compressed gas cylinders.

(a) *Definitions.* As used in this section:

(1) *Safety relief device.* A "safety relief device" is a device intended to prevent rupture of a cylinder under certain conditions of exposures. (The term as used herein shall include the approach channel, the operating parts, and the discharge channel.)

(2) *Approach channel.* An "approach channel" is the passage or passages through which gas must pass from the cylinder to reach the operating parts of the safety relief device.

(3) *Discharge channel.* A "discharge channel" is the passage or passages beyond the operating parts through which gas must pass to reach the atmosphere exclusive of any piping attached to the outlet of the device.

(4) *Safety relief device channel.* A "safety relief device channel" is the channel through which gas released by operation of the device must pass from the cylinder to the atmosphere exclusive

of any piping attached to the inlet or outlet of the device.

(5) *Operating part.* The "operating part" of a safety relief device is the part of a safety relief device that normally closes the safety discharge channel but when moved from this position as a result of the action of heat or pressure, or a combination of the two, permits escape of gas from the cylinder.

(6) *Frangible disc.* A "frangible disc" is an operating part in the form of a disc, usually of metal and which is so held as to close the safety relief device channel under normal conditions. The disc is intended to burst at a predetermined pressure to permit the escape of gas.

(7) *Pressure opening.* A "pressure opening" is the orifice against which the frangible disc functions.

(8) *Rated bursting pressure.* A "rated bursting pressure" of a frangible disc is the maximum pressure for which the disc is designed to burst when in contact with the pressure opening for which it was designed when tested.

(9) *Fusible plug.* A "fusible plug" is an operating part in the form of a plug of suitable low melting material, usually a metal alloy, which closes the safety relief device channel under normal conditions and is intended to yield or melt at a predetermined temperature to permit the escape of gas.

(10) *Yield temperature.* The "yield temperature" of a fusible plug is the temperature at which the fusible metal or alloy will yield when tested.

(11) *Reinforced fusible plug.* A "reinforced fusible plug" is a fusible plug consisting of a core of suitable material having a comparatively high yield temperature surrounded by a low-melting point fusible metal of the required yield temperature.

(12) *Combination frangible disc-fusible plug.* A "combination frangible disc-fusible plug" is a frangible disc in combination with a low melting point fusible metal, intended to prevent its bursting at its predetermined bursting pressure unless the temperature also is high enough to cause yielding or melting of the fusible metal.

(13) *Safety relief valve.* A "safety relief valve" is a safety relief device containing an operating part that is held normally in a position closing the safety relief device channel by spring force and is intended to open and to close at predetermined pressures.

(14) *Combination safety relief valve and fusible plug.* A "combination safety relief valve and fusible plug" is a safety relief device utilizing a safety relief valve in combination with a fusible plug. This combination device may be an integral unit or separate units and is intended to open and to close at predetermined pressures or to open at a predetermined temperature.

(15) *Set pressure.* The "set pressure" of a safety relief valve is the pressure marked on the valve and at which it is set to start-to-discharge.

(16) *Start-to-discharge pressure.* The "start-to-discharge pressure" of a safety relief valve is the pressure at which the first bubble appears through a water seal of not over 4 inches on the outlet of the safety relief valve.

(17) *Flow capacity.* The "flow capacity" of a safety relief device is the capacity in cubic feet per minute of free air discharged at the required flow rating pressure.

(18) *Flow rating pressure.* The "flow rating pressure" is the pressure at which a safety relief device is rated for capacity.

(19) *Nonliquefied compressed gas.* A "nonliquefied compressed gas" is a gas, other than a gas in solution which under the charging pressure, is entirely gaseous at a temperature of 70° F.

(20) *Liquefied compressed gas.* A "liquefied compressed gas" is a gas which, under the charging pressure, is partially liquid at a temperature of 70° F. A flammable compressed gas which is normally nonliquefied at 70° F. but which is partially liquid under the charging pressure and temperature, shall follow the requirements for liquefied compressed gases.

(21) *Compressed gas in solution.* A "compressed gas in solution" (Acetylene) is a nonliquefied gas which is dissolved in a solvent.

(22) *Pressurized liquid compressed gas.* A "pressurized liquid compressed gas" is a compressed gas other than a compressed gas in solution, which cannot be liquefied at a temperature of 70° F., and which is maintained in the liquid state at a pressure not less than 40 p.s.i.a. by maintaining the gas at a temperature less than 70° F.

(23) *Test pressure of the cylinder.* The "test pressure of the cylinder" is the minimum pressure at which a cylinder must be tested as prescribed in DOT specifications for compressed gas cylinders 41 CFR Ch. I.

(24) *Free air or free gas.* "Free air" or "free gas" is air or gas measured at a pressure of 14.7 pounds per square inch absolute and a temperature of 60° F.

(25) *DOT regulations.* As used in this section "DOT regulations" refers to the U.S. Department of Transportation Regulations for Transportation of Explosives and Other Dangerous Articles by Land and Water in Rail Freight, Express and Baggage Services and by Motor Vehicle (Highway) and Water, including Specifications for Shipping Containers, Code of Federal Regulations, Title 49, Parts 171 to 178.

(b) *General requirements—*(1) *Application.* Compressed gas cylinder, portable tanks, and cargo tanks shall have pressure relief devices installed and maintained in accordance with Compressed Gas Association Pamphlets S–1.1–1963 and 1965 addenda and S–1.2–1963.

(2) *Types of safety relief devices.* Types of safety relief devices as covered by this section are designated as follows:

(i) Type CG–1: Frangible disc.

(ii) Type CG–2: Fusible plug or reinforced fusible plug utilizing a fusible alloy with yield temperature not over 170° F., nor less than 157° F. (165° F. nominal).

(iii) Type CG–3: Fusible plug or reinforced fusible plug utilizing a fusible alloy with yield temperature not over 220° F., nor less than 208° F. (212° F. nominal).

(iv) Type CG–4: Combination frangible disc-fusible plug, utilizing a fusible alloy with yield temperature not over 170° F., nor less than 157° F. (165° F. nominal).

(v) Type CG–5: Combination frangible disc-fusible plug, utilizing a fusible alloy with yield temperature not over 220° F., nor less than 208° F. (212° F. nominal).

(vi) Type CG–7: Safety relief valve.

(vii) Type CG–8: Combination safety relief valve and fusible plug.

(3) *Specifications and tests.* All safety relief devices covered by this section shall meet the design, construction, marking and test specification of the "Compressed Gas Association Safety Relief Device Standards Part 1—Cylinders for Compressed Gases: S1.1–1963."

(4) *Specific requirements for safety relief devices.* (i) Compressed gas cylinders, which under the Regulations of shall be considered acceptable when the Department of Transportation must be equipped with safety relief devices, equipped with devices of proper construction, location, and discharge capacity under the conditions prescribed in Table 1 of the Compressed Gas Associations Standard S–1.1–1963.

(ii) Only replacement parts or assemblies provided by the manufacturer shall be used unless the advisability of interchange is proved by adequate tests.

(iii) When a frangible disc is used with a compressed gas cylinder, the rated bursting pressure of the disc shall not exceed the minimum required test pressure of the cylinder with which the device is used, except for DOT–3E cylinders (49 CFR Ch. I) the rated bursting pressure of the device shall not exceed 4,500 pounds per square inch gage (p.s.i.g.).

(iv) When a safety relief valve is used on a compressed gas cylinder, the flow rating pressure shall not exceed the minimum required test pressure of the cylinder on which the safety relief valve is installed and the reseating pressure shall not be less than the pressure in a normally charged cylinder at 130° F.

(v) When fittings and piping are used on either the upstream or downstream side or both of a safety relief device or devices, the passages shall be so designed that the flow capacity of the safety relief device will not be reduced below the capacity required for the container on which the safety relief device assembly is installed, nor to the extent that the operation of the device could be impaired. Fittings, piping, and method of attachment shall be designed to withstand normal handling and the pressures developed when the device or devices function.

(vi) No shutoff valve shall be installed between the safety relief devices and the cylinder.

(5) *Maintenance requirements for safety relief devices.* (i) As a precaution to keep cylinder safety relief devices in reliable operating condition, care shall be taken in the handling or storing of compressed gas cylinders to avoid damage. Care shall also be exercised to avoid plugging by paint or other dirt accumulation of safety relief device channels or other parts which could interfere with the functioning of the device. Only qualified personnel shall be allowed to service safety relief devices.

(ii) Each time a compressed gas cylinder is received at a point for refilling, all safety relief devices shall be examined externally for corrosion, damage, plugging of external safety relief device channels, and mechanical defects such as leakage or extrusion of fusible metal. If there is any doubt regarding the suitability of the safety relief device for service the cylinder shall not be filled until it is equipped with a suitable device.

§ 1910.168 Safety relief devices for cargo and portable tanks storing compressed gases.

(a) *Definitions applicable to this section—*(1) *Cargo tank.* A "cargo tank" means any container designed to be permanently attached to any motor vehicle or other highway vehicle and in which is to be transported any compressed gas. The term "cargo tank" shall not be construed to include any tank used solely for the purpose of supplying fuel for the propulsion of the vehicle or containers fabricated under specifications for cylinders.

(2) *Portable tank.* A "portable tank" means any container designed primarily to be temporarily attached to a motor vehicle, other vehicle, railroad car other than tank car, or marine vessel, and equipped with skids, mountings, or accessories to facilitate handling of the container by mechanical means, in which is to be transported any compressed gas. The term "portable tank" shall not be construed to include any cargo tank, any tank car tank, or any tank of the DOT-106A and DOT–110A–W type.

(3) *Safety relief device.* A "safety relief device" means a device intended to prevent rupture of a container under certain conditions of exposure.

(4) *Safety relief valve.* A "safety relief valve" means a safety relief device containing an operating part that is held normally in a position closing the safety relief device channel by spring force and is intended to open and to close at predetermined pressures.

(5) *Set pressure.* The "set pressure" of a safety relief valve is the pressure marked on the valve and at which the valve is set to start-to-discharge.

(6) *Start-to-discharge pressure.* The "start-to-discharge pressure" of a safety relief valve is the pressure at which the first bubble appears through a water seal of not over 4 inches on the outlet of the valve.

NOTE: When the nature of the service requires the use of a metal-to-metal seat safety relief valve, with or without secondary sealing means, the start-to-discharge pressure may be considered the pressure at which an audible discharge occurs.

(7) *Reseating pressure.* The "reseating pressure" of a safety relief valve is the pressure at which leakage ceases through a water seal of not over 4 inches on the outlet of the valve.

(8) *Flow capacity.* The "flow capacity" of a safety relief device is the capacity in cubic feet per minute of free air discharged at the required flow rating pressure.

(9) *Flow rating pressure.* The "flow rating pressure" means the pressure at which a safety relief device is rated for capacity.

(10) *Free air or free gas.* "Free air" or "free gas" means air or gas measured at a pressure of 14.7 pounds per square inch absolute and a temperature of 60° F.

(11) *Frangible disc.* A "frangible disc" means a safety relief device in the form of a disc, usually of metal, which is so held as to close the safety relief device channel under normal conditions. The disc is intended to burst at a predetermined pressure to permit the escape of gas.

(12) *Fusible plug.* A "fusible plug" means a safety relief device in the form of a plug of suitable low-melting material, usually a metal alloy, which closes the safety relief device channel under normal conditions and is intended to yield or melt at a predetermined temperature to permit the escape of gas.

(13) *DOT design pressure.* The "DOT design pressure" is identical to the term "maximum allowable working pressure" as used in the "Code" and is the maximum gage pressure at the top of the tank in its operating position. To determine the minimum permissible thickness of physical characteristics of the different parts of the vessel, the static head of the lading shall be added to the DOT design pressure to determine the thickness of any specific part of the vessel. If vacuum insulation is used, the liquid container shall be designed for a pressure of 15 p.s.i. more than DOT design pressure, plus static head of the lading.

EXCEPTION: For containers constructed in accordance with paragraph U–68 or U–69 of section VIII of the ASME Boiler and Pressure Vessel Code, 1949 Edition, the maximum allowable working pressure for the purpose of these standards is considered to be 125 percent of the design pressure as provided in 49 CFR 173.316 of DOT Regulations.

(14) *Code.* "Code" is defined as paragraph U–68, U–69, U–200 or U–201 of section VIII of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers, 1949 Edition; or section VIII of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers, 1950, 1952, 1956, 1959, and 1962 Editions; or The Code for Unfired Pressure Vessels for Petroleum Liquids and Gases of the American Petroleum Institute and the American Society of Mechanical Engineers (API-ASME), 1951 Edition.

(15) *DOT regulations.* The "DOT regulations" refers to Department of Transportation Regulations for Transportation of Explosives and Other Dangerous Articles by Land and Water in Rail Freight, Express and Baggage Services and by Motor Vehicle (Highway) and Water, including Specification for Shipping Containers," Code of Federal Regulations, Title 49, Parts 171 to 178.

(b) *General requirements—*(1) *Application.* See § 1910.167(b)(1).

(2) *Specifications and tests.* All safety relief devices covered by this section shall meet the design, construction, marking, and test specifications of the "Compressed Gas Associations Safety Relief Device Standards Part 2—Cargo and Portable Tanks for Compressed Gases: S–1.2–1963."

(3) *Specific requirements for safety relief devices.* (i) Each container shall be provided with one or more safety relief devices which, unless otherwise specified, shall be safety relief valves of the spring-loaded type.

(ii) Safety relief valves shall be set to start-to-discharge at a pressure not in excess of 110 percent of the DOT design pressure of the container nor less than the DOT design pressure of the container except as follows:

(a) If an overdesigned container is used, the set pressure of the safety relief valve may be between the minimum required DOT design pressure for the lading and 110 percent of the DOT design pressure of the container used.

(b) For sulfur dioxide containers, a minimum set pressure of 120 and 110 p.s.i.g. is permitted for the 150 and 125 p.s.i.g. DOT design pressure containers, respectively.

(c) For carbon dioxide (refrigerated), nitrous oxide (refrigerated), and pressurized liquid argon, nitrogen and oxygen, there shall be no minimum set pressure.

(d) For butadiene, inhibited, and liquefied petroleum gas containers, a minimum set pressure of 90 percent of the minimum DOT design pressure permitted for these ladings may be used.

(e) For containers constructed in accord with paragraph U–68 or U–69 of the Code 1949 Edition, the set pressure marked on the safety relief valve may be 125 percent of the original DOT design pressure of the container.

(iii) Only replacement parts or assemblies provided by the manufacturer of the device shall be used unless the suitability of interchange is proved by adequate tests.

(iv) Safety relief valves shall have direct communication with the vapor space of the container.

(v) Any portion of liquid piping or hose which at any time may be closed at each end must be provided with a safety relief device to prevent excessive pressure.

(vi) The additional restrictions of this subdivision apply to safety relief devices on containers for carbon dioxide or nitrous oxide which are shipped in refrigerated and insulated containers. The maximum operating pressure in the container may be regulated by the use of one or more pressure controlling devices, which devices shall not be in lieu of the safety relief valve required in subdivision (i) of this subparagraph.

(vii) All safety relief devices shall be so installed and located that the cooling effect of the contents will not prevent the effective operation of the device.

(viii) In addition to the safety relief valves required by subdivision (i) of this subparagraph each container for carbon dioxide may be equipped with one or more frangible disc safety relief devices of suitable design set to function at a pressure not exceeding two times the DOT design pressure of the container.

(ix) Subject to conditions of 49 CFR 173.315(a)(1) (DOT Regulations) for methyl chloride and sulfur dioxide optional portable tanks of 225 p.s.i.g. minimum DOT design pressure, one or more fusible plugs approved by the Bureau of Explosives, 63 Vesey Street, New York, NY 10007, may be used in lieu of safety relief valves of the spring-loaded type. If the container is over 30 inches long a safety relief device having the total re-

quired flow capacity must be at both ends.

(x) When storage containers for liquefied petroleum gas are permitted to be shipped in accordance with 49 CFR 173.315(j) (DOT Regulations), they must be equipped with safety relief devices in compliance with the requirements for safety relief devices on above-ground containers as specified in the National Fire Protection Association Pamphlet No. 58–1969 "Standard for the Storage and Handling of Liquefied Petroleum Gases."

(xi) When containers are filled by pumping equipment which has a discharge capacity in excess of the capacity of the container safety relief devices, and which is capable of producing pressures in excess of DOT design pressure of the container, precautions should be taken to prevent the development of pressures in the container in excess of 120 percent of its DOT design pressure. This may be done by providing additional capacity of the safety relief valves on the container, by providing a bypass on the pump discharge, or by any other suitable method.

(xii) This additional requirement applies to safety relief devices on containers for liquefied hydrogen and pressurized liquid argon, nitrogen, and oxygen. The liquid container shall be protected by one or more safety relief valves and one or more frangible discs.

(xiii) Safety relief devices shall be arranged to discharge unobstructed to the open air in such a manner as to prevent any impingement of escaping gas upon the container. Safety relief devices shall be arranged to discharge upward except this is not required for carbon dioxide, nitrous oxide and pressurized liquid argon, nitrogen, and oxygen.

(xiv) No shutoff valves shall be installed between the safety relief devices and the container except, in cases where two or more safety relief devices are installed on the same container, a shutoff valve may be used where the arrangement of the shutoff valve or valves is such as always to insure full required capacity flow through at least one safety relief device.

(4) *Maintenance requirements for safety relief devices.* (i) Care shall be exercised to avoid damage to safety relief devices. Care shall also be exercised to avoid plugging by paint or other dirt accumulation of safety relief device channels or other parts which could interfere with the functioning of the device.

(ii) Only qualified personnel shall be allowed to service safety relief devices. Any servicing or repairs which require resetting of safety relief valves shall be done only by or after consultation with the valve manufacturer.

(iii) Safety-relief devices periodically shall be examined externally for corrosion, damage, plugging or external safety relief device channels, and mechanical defects such as leakage or extrusion of fusible metal. Valves equipped with secondary resilient seals shall have the seals inspected periodically. If there is any doubt regarding the suitability of the safety relief device for service the container shall not be filled until it is equipped with a suitable safety relief device.

§ 1910.169 Air receivers.

(a) *General requirements*—(1) *Application.* This section applies to compressed air receivers, and other equipment used in providing and utilizing compressed air for performing operations such as cleaning, drilling, hoisting, and chipping. On the other hand, however, this section does not deal with the special problems created by using compressed air to convey materials nor the problems created when men work in compressed air as in tunnels and caissons. This section is not intended to apply to compressed air machinery and equipment used on transportation vehicles such as steam railroad cars, electric railway cars, and automotive equipment.

(2) *New and existing equipment.* (i) All new air receivers installed after the effective date of these regulations shall be constructed in accordance with the 1968 edition of the A.S.M.E. Boiler and Pressure Vessel Code Section VIII.

(ii) All safety valves used shall be constructed, installed, and maintained in accordance with the A.S.M.E. Boiler and Pressure Vessel Code, Section VIII Edition 1968.

(b) *Installation and equipment requirements*—(1) *Installation.* Air receivers shall be so installed that all drains, handholes, and manholes therein are easily accessible. Air receivers should be supported with sufficient clearance to permit a complete external inspection and to avoid corrosion of external surfaces. Under no circumstances shall an air receiver be buried underground or located in an inaccessible place. The receiver should be located as close to the compressor or aftercooler as is possible in order to keep the discharge pipe short.

(2) *Drains and traps.* A drain pipe and valve shall be installed at the lowest point of every air receiver to provide for the removal of accumulated oil and water. Adequate automatic traps may be installed in addition to drain valves. The drain valve on the air receiver shall be opened and the receiver completely drained frequently and at such intervals as to prevent the accumulation of excessive amounts of liquid in the receiver.

(3) *Gages and valves.* (i) Every air receiver shall be equipped with an indicating pressure gage (so located as to be readily visible) and with one or more spring-loaded safety valves. The total relieving capacity of such safety valves shall be such as to prevent pressure in the receiver from exceeding the maximum allowable working pressure of the receiver by more than 10 percent.

(ii) No valve of any type shall be placed between the air receiver and its safety valve or valves.

(iii) Safety appliances, such as safety valves, indicating devices and controlling devices, shall be constructed, located, and installed so that they cannot be readily rendered inoperative by any means, including the elements.

(iv) All safety valves shall be tested frequently and at regular intervals to determine whether they are in good operating condition.

§ 1910.170 Sources of standards.

Sec.	Source
1910.166	41 CFR 50-204.65 referencing CGA C-6-1968, Standards for Visual Inspection of Compressed Gas Cylinders.
1910.167	41 CFR 50-204.71 and CGA Pamphlets S-1.1-1963 and 1965 addenda and S-1.2-1963 and 1965 addenda and S-1.3-1963, Safety Relief Device Standards.
1910.169	ANSI B-19, 1938 Safety Code for Compressed Air Machinery.

§ 1910.171 Standards organizations.

Specific standards of the following organizations have been referenced in this part. Copies of the referenced materials may be obtained from the issuing organizations.

Compressed Gas Association, Inc., 500 Fifth Avenue, New York, NY 10036.

American Society of Mechanical Engineers, Inc., United Engineering Center, 345 East 47th Street, New York, NY 10017.

National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210.

American National Standards Institute, 1430 Broadway, New York, NY 10018.

[39 FR 23502, June 27, 1974, as amended at 40 FR 18426, April 28, 1975]

Subpart N—Materials Handling and Storage

§ 1910.176 Handling materials—general.

(a) *Use of mechanical equipment.* Where mechanical handling equipment is used, sufficient safe clearances shall be allowed for aisles, at loading docks, through doorways and wherever turns or passage must be made. Aisles and passageways shall be kept clear and in good repair, with no obstruction across or in aisles that could create a hazard. Permanent aisles and passageways shall be appropriately marked.

(b) *Secure storage.* Storage of material shall not create a hazard. Bags, containers, bundles, etc., stored in tiers shall be stacked, blocked, interlocked and limited in height so that they are stable and secure against sliding or collapse.

(c) *Housekeeping.* Storage areas shall be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion, or pest harborage. Vegetation control will be exercised when necessary.

(d) *Drainage.* Proper drainage shall be provided.

(e) *Clearance limits.* Clearance signs to warn of clearance limits shall be provided.

(f) *Rolling railroad cars.* Derail and/or bumper blocks shall be provided on spur railroad tracks where a rolling car could contact other cars being worked, enter a building, work or traffic area.

(g) *Guarding.* Covers and/or guardrails shall be provided to protect personnel from the hazards of open pits, tanks, vats, ditches, etc.

§ 1910.177 [Reserved]

§ 1910.178 Powered industrial trucks.

(a) *General requirements.*—(1) This section contains safety requirements relating to fire protection, design, maintenance, and use of fork trucks, tractors, platform lift trucks, motorized hand trucks, and other specialized industrial trucks powered by electric motors or internal combustion engines. This section does not apply to compressed air or nonflammable compressed gas-operated in-

dustrial trucks, nor to farm vehicles, nor to vehicles intended primarily for earth moving or over-the-road hauling.

(2) All new powered industrial trucks acquired and used by an employer after the effective date specified in paragraph (b) of § 1910.182 shall meet the design and construction requirements for powered industrial trucks established in the "American National Standard for Powered Industrial Trucks, Part II, ANSI B56.1–1969", except for vehicles intended primarily for earth moving or over-the-road hauling.

(3) Approved trucks shall bear a label or some other identifying mark indicating approval by the testing laboratory. See subparagraph (7) of this paragraph and paragraph 405 of "American National Standard for Powered Industrial Trucks, Part II, ANSI B56.1–1969", which is incorporated by reference in subparagraph (2) of this paragraph and which provides that if the powered industrial truck is accepted by a nationally recognized testing laboratory it should be so marked.

(4) Modifications and additions which affect capacity and safe operation shall not be performed by the customer or user without manufacturers prior written approval. Capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly.

(5) If the truck is equipped with front-end attachments other than factory installed attachments, the user shall request that the truck be marked to identify the attachments and show the approximate weight of the truck and attachment combination at maximum elevation with load laterally centered.

(6) The user shall see that all nameplates and markings are in place and are maintained in a legible condition.

(7) As used in this section, the term, "approved truck" or "approved industrial truck" means a truck that is listed or approved for fire safety purposes for the intended use by a nationally recognized testing laboratory, e.g., Underwriters' Laboratories, Inc.; Factory Mutual Engineering Corp., using nationally recognized testing standards.

(b) *Designations.* For the purpose of this standard there are eleven different designations of industrial trucks or tractors as follows: D, DS, DY, E, ES, EE, EX, G, GS, LP, and LPS.

(1) The D designated units are units similar to the G units except that they are diesel engine powered instead of gasoline engine powered.

(2) The DS designated units are diesel powered units that are provided with additional safeguards to the exhaust, fuel and electrical systems. They may be used in some locations where a D unit may not be considered suitable.

(3) The DY designated units are diesel powered units that have all the safeguards of the DS units and in addition do not have any electrical equipment including the ignition and are equipped with temperature limitation features.

(4) The E designated units are electrically powered units that have minimum acceptable safeguards against inherent fire hazards.

(5) The ES designated units are electrically powered units that, in addition to all of the requirements for the E units, are provided with additional safeguards to the electrical system to prevent emission of hazardous sparks and to limit surface temperatures. They may be used in some locations where the use of an E unit may not be considered suitable.

(6) The EE designated units are electrically powered units that have, in addition to all of the requirements for the E and ES units, the electric motors and all other electrical equipment completely enclosed. In certain locations the EE unit may be used where the use of an E and ES unit may not be considered suitable.

(7) The EX designated units are electrically powered units that differ from the E, ES, or EE units in that the electrical fittings and equipment are so designed, constructed and assembled that the units may be used in certain atmospheres containing flammable vapors or dusts.

(8) The G designated units are gasoline powered units having minimum acceptable safeguards against inherent fire hazards.

(9) The GS designated units are gasoline powered units that are provided with additional safeguards to the exhaust, fuel, and electrical systems. They may be used in some locations where the use of a G unit may not be considered suitable.

(10) The LP designated unit is similar to the G unit except that liquefied petroleum gas is used for fuel instead of gasoline.

(11) The LPS designated units are liquefied petroleum gas powered units that are provided with additional safeguards

to the exhaust, fuel, and electrical systems. They may be used in some locations where the use of an LP unit may not be considered suitable.

(12) The atmosphere or location shall have been classified as to whether it is hazardous or nonhazardous prior to the consideration of industrial trucks being used therein and the type of industrial truck required shall be as provided in paragraph (d) of this section for such location.

(c) *Designated locations.* (1) The industrial trucks specified under subparagraph (2) of this paragraph are the minimum types required but industrial trucks having greater safeguards may be used if desired.

(2) For specific areas of use see Table N–1 which tabulates the information contained in this section. References in the table to the corresponding classification as used in the National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968) for the convenience of persons familiar with those classifications.

TABLE N–1

SUMMARY TABLE ON USE OF INDUSTRIAL TRUCKS IN VARIOUS LOCATIONS

Classes	Unclassified	Class I locations					Class II locations				Class III locations	
Description of class	Locations not possessing atmosphere as hazardous as in other subclasses.	Locations in which flammable gases or vapors are, or may be, present in the air in quantities sufficient to produce explosive or ignitible mixtures.					Locations which are hazardous because of the presence of combustible dust.				Locations where easily ignitible fibers or flyings are present but not likely to be suspended in the air in quantities liable to produce ignitible mixtures.	
Groups in class	None	A	B	C	D	E	F	G	None			
Examples of locations in class and groups	Piers and wharves inside and outside general storage warehouses, and similar industrial or commercial properties.	Acetylene	Hydrogen	Ethyl ether	Gasoline, Naphtha, Lacquer solvent vapors, Alcohol	Metal dust	Carbon black, coal dust, coke dust	Grain dust, flour dust, starch dust, organic dust.	Baled waste, excelsior, cotton, sawdust, shavings, oils, lints, kapok, hay, straw, Spanish moss, vegetable fibers, low.			
Divisions (Nature of hazard and conditions)	None	1				2	1		2		1	2
		Above conditions rarely occur or continuously, intermittently, or periodically under normal conditions.				Explosive mixture may be present under normal operating conditions, or frequently because of repair or maintenance operations or leakage in containment system.	Explosive mixture may be present under normal operating conditions, or frequently because of repair or maintenance operations or leakage in containment system.		Locations in which easily ignitible fibers or materials producing combustible flyings are handled, manufactured, or used.		Locations in which easily ignitible fibers are stored or handled (except in the process of manufacture).	

Authorized uses of trucks by types in groups of classes and divisions

Groups in classes	Name	A	B	C	D	E	F	G	Name	Name
Types of trucks authorized:										
Diesel	D**				DS			DS		
Type D	DY				DY			DY	DY	DY
Electric	E**				ES			ES		ES
Type E	EE				EE			EE	EE	EE
Type En	EX				EX	EX		EX	EX	EX
Type Es	EX				EX	EX		EX	EX	EX
Gasoline	G**				GS			GS		GS
Type G	GS				GS			GS		GS
LP-Gas	LP**				LPS			LPS		LPS
Type LP	LPS				LPS			LPS		LPS
Paragraph Ref. in No. 56	1910.111	302 (a)	302 (a)	302 (a)	306 (a), (b)	307 (a)	308 (a)	308 (a)	307 (a)	308 (a)

**Trucks conforming to these types may also be used—see subdivision (a)(2) and (c)(2) of this section.

(i) Power-operated industrial trucks shall not be used in atmospheres containing hazardous concentration of acetylene, butadiene, ethylene oxide, hydrogen (or gases or vapors equivalent in hazard to hydrogen, such as manufactured gas), propylene oxide, acrolein, cyclopropane, diethyl ether, ethylene, isoprene, or unsymmetrical dimethyl hydrazine (UDMH).

(ii) (a) Power-operated industrial trucks shall not be used in atmospheres containing hazardous concentrations of metal dust, including aluminum, magnesium, and their commercial alloys, other metals of similarly hazardous characteristics, or in atmospheres containing carbon black, coal or coke dust, except approved power-operated industrial trucks designated as EX may be used in such atmospheres.

(b) In atmospheres where dust of magnesium, aluminum or aluminum bronze may be present, fuses, switches, motor controllers, and circuit breakers of trucks shall have enclosures specifically approved for such locations.

(iii) Only approved power-operated industrial trucks designated as EX may be used in locations where volatile flammable liquids or flammable gases are handled, processed or used, but in which the hazardous liquid, vapors or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems, or in the case of abnormal operation of equipment; also in locations in which hazardous concentrations of gases or vapors are normally prevented by positive mechanical ventilation but which might become hazardous through failure or abnormal operation of the ventilating equipment; or in locations which are adjacent to Class I, Division 1 locations, and to which hazardous concentrations of gases or vapors might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clear air, and effective safeguards against ventilation failure are provided.

(v) In locations used for the storage of hazardous liquids in sealed containers or liquified or compressed gases in containers, approved power-operated industrial trucks designated as DS, ES, GS, or LPS may be used. This classification includes locations where volatile flammable liquids or flammable gases or vapors are used, but which, would become hazardous only in case of an accident or of some unusual operating condition. The quantity of hazardous material that might escape in case of accident, the adequacy of ventilating equipment, the total area involved, and the record of the industry or business with respect to explosions or fires are all factors that should receive consideration in determining whether or not the DS or DY, ES, EE, GS, LPS designated truck possesses sufficient safeguards for the location. Piping without valves, checks, meters and similar devices would not ordinarily be deemed to introduce a hazardous condition even though used for hazardous liquids or gases. Locations used for the storage of hazardous liquids or of liquified or compressed gases in sealed containers would not normally be considered hazardous unless subject to other hazardous conditions also.

(vi) (a) Only approved power-operated industrial trucks designated as EX shall be used in atmospheres in which combustible dust is or may be in suspension continuously, intermittently, or periodically under normal operating conditions, in quantities sufficient to produce explosive or ignitable mixtures, or where mechanical failure or abnormal operation of machinery or equipment might cause such mixtures to be produced.

(b) The EX classification usually includes the working areas of grain handling and storage plants, room containing grinders or pulverizers, cleaners, graders, scalpers, open conveyors or spouts, open bins or hoppers, mixers, or blenders, automatic or hopper scales, packing machinery, elevator heads and boots, stock distributors, dust and stock collectors (except all-metal collectors vented to the outside), and all similar dust producing machinery and equipment in grain processing plants, starch plants, sugar pulverizing plants, malting plants, hay grinding plants, and other occupancies of similar nature; coal pulverizing plants (except where the pulverizing equipment is essentially dust tight); all working areas where metal dusts and powders are produced, processed, handled, packed, or stored (except in tight containers); and other similar locations where combustible dust may, under normal operating conditions, be present in the air in quantities sufficient to produce explosive or ignitable mixtures.

(vii) Only approved power-operated industrial trucks designated as DY, EE, or EX shall be used in atmospheres in which combustible dust will not normally be in suspension in the air or will not be likely to be thrown into suspension by the normal operation of equipment or apparatus in quantities sufficient to produce explosive or ignitable mixtures but where deposits or accumulations of such dust may be ignited by arcs or sparks originating in the truck.

(viii) Only approved power-operated industrial trucks designated as DY, EE, or EX shall be used in locations which are hazardous because of the presence of easily ignitible fibers or flyings but in which such fibers or flyings are not likely to be in suspension in the air in quantities sufficient to produce ignitable mixtures.

(ix) Only approved power-operated industrial trucks designated as DS, DY, ES, EE, EX, GS, or LPS shall be used in locations where easily ignitable fibers are stored or handled, including outside storage, but are not being processed or manufactured. Industrial trucks designated as E, which have been previously used in these locations may be continued in use.

(x) On piers and wharves handling general cargo, any approved power-operated industrial truck designated as Type D, E, G, or LP may be used, or trucks which conform to the requirements for these types may be used.

(xi) If storage warehouses and outside storage locations are hazardous only

the approved power-operated industrial truck specified for such locations in this paragraph (c)(2) shall be used. If not classified as hazardous, any approved power-operated industrial truck designated as Type D, E, G, or LP may be used, or trucks which conform to the requirements for these types may be used.

(xii) If general industrial or commercial properties are hazardous, only approved power-operated industrial trucks specified for such locations in this paragraph (c)(2) shall be used. If not classified as hazardous, any approved power-operated industrial truck designated as Type D, E, G, or LP may be used, or trucks which conform to the requirements of these types may be used.

(d) *Converted industrial trucks.* Power-operated industrial trucks that have been originally approved for the use of gasoline for fuel, when converted to the use of liquefied petroleum gas fuel in accordance with paragraph (q) of this section, may be used in those locations where G, GS or LP, and LPS designated trucks have been specified in the preceding paragraphs.

(e) *Safety guards.* (1) High Lift Rider trucks shall be fitted with an overhead guard manufactured in accordance with paragraph (a)(2) of this section, unless operating conditions do not permit.

(2) If the type of load presents a hazard, the user shall equip fork trucks with a vertical load backrest extension manufactured in accordance with paragraph (a)(2) of this section.

(f) *Fuel handling and storage.* (1) The storage and handling of liquid fuels such as gasoline and diesel fuel shall be in accordance with NFPA Flammable and Combustible Liquids Code (NFPA No. 30–1969).

(2) The storage and handling of liquefied petroleum gas fuel shall be in accordance with NFPA Storage and Handling of Liquefied Petroleum Gases (NFPA No. 58–1969).

(g) *Changing and charging storage batteries.* (1) Battery charging installations shall be located in areas designated for that purpose.

(2) Facilities shall be provided for flushing and neutralizing spilled electrolyte, for fire protection, for protecting charging apparatus from damage by trucks, and for adequate ventilation for dispersal of fumes from gassing batteries.

(3) When racks are used for support of batteries, they should be made of materials nonconductive to spark generation or be coated or covered to achieve this objective.

(4) A conveyor, overhead hoist, or equivalent material handling equipment shall be provided for handling batteries.

(5) Reinstalled batteries shall be properly positioned and secured in the truck.

(6) A carboy tilter or siphon shall be provided for handling electrolyte.

(7) When charging batteries, acid shall be poured into water; water shall not be poured into acid.

(8) Trucks shall be properly positioned and brake applied before attempting to change or charge batteries.

(9) When charging batteries, the vent caps should be kept in place to avoid electrolyte spray. Care shall be taken to assure that vent caps are functioning. The battery (or compartment) cover(s) shall be open to dissipate heat.

(10) Smoking shall be prohibited in the charging area.

(11) Precautions shall be taken to prevent open flames, sparks, or electric arcs in battery charging areas.

(12) Tools and other metallic objects shall be kept away from the top of uncovered batteries.

(h) *Lighting for operating areas.* (1) Controlled lighting of adequate intensity should be provided in operating areas. (See American National Standard Practice for Industrial Lighting, A11.1–1965 (R1970)).

(2) Where general lighting is less than 2 lumens per square foot, auxiliary directional lighting shall be provided on the truck.

(i) *Control of noxious gases and fumes.* (1) Concentration levels of carbon monoxide gas created by powered industrial truck operations shall not exceed the levels specified in § 1910.1000.

(2) Questions concerning degree of concentration and methods of sampling to ascertain the conditions should be referred to a qualified industrial hygienist.

(j) *Dockboards (bridge plates).* See § 1910.30(a).

(k) *Trucks and railroad cars.* (1) The brakes of highway trucks shall be set and wheel chocks placed under the rear wheels to prevent the trucks from rolling while they are boarded with powered industrial trucks.

(2) Wheel stops or other recognized positive protection shall be provided to prevent railroad cars from moving during loading or unloading operations.

(3) Fixed jacks may be necessary to support a semitrailer and prevent upending during the loading or unloading when the trailer is not coupled to a tractor.

(4) Positive protection shall be provided to prevent railroad cars from being moved while dockboards or bridge plates are in position.

(l) *Operator training.* Only trained and authorized operators shall be permitted to operate a powered industrial truck. Methods shall be devised to train operators in the safe operation of powered industrial trucks.

(m) *Truck operations.* (1) Trucks shall not be driven up to anyone standing in front of a bench or other fixed object.

(2) No person shall be allowed to stand or pass under the elevated portion of any truck, whether loaded or empty.

(3) Unauthorized personnel shall not be permitted to ride on powered industrial trucks. A safe place to ride shall be provided where riding of trucks is authorized.

(4) The employer shall prohibit arms or legs from being placed between the uprights of the mast or outside the running lines of the truck.

(5) (i) When a powered industrial truck is left unattended, load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set. Wheels shall be blocked if the truck is parked on an incline.

(ii) A powered industrial truck is unattended when the operator is 25 ft or more away from the vehicle which remains in his view, or whenever the operator leaves the vehicle and it is not in his view.

(iii) When the operator of an industrial truck is dismounted and within 25 ft. of the truck still in his view, the load engaging means shall be fully lowered, controls neutralized, and the brakes set to prevent movement.

(6) A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock, or platform or freight car. Trucks shall not be used for opening or closing freight doors.

(7) Brakes shall be set and wheel blocks shall be in place to prevent movement of trucks, trailers, or railroad cars while loading or unloading. Fixed jacks may be necessary to support a semitrailer during loading or unloading when the trailer is not coupled to a tractor. The flooring of trucks, trailers, and railroad cars shall be checked for breaks and weakness before they are driven onto.

(8) There shall be sufficient headroom under overhead installations, lights, pipes, sprinkler system, etc.

(9) An overhead guard shall be used as protection against falling objects. It should be noted that an overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application, but not to withstand the impact of a falling capacity load.

(10) A load backrest extension shall be used whenever necessary to minimize the possibility of the load or part of it from falling rearward.

(11) Only approved industrial trucks shall be used in hazardous locations.

(12) Whenever a truck is equipped with vertical only, or vertical and horizontal controls elevatable with the lifting carriage or forks for lifting personnel, the following additional precautions shall be taken for the protection of personnel being elevated.

(i) Use of a safety platform firmly secured to the lifting carriage and/or forks.

(ii) Means shall be provided whereby personnel on the platform can shut off power to the truck.

(iii) Such protection from falling objects as indicated necessary by the operating conditions shall be provided.

(13) [Reserved]

(14) Fire aisles, access to stairways, and fire equipment shall be kept clear.

(n) *Traveling.* (1) All traffic regulations shall be observed, including authorized plant speed limits. A safe distance shall be maintained approximately three truck lengths from the truck ahead, and the truck shall be kept under control at all times.

(2) The right of way shall be yielded to ambulances, fire trucks, or other vehicles in emergency situations.

(3) Other trucks traveling in the same direction at intersections, blind spots, or other dangerous locations shall not be passed.

(4) The driver shall be required to slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall

be required to travel with the load trailing.

(5) Railroad tracks shall be crossed diagonally wherever possible. Parking closer than 8 feet from the center of railroad tracks is prohibited.

(6) The driver shall be required to look in the direction of, and keep a clear view of the path of travel.

(7) Grades shall be ascended or descended slowly.

(i) When ascending or descending grades in excess of 10 percent, loaded trucks shall be driven with the load upgrade.

(ii) Unloaded trucks should be operated on all grades with the load engaging means downgrade.

(iii) On all grades the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface.

(8) Under all travel conditions the truck shall be operated at a speed that will permit it to be brought to a stop in a safe manner.

(9) Stunt driving and horseplay shall not be permitted.

(10) The driver shall be required to slow down for wet and slippery floors.

(11) Dockboard or bridgeplates, shall be properly secured before they are driven over. Dockboard or bridgeplates shall be driven over carefully and slowly and their rated capacity never exceeded.

(12) Elevators shall be approached slowly, and then entered squarely after the elevator car is properly leveled. Once on the elevator, the controls shall be neutralized, power shut off, and the brakes set.

(13) Motorized hand trucks must enter elevator or other confined areas with load end forward.

(14) Running over loose objects on the roadway surface shall be avoided.

(15) While negotiating turns, speed shall be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, the hand steering wheel shall be turned at a moderate, even rate.

(o) *Loading.* (1) Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered.

(2) Only loads within the rated capacity of the truck shall be handled.

(3) The long or high (including multiple-tiered) loads which may affect capacity shall be adjusted.

(4) When attachments are used, particular care should be taken in securing, manipulating, positioning, and transporting the load. Trucks equipped with attachments shall be operated as partially loaded trucks when not handling a load.

(5) A load engaging means shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load.

(6) Extreme care shall be used when tilting the load forward or backward, particularly when high tiering. Tilting forward with load engaging means elevated shall be prohibited except to pick up a load. An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, only enough backward tilt to stabilize the load shall be used.

(p) *Operation of the truck.* (1) If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition.

(2) Fuel tanks shall not be filled while the engine is running. Spillage shall be avoided.

(3) Spillage of oil or fuel shall be carefully washed away or completely evaporated and the fuel tank cap replaced before restarting engine.

(4) No truck shall be operated with a leak in the fuel system until the leak has been corrected.

(5) Open flames shall not be used for checking electrolyte level in storage batteries or gasoline level in fuel tanks.

(q) *Maintenance of industrial trucks.* (1) Any power-operated industrial truck not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel.

(2) No repairs shall be made in Class I, II, and III locations.

(3) Those repairs to the fuel and ignition systems of industrial trucks which involve fire hazards shall be conducted only in locations designated for such repairs.

(4) Trucks in need of repairs to the electrical system shall have the battery disconnected prior to such repairs.

(5) All parts of any such industrial truck requiring replacement shall be replaced only by parts equivalent as to safety with those used in the original design.

(6) Industrial trucks shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts, except as provided in subparagraph (12) of this paragraph. Additional counterweighting of fork trucks shall not be done unless approved by the truck manufacturer.

(7) Industrial trucks shall be examined before being placed in service, and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination shall be made at least daily.

Where industrial trucks are used on a round-the-clock basis, they shall be examined after each shift. Defects when found shall be immediately reported and corrected.

(8) Water mufflers shall be filled daily or as frequently as is necessary to prevent depletion of the supply of water below 75 percent of the filled capacity. Vehicles with mufflers having screens or other parts that may become clogged shall not be operated while such screens or parts are clogged. Any vehicle that emits hazardous sparks or flames from the exhaust system shall immediately be removed from service, and not returned to service until the cause for the emission of such sparks and flames has been eliminated.

(9) When the temperature of any part of any truck is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the vehicle shall be removed from service and not returned to service until the cause for such overheating has been eliminated.

(10) Industrial trucks shall be kept in a clean condition, free of lint, excess oil, and grease. Noncombustible agents should be used for cleaning trucks. Low flash point (below 100° F.) solvents shall not be used. High flash point (at or above 100° F.) solvents may be used. Precautions regarding toxicity, ventilation, and fire hazard shall be consonant with the agent or solvent used.

(11) Where it is necessary to use antifreeze in the engine cooling system, only those products having a glycol base shall be used.

(12) Industrial trucks originally approved for the use of gasoline for fuel may be converted to liquefied petroleum gas fuel provided the complete conversion results in a truck which embodies the features specified for LP or LPS designated trucks. Such conversion equipment shall be approved. The description of the component parts of this conversion system and the recommended method of installation on specific trucks are contained in the "Listed by Report."

[39 FR 23502, June 27, 1974, as amended at 40 FR 23078, May 28, 1975]

§ 1910.179 Overhead and gantry cranes.

(a) *Definitions applicable to this section.* (1) A "crane" is a machine for lifting and lowering a load and moving it horizontally, with the hoisting mechanism an integral part of the machine. Cranes whether fixed or mobile are driven manually or by power.

(2) An "automatic crane" is a crane which when activated operates through a preset cycle or cycles.

(3) A "cab-operated crane" is a crane controlled by an operator in a cab located on the bridge or trolley.

(4) "Cantilever gantry crane" means a gantry or semigantry crane in which the bridge girders or trusses extend transversely beyond the crane runway on one or both sides.

(5) "Floor-operated crane" means a crane which is pendant or nonconductive rope controlled by an operator on the floor or an independent platform.

(6) "Gantry crane" means a crane similar to an overhead crane except that the bridge for carrying the trolley or trolleys is rigidly supported on two or more legs running on fixed rails or other runway.

(7) "Hot metal handling crane" means an overhead crane used for transporting or pouring molten material.

(8) "Overhead crane" means a crane with a movable bridge carrying a movable or fixed hoisting mechanism and traveling on an overhead fixed runway structure.

(9) "Power-operated crane" means a crane whose mechanism is driven by electric, air, hydraulic, or internal combustion means.

(10) A "pulpit-operated crane" is a crane operated from a fixed operator station not attached to the crane.

(11) A "remote-operated crane" is a crane controlled by an operator not in a pulpit or in the cab attached to the crane, by any method other than pendant or rope control.

(12) A "semigantry crane" is a gantry crane with one end of the bridge rigidly supported on one or more legs that run on a fixed rail or runway, the other end of the bridge being supported by a truck running on an elevated rail or runway.

(13) "Storage bridge crane" means a gantry type crane of long span usually used for bulk storage of material; the bridge girders or trusses are rigidly or nonrigidly supported on one or more legs. It may have one or more fixed or hinged cantilever ends.

(14) "Wall crane" means a crane having a jib with or without trolley and supported from a side wall or line of columns of a building. It is a traveling type and operates on a runway attached to the side wall or columns.

(15) "Appointed" means assigned specific responsibilities by the employer or the employer's representative.

(16) "ANSI" means the American National Standards Institute.

(17) An "auxiliary hoist" is a supplemental hoisting unit of lighter capacity and usually higher speed than provided for the main hoist.

(18) A "brake" is a device used for retarding or stopping motion by friction or power means.

(19) A "drag brake" is a brake which provides retarding force without external control.

(20) A "holding brake" is a brake that automatically prevents motion when power is off.

(21) "Bridge" means that part of a crane consisting of girders, trucks, end ties, footwalks, and drive mechanism which carries the trolley or trolleys.

(22) "Bridge travel" means the crane movement in a direction parallel to the crane runway.

(23) A "bumper" (buffer) is an energy absorbing device for reducing impact when a moving crane or trolley reaches the end of its permitted travel; or when two moving cranes or trolleys come in contact.

(24) The "cab" is the operator's compartment on a crane.

(25) "Clearance" means the distance from any part of the crane to a point of the nearest obstruction.

(26) "Collectors current" are contacting devices for collecting current from runway or bridge conductors.

(27) "Conductors, bridge" are the electrical conductors located along the bridge structure of a crane to provide power to the trolley.

(28) "Conductors, runway" (main) are the electrical conductors located along a crane runway to provide power to the crane.

(29) The "control braking means" is a method of controlling crane motor speed when in an overhauling condition.

(30) "Countertorque" means a method of control by which the power to the motor is reversed to develop torque in the opposite direction.

(31) "Dynamic" means a method of controlling crane motor speeds when in the overhauling condition to provide a retarding force.

(32) "Regenerative" means a form of dynamic braking in which the electrical energy generated is fed back into the power system.

(33) "Mechanical" means a method of control by friction.

(34) "Controller, spring return" means a controller which when released will return automatically to a neutral position.

(35) "Designated" means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.

(36) A "drift point" means a point on a travel motion controller which releases the brake while the motor is not energized. This allows for coasting before the brake is set.

(37) The "drum" is the cylindrical member around which the ropes are wound for raising or lowering the load.

(38) An "equalizer" is a device which compensates for unequal length or stretch of a rope.

(39) "Exposed" means capable of being contacted inadvertently. Applied to hazardous objects not adequately guarded or isolated.

(40) "Fail-safe" means a provision designed to automatically stop or safely control any motion in which a malfunction occurs.

(41) "Footwalk" means the walkway with handrail, attached to the bridge or trolley for access purposes.

(42) A "hoist" is an apparatus which may be a part of a crane, exerting a force for lifting or lowering.

(43) "Hoist chain" means the load bearing chain in a hoist.

NOTE: Chain properties do not conform to those shown in ANSI B30.9–1971, Safety Code for Slings.

(44) "Hoist motion" means that motion of a crane which raises and lowers a load.

(45) "Load" means the total superimposed weight on the load block or hook.

(46) The "load block" is the assembly of hook or shackle, swivel, bearing, sheaves, pins, and frame suspended by the hoisting rope.

(47) "Magnet" means an electromagnetic device carried on a crane hook to pick up loads magnetically.

(48) "Main hoist" means the hoist mechanism provided for lifting the maximum rated load.

(49) A "man trolley" is a trolley having an operator's cab attached thereto.

(50) "Rated load" means the maximum load for which a crane or individual hoist is designed and built by the manufacturer and shown on the equipment nameplate(s).

(51) "Rope" refers to wire rope, unless otherwise specified.

(52) "Running sheave" means a sheave which rotates as the load block is raised or lowered.

(53) "Runway" means an assembly of rails, beams, girders, brackets, and framework on which the crane or trolley travels.

(54) "Side pull" means that portion of the hoist pull acting horizontally when the hoist lines are not operated vertically.

(55) "Span" means the horizontal distance center to center of runway rails.

(56) "Standby crane" means a crane which is not in regular service but which is used occasionally or intermittently as required.

(57) A "stop" is a device to limit travel of a trolley or crane bridge. This device normally is attached to a fixed structure and normally does not have energy absorbing ability.

(58) A "switch" is a device for making, breaking, or for changing the connections in an electric circuit.

(59) An "emergency stop switch" is a manually or automatically operated electric switch to cut off electric power independently of the regular operating controls.

(60) A "limit switch" is a switch which is operated by some part or motion of a power-driven machine or equipment to alter the electric circuit associated with the machine or equipment.

(61) A "main switch" is a switch controlling the entire power supply to the crane.

(62) A "master switch" is a switch which dominates the operation of contactors, relays, or other remotely operated devices.

(63) The "trolley" is the unit which travels on the bridge rails and carries the hoisting mechanism.

(64) "Trolley travel" means the trolley movement at right angles to the crane runway.

(65) "Truck" means the unit consisting of a frame, wheels, bearings, and axles which supports the bridge girders or trolleys.

(b) *General requirements*—(1) *Application.* This section applies to overhead and gantry cranes, including semigantry, cantilever gantry, wall cranes, storage bridge cranes, and others having the same fundamental characteristics. These cranes are grouped because they all have trolleys and similar travel characteristics.

(2) *New and existing equipment.* All new overhead and gantry cranes constructed and installed on or after August 31, 1971, shall meet the design specifications of the American National Standard Safety Code for Overhead and Gantry Cranes, ANSI B30.2.0–1967. Overhead and gantry cranes constructed before August 31, 1971, should be modified to conform to those design specifications by February 15, 1972, unless it can be shown that the crane cannot feasibly or economically be altered and that the crane substantially complies with the requirements of this section.

(3) *Modifications.* Cranes may be modified and rerated provided such modifications and the supporting structure are checked thoroughly for the new rated load by a qualified engineer or the equipment manufacturer. The crane shall be tested in accordance with paragraph (k)(2) of this section. New rated load shall be displayed in accordance with subparagraph (5) of this paragraph.

(4) *Wind indicators and rail clamps.* Outdoor storage bridges shall be provided with automatic rail clamps. A wind-indicating device shall be provided which will give a visible or audible alarm to the bridge operator at a predetermined wind velocity. If the clamps act on the rail heads, any beads or weld flash on the rail heads shall be ground off.

(5) *Rated load marking.* The rated load of the crane shall be plainly marked on each side of the crane, and if the crane has more than one hoisting unit, each hoist shall have its rated load marked on it or its load block and this marking shall be clearly legible from the ground or floor.

(6) *Clearance from obstruction.* (i) Minimum clearance of 3 inches overhead and 2 inches laterally shall be provided and maintained between crane and obstructions in conformity with Crane Manufacturers Association of America, Inc., Specification No. 61 (formerly the Electric Overhead Crane Institute, Inc).

(ii) Where passageways or walkways are provided obstructions shall not be placed so that safety of personnel will be jeopardized by movements of the crane.

(7) *Clearance between parallel cranes.* If the runways of two cranes are parallel, and there are no intervening walls or structure, there shall be adequate clearance provided and maintained between the two bridges.

(8) *Designated personnel.*—Only designated personnel shall be permitted to operate a crane covered by this section.

(c) *Cabs.*—(1) *Cab location.* (i) The general arrangement of the cab and the location of control and protective equipment shall be such that all operating handles are within convenient reach of the operator when facing the area to be served by the load hook, or while facing the direction of travel of the cab. The arrangement shall allow the operator a full view of the load hook in all positions.

(ii) The cab shall be located to afford a minimum of 3 inches clearance from all fixed structures within its area of possible movement.

(iii) The clearance of the cab above the working floor or passageway should be not less than 7 feet.

(2) *Access to crane.* Access to the cab and/or bridge walkway shall be by a conveniently placed fixed ladder, stairs, or platform requiring no step over any gap exceeding 12 inches. Fixed ladders shall be in conformance with the American National Standard Safety Code for Fixed Ladders, ANSI A14.3–1956.

(3) *Fire extinguisher.* A carbon dioxide, dry-chemical, or equivalent hand fire extinguisher should be kept in the cab. Carbon tetrachloride extinguishers shall not be used.

(4) *Lighting.* Light in the cab shall be sufficient to enable the operator to see clearly enough to perform his work.

(d) *Footwalks and ladders.*—(1) *Location of footwalks.* (i) If sufficient headroom is available on cab-operated cranes, a footwalk shall be provided on the drive side along the entire length of the bridge of all cranes having the trolley running on the top of the girders. To give sufficient access to the opposite side of the trolley, there should be provided either a footwalk mounted on the trolley, a suitable footwalk or platform in the building, or a footwalk on the opposite side of the crane at least twice the length of the trolley.

(ii) Footwalks should be located to give a headroom not less than 78 inches. In no case shall less than 48 inches be provided. If 48 inches of headroom cannot be provided, footwalks should be omitted from the crane and a stationary platform or landing stage built for workmen making repairs.

(2) *Construction of footwalks.* (i) Footwalks shall be of rigid construction and designed to sustain a distributed load of at least 50 pounds per square foot.

(ii) Footwalks shall have a walking surface of antislip type.

NOTE: Wood will meet this requirement.

(iii) Footwalks should be continuous and permanently secured.

(iv) Footwalks should have a clear passageway at least 18 inches wide except opposite the bridge motor, where they should be not less than 15 inches. The inner edge shall extend at least to the line of the outside edge of the lower cover plate or flange of the girder.

(3) *Toeboards and handrails for footwalks.* Toeboards and handrails shall be in compliance with section 1910.23 of this part.

(4) *Ladders and stairways.* (i) Gantry cranes shall be provided with ladders or stairways extending from the ground to the footwalk or cab platform.

(ii) Stairways shall be equipped with rigid and substantial metal handrails. Walking surfaces shall be of an antislip type.

(iii) Ladders shall be permanently and securely fastened in place and shall be constructed in compliance with § 1910.27.

(e) *Stops, bumpers, rail sweeps, and guards.*—(1) *Trolley stops.* (i) Stops shall be provided at the limits of travel of the trolley.

(ii) Stops shall be fastened to resist forces applied when contacted.

(iii) A stop engaging the tread of the wheel shall be of a height at least equal to the radius of the wheel.

(2) *Bridge bumpers.*—(i) A crane shall be provided with bumpers or other automatic means providing equivalent effect, unless the crane travels at a slow rate of speed and has a faster deceleration rate due to the use of sleeve bearings, or is not operated near the ends of bridge and trolley travel, or is restricted to a limited distance by the nature of the crane operation and their is no hazard of striking any object in this limited distance, or is used in similar operating conditions. The bumpers shall be capable of stopping the crane (not including the lifted load) at an average rate of deceleration not to exceed 3 ft/s/s when traveling in either direction at 20 percent of the rated load speed.

(A) The bumpers shall have sufficient energy absorbing capacity to stop the crane when traveling at a speed of at least 40 percent of rated load speed.

(B) The bumper shall be so mounted that there is no direct shear on bolts.

(ii) Bumpers shall be so designed and installed as to minimize parts falling from the crane in case of breakage.

(3) *Trolley bumpers.*—(i) A trolley shall be provided with bumpers or other automatic means of equivalent effect, unless the trolley travels at a slow rate of speed, or is not operated near the ends of bridge and trolley travel, or is restricted to a limited distance of the runway and there is no hazard of striking any object in this limited distance, or is used in similar operating conditions. The bumpers shall be capable of stopping the trolley (not including the lifted load) at an average rate of deceleration not to exceed 4.7 ft/s/s when traveling in either direction at one-third of the rated load speed.

(ii) When more than one trolley is operated on the same bridge, each shall be equipped with bumpers or equivalent on their adjacent ends.

(iii) Bumpers or equivalent shall be designed and installed to minimize parts falling from the trolley in case of age.

(4) *Rail sweeps.* Bridge trucks shall be equipped with sweeps which extend below the top of the rail and project in front of the truck wheels.

(5) *Guards for hoisting ropes.* (i) If hoisting ropes run near enough to other parts to make fouling or chafing possible, guards shall be installed to prevent this condition.

(ii) A guard shall be provided to prevent contact between bridge conductors and hoisting ropes if they could come into contact.

(6) *Guards for moving parts.* (i) Exposed moving parts such as gears, set screws, projecting keys, chains, chain sprockets, and reciprocating components which might constitute a hazard under normal operating conditions shall be guarded.

(ii) Guards shall be securely fastened.

(iii) Each guard shall be capable of supporting without permanent distortion the weight of a 200-pound person unless the guard is located where it is impossible for a person to step on it.

(f) *Brakes.*—(1) *Brakes for hoists.* (i) Each independent hoisting unit of a crane shall be equipped with at least one self-setting brake, hereafter referred to as a holding brake, applied directly to the motor shaft or some part of the gear train.

(ii) Each independent hoisting unit of a crane, except worm-geared hoists, the angle of whose worm is such as to prevent the load from accelerating in the lowering direction shall, in addition to a holding brake, be equipped with control braking means to prevent overspeeding.

(2) *Holding brakes.* (i) Holding brakes for hoist motors shall have not less than the following percentage of the full-load hoisting torque at the point where the brake is applied.

(a) 125 percent when used with a control braking means other than mechanical.

(b) 100 percent when used in conjunction with a mechanical control braking means.

(c) 100 percent each if two holding brakes are provided.

(ii) Holding brakes on hoists shall have ample thermal capacity for the frequency of operation required by the service.

(iii) Holding brakes on hoists shall be applied automatically when power is removed.

(iv) Where necessary holding brakes shall be provided with adjustment means to compensate for wear.

(v) The wearing surface of all holding-brake drums or discs shall be smooth.

(vi) Each independent hoisting unit of a crane handling hot metal and having power control braking means shall be equipped with at least two holding brakes.

(3) *Control braking means.* (i) A power control braking means such as regenerative, dynamic or counterforque braking, or a mechanically controlled braking means shall be capable of maintaining safe lowering speeds of rated loads.

(ii) The control braking means shall have ample thermal capacity for the frequency of operation required by service.

(4) *Brakes for trolleys and bridges.* (i) Foot operated brakes shall not require an applied force of more than 70 pounds to develop manufacturer's rated brake torque.

(ii) Brakes may be applied by mechanical, electrical, pneumatic, hydraulic, or gravity means.

(iii) Where necessary brakes shall be provided with adjustment means to compensate for wear.

(iv) The wearing surface of all brake-drums or discs shall be smooth.

(v) All foot-brake pedals shall be constructed so that the operator's foot will not easily slip off the pedal.

(vi) Foot-operated brakes shall be equipped with automatic means for positive release when pressure is released from the pedal.

(vii) Brakes for stopping the motion of the trolley or bridge shall be of sufficient size to stop the trolley or bridge within a distance in feet equal to 10 percent of full load speed in feet per minute when traveling at full speed with full load.

(viii) If holding brakes are provided on the bridge or trolleys, they shall not prohibit the use of a drift point in the control circuit.

(ix) Brakes on trolleys and bridges shall have ample thermal capacity for the frequency of operation required by the service to prevent impairment of functions from overheating.

(5) *Application of trolley brakes.* (i) On cab-operated cranes with cab on trolley, a trolley brake shall be required as specified under subparagraph (4) of this paragraph.

(ii) A drag brake may be applied to hold the trolley in a desired position on the bridge and to eliminate creep with the power off.

(6) *Application of bridge brakes.* (i) On cab-operated cranes with cab on bridge, a bridge brake is required as specified under subparagraph (4) of this paragraph.

(ii) On cab-operated cranes with cab on trolley, a bridge brake of the holding type shall be required.

(iii) On all floor, remote and pulpit-operated crane bridge drives, a brake or noncoasting mechanical drive shall be provided.

(g) *Electric equipment.*—(1) *General.* (i) Wiring and equipment shall comply with § 1910.309.

(ii) The control circuit voltage shall not exceed 600 volts for a.c. or d.c. current.

(iii) The voltage at pendant push-buttons shall not exceed 150 volts for a.c. and 300 volts for d.c.

(iv) Where multiple conductor cable is used with a suspended pushbutton station, the station must be supported in some satisfactory manner that will protect the electrical conductors against strain.

(v) Pendant control boxes shall be constructed to prevent electrical shock and shall be clearly marked for identification of functions.

(2) *Equipment.* (i) Electrical equipment shall be so located or enclosed that live parts will not be exposed to accidental contact under normal operating conditions.

(ii) Electric equipment shall be protected from dirt, grease, oil, and moisture.

(iii) Guards for live parts shall be substantial and so located that they cannot be accidently deformed so as to make contact with the live parts.

(3) *Controllers.* (i) Cranes not equipped with spring-return controllers or momentary contact pushbuttons shall be provided with a device which will disconnect all motors from the line on failure of power and will not permit any motor to be restarted until the controller handle is brought to the "off" position, or a reset switch or button is operated.

(ii) Lever operated controllers shall be provided with a notch or latch which in the "off" position prevents the handle from being inadvertently moved to the "on" position. An "off" detent or spring return arrangement is acceptable.

(iii) The controller operating handle shall be located within convenient reach of the operator.

(iv) As far as practicable, the movement of each controller handle shall be in the same general directions as the resultant movements of the load.

(v) The control for the bridge and trolley travel shall be so located that the operator can readily face the direction of travel.

(vi) For floor-operated cranes, the controller or controllers if rope operated, shall automatically return to the "off" position when released by the operator.

(vii) Pushbuttons in pendant stations shall return to the "off" position when pressure is released by the crane operator.

(viii) Automatic cranes shall be so designed that all motions shall fail-safe if any malfunction of operation occurs.

(ix) Remote-operated cranes shall function so that if the control signal for any crane motion becomes ineffective the crane motion shall stop.

(4) *Resistors.* (i) Enclosures for resistors shall have openings to provide adequate ventilation, and shall be installed to prevent the accumulation of combustible matter too near to hot parts.

(ii) Resistor units shall be supported so as to be as free as possible from vibration.

(iii) Provision shall be made to prevent broken parts or molten metal falling upon the operator or from the crane.

(5) *Switches.* (i) The power supply to the runway conductors shall be controlled by a switch or circuit breaker located on a fixed structure, accessible from the floor, and arranged to be locked in the open position.

(ii) On cab-operated cranes a switch or circuit breaker of the enclosed type, with provision for locking in the open position, shall be provided in the leads from the runway conductors. A means of opening this switch or circuit breaker shall be located within easy reach of the operator.

(iii) On floor-operated cranes, a switch or circuit breaker of the enclosed type, with provision for locking in the open position, shall be provided in the leads from the runway conductors. This disconnect shall be mounted on the bridge or footwalk near the runway collectors. One of the following types of floor-operated disconnects shall be provided:

(a) Nonconductive rope attached to the main disconnect switch.

(b) An undervoltage trip for the main circuit breaker operated by an emergency stop button in the pendant pushbutton in the pendant pushbutton station.

(c) A main line contactor operated by a switch or pushbutton in the pendant pushbutton station.

(iv) The hoisting motion of all electric traveling cranes shall be provided with an overtravel limit switch in the hoisting direction.

(v) All cranes using a lifting magnet shall have a magnet circuit switch of the enclosed type with provision for locking in the open position. Means for discharging the inductive load of the magnet shall be provided.

(6) *Runway conductors.* Conductors of the open type mounted on the crane runway beams or overhead shall be so located or so guarded that persons entering or leaving the cab or crane footwalk normally could not come into contact with them.

(7) *Extension lamps.* If a service receptacle is provided in the cab or on the bridge of cab-operated cranes, it shall be a grounded three-prong type permanent receptacle, not exceeding 300 volts.

(h) *Hoisting equipment.*—(1) *Sheaves.* (i) Sheave grooves shall be smooth and free from surface defects which could cause rope damage.

(ii) Sheaves carrying ropes which can be momentarily unloaded shall be provided with close-fitting guards or other suitable devices to guide the rope back into the groove when the load is applied again.

(iii) The sheaves in the bottom block shall be equipped with close-fitting guards that will prevent ropes from becoming fouled when the block is lying on the ground with ropes loose.

(iv) Pockets and flanges of sheaves used with hoist chains shall be of such dimensions that the chain does not catch or bind during operation.

(v) All running sheaves shall be equipped with means for lubrication. Permanently lubricated, sealed and/or shielded bearings meet this requirement.

(2) *Ropes.* (i) In using hoisting ropes, the crane manufacturer's recommendation shall be followed. The rated load divided by the number of parts of rope shall not exceed 20 percent of the nominal breaking strength of the rope.

(ii) Socketing shall be done in the manner specified by the manufacturer of the assembly.

(iii) Rope shall be secured to the drum as follows:

(a) No less than two wraps of rope shall remain on the drum when the hook is in its extreme low position.

(b) Rope end shall be anchored by a clamp securely attached to the drum, or by a socket arrangement approved by the crane or rope manufacturer.

(iv) Eye splices. [Reserved.]

(v) Rope clips attached with U-bolts shall have the U-bolts on the dead or short end of the rope. Spacing and number of all types of clips shall be in

accordance with the clip manufacturer's recommendation. Clips shall be drop-forged steel in all sizes manufactured commercially. When a newly installed rope has been in operation for an hour, all nuts on the clip bolts shall be retightened.

(vi) Swaged or compressed fittings shall be applied as recommended by the rope or crane manufacturer.

(vii) Wherever exposed to temperatures, at which fiber cores would be damaged, rope having an independent wire-rope or wire-strand core, or other temperature-damage resistant core shall be used.

(viii) Replacement rope shall be the same size, grade, and construction as the original rope furnished by the crane manufacturer, unless otherwise recommended by a wire rope manufacturer due to actual working condition requirements.

(3) *Equalizers.* If a load is supported by more than one part of rope, the tension in the parts shall be equalized.

(4) *Hooks.* Hooks shall meet the manufacturer's recommendations and shall not be overloaded.

(l) *Warning device.* Except for floor-operated cranes a gong or other effective warning signal shall be provided for each crane equipped with a power traveling mechanism.

(j) *Inspection*—(1) *Inspection classification.* (i) Initial inspection. Prior to initial use all new and altered cranes shall be inspected to insure compliance with the provisions of this section.

(ii) Inspection procedure for cranes in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the critical components of the crane and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as "frequent" and "periodic" with respective intervals between inspections as defined below:

(a) Frequent inspection—Daily to monthly intervals.

(b) Periodic inspection—1 to 12-month intervals.

(2) *Frequent inspection.* The following items shall be inspected for defects at intervals as defined in subparagraph (1)(ii) of this paragraph or as specifically indicated, including observation during operation for any defects which might appear between regular inspections. All deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:

(i) All functional operating mechanisms for maladjustment interfering with proper operation. Daily.

(ii) Deterioration or leakage in lines, tanks, valves, drain pumps, and other parts of air or hydraulic systems. Daily.

(iii) Hooks with deformation or cracks. Visual inspection daily; monthly inspection with signed reports. For hooks with cracks or having more than 15 percent in excess of normal throat opening or more than 10° twist from the plane of the unbent hook refer to paragraph (l)(3)(iii)(a) of this section.

(iv) Hoist chains, including end connections, for excessive wear, twist, distorted links interfering with proper function, or stretch beyond manufacturer's recommendations. Visual inspection daily; monthly inspection with signed report.

(v) [Reserved]

(vi) All functional operating mechanisms for excessive wear of components.

(vii) Rope reeving for noncompliance with manufacturer's recommendations.

(3) *Periodic inspection.* Complete inspections of the crane shall be performed at intervals as generally defined in subparagraph (1)(ii)(b) of this paragraph, depending upon its activity, severity of service, and environment, or as specifically indicated below. These inspections shall include the requirements of subparagraph (2) of this paragraph and in addition, the following items. Any deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:

(i) Deformed, cracked, or corroded members.

(ii) Loose bolts or rivets.

(iii) Cracked or worn sheaves and drums.

(iv) Worn, cracked or distorted parts such as pins, bearings, shafts, gears, rollers, locking and clamping devices.

(v) Excessive wear on brake system parts, linings, pawls, and ratchets.

(vi) Load, wind, and other indicators over their full range, for any significant inaccuracies.

(vii) Gasoline, diesel, electric, or other powerplants for improper performance or noncompliance with applicable safety requirements.

(viii) Excessive wear of chain drive sprockets and excessive chain stretch.

(ix) Crane hooks. Magnetic particle or other suitable crack detecting inspection should be performed at least once each year.

(x) Electrical apparatus for signs of pitting or any deterioration of controller contactors, limit switches and pushbutton stations.

(4) *Cranes not in regular use.* (i) A crane which has been idle for a period of 1 month or more, but less than 6 months, shall be given an inspection conforming with requirements of subparagraph (2) of this paragraph and paragraph (m)(2) of this section before placing in service.

(ii) A crane which has been idle for a period of over 6 months shall be given a complete inspection conforming with requirements of subparagraphs (2) and (3) of this paragraph and paragraph (m)(2) of this section before placing in service.

(iii) Standby cranes shall be inspected at least semi-annually in accordance with requirements of subparagraph (2) of this paragraph and paragraph (m)(2) of this section. Standby cranes exposed to adverse environment should be inspected more frequently.

(k) *Testing*—(1) *Operational tests.* (i) Prior to initial use all new and altered cranes shall be tested to insure compliance with this section including the following functions:

(a) Hoisting and lowering.

(b) Trolley travel.

(c) Bridge travel.

(d) Limit switches, locking and safety devices.

(ii) The trip setting of hoist limit switches shall be determined by tests with an empty hook traveling in increasing speeds up to the maximum speed. The actuating mechanism of the limit switch shall be located so that it will trip the switch, under all conditions, in sufficient time to prevent contact of the hook or hook block with any part of the trolley.

(2) *Rated load test.* Prior to initial use all new, extensively repaired, and altered cranes should be tested by or under the direction of an appointed or authorized person, confirming the load rating of the crane. The load rating should not be more than 80 percent of the maximum load sustained during the test. Test loads shall not be more than 125 percent of the rated load unless otherwise recommended by the manufacturer. The test reports shall be placed on file where readily available to appointed personnel.

(l) *Maintenance*—(1) *Preventive maintenance.* A preventive maintenance program based on the crane manufacturer's recommendations shall be established.

(2) *Maintenance procedure.* (i) Before adjustments and repairs are started on a crane the following precautions shall be taken:

(a) The crane to be repaired shall be run to a location where it will cause the least interference with other cranes and operations in the area.

(b) All controllers shall be at the off position.

(c) The main or emergency switch shall be open and locked in the open position.

(d) Warning or "out of order" signs shall be placed on the crane, also on the floor beneath or on the hook where visible from the floor.

(e) Where other cranes are in operation on the same runway, rail stops or other suitable means shall be provided to prevent interference with the idle crane.

(f) Where temporary protective rail stops are not available, or practical, a signalman should be placed at a visual vantage point for observing the approach of an active crane and warning its operator when reaching the limit of safe distance from the idle crane.

(ii) After adjustments and repairs have been made the crane shall not be operated until all guards have been reinstalled, safety devices reactivated and maintenance equipment removed.

(3) *Adjustments and repairs.* (i) Any unsafe conditions disclosed by the inspection requirements of paragraph (j) of this section shall be corrected before operation of the crane is resumed. Adjustments and repairs shall be done only by designated personnel.

(ii) Adjustments shall be maintained to assure correct functioning of components. The following are examples:

(a) All functional operating mechanisms.

(b) Limit switches.

(c) Control systems.

(d) Brakes.

(e) Power plants.

(iii) Repairs or replacements shall be provided promptly as needed for safe operation. The following are examples:

(a) Crane hooks showing defects described in paragraph (j)(2)(iii) of this section shall be discarded. Repairs by welding or reshaping are not generally recommended. If such repairs are attempted they shall only be done under competent supervision and the hook shall be tested to the load requirements of paragraph (k)(2) of this section before further use.

(b) Load attachment chains and rope slings showing defects described in paragraph (j)(2)(iv) and (v) of this section respectively.

(c) All critical parts which are cracked, broken, bent, or excessively worn.

(d) Pendant control stations shall be kept clean and function labels kept legible.

(m) *Rope inspection*—(1) *Running ropes.* A thorough inspection of all ropes shall be made at least once a month and a full written, dated, and signed report of rope condition kept on file where readily available to appointed personnel. Any deterioration, resulting in appreciable loss of original strength, such as described below, shall be carefully noted and determination made as to whether further use of the rope would constitute a safety hazard:

(i) Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.

(ii) A number of broken outside wires and the degree of distribution or concentration of such broken wires.

(iii) Worn outside wires.

(iv) Corroded or broken wires at end connections.

(v) Corroded, cracked, bent, worn, or improperly applied end connections.

(vi) Severe kinking, crushing, cutting, or unstranding.

(2) *Other ropes.* All rope which has been idle for a period of a month or more due to shutdown or storage of a crane on which it is installed shall be given a thorough inspection before it is placed in service. This inspection shall be for all types of deterioration and shall be performed by an appointed person whose approval shall be required for further use of the rope. A written and dated report of the rope condition shall be available for inspection.

(n) *Handling the load*—(1) *Size of load.* The crane shall not be loaded beyond its rated load except for test purposes as provided in paragraph (k) of this section.

(2) *Attaching the load.* (i) The hoist chain or hoist rope shall be free from kinks or twists and shall not be wrapped around the load.

(ii) The load shall be attached to the load block hook by means of slings or other approved devices.

(iii) Care shall be taken to make certain that the sling clears all obstacles.

(3) *Moving the load.* (i) The load shall be well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches.

(ii) Before starting to hoist the following conditions shall be noted:

(a) Hoist rope shall not be kinked.

(b) Multiple part lines shall not be twisted around each other.

(c) The hook shall be brought over the load in such a manner as to prevent swinging.

(iii) During hoisting care shall be taken that:

(a) There is no sudden acceleration or deceleration of the moving load.

(b) The load does not contact any obstructions.

(iv) Cranes shall not be used for side pulls except when specifically authorized by a responsible person who has determined that the stability of the crane is not thereby endangered and that various parts of the crane will not be overstressed.

(v) While any employee is on the load or hook, there shall be no hoisting, lowering, or traveling.

(vi) The employer shall require that the operator avoid carrying loads over people.

(vii) The operator shall test the brakes each time a load approaching the rated load is handled. The brakes shall be tested by raising the load a few inches and applying the brakes.

(viii) The load shall not be lowered below the point where less than two full wraps of rope remain on the hoisting drum.

(ix) When two or more cranes are used to lift a load one qualified responsible person shall be in charge of the operation. He shall analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and the movements to be made.

(x) The employer shall insure that the operator does not leave his position at the controls while the load is suspended or when the load or hook approaches near or over personnel, the warning signal shall be sounded.

(xi) When starting the bridge and when the load or hook approaches near or over personnel, the warning signal shall be sounded.

(4) *Hoist limit switch.* (i) At the beginning of each operator's shift, the upper limit switch of each hoist shall be tried out under no load. Extreme care shall be exercised; the block shall be "inched" into the limit or run in at slow speed. If the switch does not operate properly, the appointed person shall be immediately notified.

(ii) The hoist limit switch which controls the upper limit of travel of the load block shall never be used as an operating control.

(o) *Other requirements, general*—(1) *Ladders.* (i) The employer shall insure that hands are free from encumbrances while personnel are using ladders.

(ii) Articles which are too large to be carried in pockets or belts shall be lifted and lowered by hand line.

(2) *Cabs.* (i) Necessary clothing and personal belongings shall be stored in such a manner as not to interfere with access or operation.

(ii) Tools, oil cans, waste, extra fuses, and other necessary articles shall be stored in the tool box, and shall not be permitted to lie loose in or about the cab.

(3) *Fire extinguishers.* The employer shall insure that operators are familiar with the operation and care of fire extinguishers provided.

[39 FR 23502, June 27, 1974, as amended at 40 FR 27400, June 27, 1975]

EFFECTIVE DATE: Paragraph (j)(3)(iv) was revised and (j)(2)(v) was removed, effective July 27, 1975. For the convenience of the user the superseded and removed text follows:

(iv) Hoist or load attachment chains, including end connections, for excessive wear, twist, distorted links interfering with proper function, or stretch beyond manufacturer's recommendations. Visual inspection daily; monthly inspection with signed report.

(v) Rope slings, including end connections, for excessive wear, broken wires, stretch, kinking, or twisting. Visual inspection daily; monthly inspection with signed report.

§ 1910.180 Crawler locomotive and truck cranes.

(a) *Definitions applicable to this section.* (1) A "crawler crane" consists of a rotating superstructure with power plant, operating machinery, and boom, mounted on a base, equipped with crawler treads for travel. Its function is to hoist and swing loads at various radii.

(2) A "locomotive crane" consists of a rotating superstructure with powerplant, operating machinery and boom, mounted on a base or car equipped for travel on railroad track. It may be self-propelled or propelled by an outside source. Its function is to hoist and swing loads at various radii.

(3) A "truck crane" consists of a rotating superstructure with powerplant, operating machinery and boom, mounted on an automotive truck equipped with a powerplant for travel. Its function is to hoist and swing loads at various radii.

(4) A "wheel mounted crane" (wagon crane) consists of a rotating superstructure with powerplant, operating machinery and boom, mounted on a base or platform equipped with axles and rubber-tired wheels for travel. The base is usually propelled by the engine in the superstructure, but it may be equipped with a separate engine controlled from the superstructure. Its function is to hoist and swing loads at various radii.

(5) An "accessory" is a secondary part or assembly of parts which contributes to the overall function and usefulness of a machine.

(6) "Appointed" means assigned specific responsibilities by the employer or the employer's representative.

(7) "ANSI" means the American National Standards Institute.

(8) An "angle indicator" (boom) is an accessory which measures the angle of the boom to the horizontal.

(9) The "axis of rotation" is the vertical axis around which the crane superstructure rotates.

(10) "Axle" means the shaft or spindle with which or about which a wheel rotates. On truck- and wheel-mounted cranes it refers to an automotive type of axle assembly including housings, gearing, differential, bearings, and mounting appurtenances.

(11) "Axle" (bogie) means two or more automotive-type axles mounted in tandem in a frame so as to divide the load between the axles and permit vertical oscillation of the wheels.

(12) The "base" (mounting) is the traveling base or carrier on which the rotating superstructure is mounted such as a car, truck, crawlers, or wheel platform.

(13) The "boom" (crane) is a member hinged to the front of the rotating superstructure with the outer end supported by ropes leading to a gantry or A-frame and used for supporting the hoisting tackle.

(14) The "boom angle" is the angle between the longitudinal centerline of the boom and the horizontal. The boom longitudinal centerline is a straight line between the boom foot pin (heel pin) centerline and boom point sheave pin centerline.

(15) The "boom hoist" is a hoist drum and rope reeving system used to raise and lower the boom. The rope system may be all live reeving or a combination of live reeving and pendants.

(16) The "boom stop" is a device used to limit the angle of the boom at the highest position.

(17) A "brake" is a device used for retarding or stopping motion by friction or power means.

(18) A "cab" is a housing which covers the rotating superstructure machinery and/or operator's station. On truck-crane trucks a separate cab covers the driver's station.

(19) The "clutch" is a friction, electromagnetic, hydraulic, pneumatic, or positive mechanical device for engagement or disengagement of power.

(20) The "counterweight" is a weight used to supplement the weight of the machine in providing stability for lifting working loads.

(21) "Designated" means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.

(22) The "drum" is the cylindrical members around which ropes are wound for raising and lowering the load or boom.

(23) "Dynamic" (loading) means loads introduced into the machine or its components by forces in motion.

(24) The "gantry" (A-frame) is a structural frame, extending above the superstructure, to which the boom support ropes are reeved.

(25) A "jib" is an extension attached to the boom point to provide added boom length for lifting specified loads. The jib may be in line with the boom or offset to various angles.

(26) "Load" (working) means the external load, in pounds, applied to the crane, including the weight of load-attaching equipment such as load blocks, shackles, and slings.

(27) "Load block" (upper) means the assembly of hook or shackle, swivel, sheaves, pins, and frame suspended from the boom point.

(28) "Load block" (lower) means the assembly of hook or shackle, swivel, sheaves, pins, and frame suspended by the hoisting ropes.

(29) A "load hoist" is a hoist drum and rope reeving system used for hoisting and lowering loads.

(30) "Load ratings" are crane ratings in pounds established by the manufacturer in accordance with paragraph (c) of this section.

(31) "Outriggers" are extendable or fixed metal arms, attached to the mounting base, which rest on supports at the outer ends.

(32) "Rail clamp" means a tong-like metal device, mounted on a locomotive crane car, which can be connected to the track.

(33) "Reeving" means a rope system in which the rope travels around drums and sheaves.

(34) "Rope" refers to a wire rope unless otherwise specified.

(35) "Side loading" means a load applied at an angle to the vertical plane of the boom.

(36) A "standby crane" is a crane which is not in regular service but which is used occasionally or intermittently as required.

(37) A "standing (guy) rope" is a supporting rope which maintains a constant distance between the points of attachment to the two components connected by the rope.

(38) "Structural competence" means the ability of the machine and its components to withstand the stresses imposed by applied loads.

(39) "Superstructure" means the rotating upper frame structure of the machine and the operating machinery mounted thereon.

(40) "Swing" means the rotation of the superstructure for movement of loads in a horizontal direction about the axis of rotation.

(41) "Swing mechanism" means the machinery involved in providing rotation of the superstructure.

(42) "Tackle" is an assembly of ropes and sheaves arranged for hoisting and pulling.

(43) "Transit" means the moving or transporting of a crane from one jobsite to another.

(44) "Travel" means the function of the machine moving from one location to another, on a jobsite.

(45) The "travel mechanism" is the machinery involved in providing travel.

(46) "Wheelbase" means the distance between centers of front and rear axles. For a multiple axle assembly the axle center for wheelbase measurement is taken as the midpoint of the assembly.

(47) The "whipline" (auxiliary hoist) is a separate hoist rope system of lighter load capacity and higher speed than provided by the main hoist.

(48) A "winch head" is a power driven spool for handling of loads by means of friction between fiber or wire rope and spool.

(b) *General requirements*—(1) *Application.* This section applies to crawler cranes, locomotive cranes, wheel mounted cranes of both truck and self-propelled wheel type, and any variations thereof which retain the same fundamental characteristics. This section includes only cranes of the above types, which are basically powered by internal combustion engines or electric motors and which utilize drums and ropes. Cranes designed for railway and automobile wreck clearances are excepted. The requirements of this section are applicable only to machines when used as lifting cranes.

(2) *New and existing equipment.* All new crawler, locomotive, and truck cranes constructed and utilized on or after August 31, 1971, shall meet the design specifications of the American National Standard Safety Code for Crawler, Locomotive, and Truck Cranes, ANSI B30.5–1968. Crawler, locomotive, and truck cranes constructed prior to August 31, 1971, should be modified to conform to those design specifications by February 15, 1972, unless it can be shown that the crane cannot feasibly or economically be altered and that the crane substantially complies with the requirements of this section.

(3) *Designated personnel.*—Only designated personnel shall be permitted to operate a crane covered by this section.

(c) *Load ratings*—(1) *Load ratings—where stability governs lifting performance.* (i) The margin of stability for determination of load ratings, with booms of stipulated lengths at stipulated working radii for the various types of crane mountings, is established by taking a percentage of the loads which will produce a condition of tipping or balance with the boom in the least stable direction, relative to the mounting. The load ratings shall not exceed the following percentages for cranes, with the indicated types of mounting under conditions stipulated in subdivisions (ii) and (iii) of this subparagraph.

Type of crane mounting	Maximum load ratings (percent of tipping loads)
Locomotive, without outriggers:	
Booms 60 feet or less	85
Booms over 60 feet	[1] 85
Locomotive, using outriggers fully extended	80
Crawler, without outriggers	75
Crawler using outriggers fully extended	85
Truck and wheel mounted without outriggers or using outriggers fully extended	85

[1] Unless this results in less than 30,000 pound-feet net stabilizing moment about the rail, which shall be minimum with such booms.

(ii) The following stipulations shall govern the application of the values in subdivision (i) of this subparagraph for locomotive cranes:

(a) Tipping with or without the use of outriggers occurs when half of the wheels farthest from the load leave the rail.

(b) The crane shall be standing on track which is level within 1 percent grade.

(c) Radius of the load is the horizontal distance from a projection of the axis of rotation to the rail support surface, before loading, to the center of vertical hoist line or tackle with load applied.

(d) Tipping loads from which ratings are determined shall be applied under static conditions only, i.e., without dynamic effect of hoisting, lowering, or swinging.

(e) The weight of all auxiliary handling devices such as hoist blocks, hooks, and slings shall be considered a part of the load rating.

(iii) Stipulations governing the application of the values in subdivision (i) of this subparagraph for crawler, truck, and wheel-mounted cranes shall be in accordance with Crane Load-Stability Test Code, Society of Automotive Engineers (SAE) J765.

(iv) The effectiveness of these preceding stability factors will be influenced by such additional factors as freely suspended loads, track, wind, or ground conditions, condition and inflation of rubber tires, boom lengths, proper operating speeds for existing conditions, and, in general, careful and competent operation. All of these shall be taken into account by the user.

(2) *Load rating chart.* A substantial and durable rating chart with clearly legible letters and figures shall be provided with each crane and securely fixed to the crane cab in a location easily visible to the operator while seated at his control station.

(d) *Inspection classification*—(1) *Initial inspection.* Prior to initial use all new and altered cranes shall be inspected to insure compliance with provisions of this section.

(2) *Regular inspection.* Inspection procedure for cranes in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the critical components of the crane and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as "frequent" and "periodic", with respective intervals between inspections as defined below:

(i) Frequent inspection: Daily to monthly intervals.

(ii) Periodic inspection: 1- to 12-month intervals, or as specifically recommended by the manufacturer.

(3) *Frequent inspection.* Items such as the following shall be inspected for defects at intervals as defined in subdivision (2) (i) of this subparagraph or as specifically indicated including observation during operation for any defects which might appear between regular inspections. Any deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:

(i) All control mechanisms for maladjustment interfering with proper operation: Daily.

(ii) All control mechanisms for excessive wear of components and contamination by lubricants or other foreign matter.

(iii) All safety devices for malfunction.

(iv) Deterioration or leakage in air or hydraulic systems: Daily.

(v) Crane hooks with deformations or cracks. For hooks with cracks or having more than 15 percent in excess of normal throat opening or more than 10° twist from the plane of the unbent hook.

(vi) Rope reeving for noncompliance with manufacturer's recommendations.

(vii) Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation.

(4) *Periodic inspection.* Complete inspections of the crane shall be performed at intervals as generally defined in subparagraph (2) (ii) of this paragraph depending upon its activity, severity of service, and environment, or as specifically indicated below. These inspections shall include the requirements of subparagraph (3) of this paragraph and in addition, items such as the following. Any deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:

(i) Deformed, cracked, or corroded members in the crane structure and boom.

(ii) Loose bolts or rivets.

(iii) Cracked or worn sheaves and drums.

(iv) Worn, cracked, or distorted parts such as pins, bearings, shafts, gears, rollers and locking devices.

(v) Excessive wear on brake and clutch system parts, linings, pawls, and ratchets.

(vi) Load, boom angle, and other indicators over their full range, for any significant inaccuracies.

(vii) Gasoline, diesel, electric, or other power plants for improper performance or noncompliance with safety requirements.

(viii) Excessive wear of chain-drive sprockets and excessive chain stretch.

(ix) Travel steering, braking, and locking devices, for malfunction.

(x) Excessively worn or damaged tires.

(5) *Cranes not in regular use.* (i) A crane which has been idle for a period of one month or more, but less than 6 months, shall be given an inspection conforming with requirements of subparagraph (3) of this paragraph and paragraph (g) (2) (ii) of this section before placing in service.

(ii) A crane which has been idle for a period of six months shall be given a complete inspection conforming with requirements of subparagraphs (3) and (4) of this paragraph and paragraph (g) (2) (ii) of this section before placing in service.

(iii) Standby cranes shall be inspected at least semiannually in accordance with requirements of subparagraph (3) of this paragraph and paragraph (g) (2) (ii) of this section. Such cranes which are exposed to adverse environment should be inspected more frequently.

(6) *Inspection records.* Written, dated, and signed inspection reports and records shall be made monthly on critical items in use such as brakes, crane hooks, and ropes. Records shall be kept readily available.

(e) *Testing*—(1) *Operational tests.* (i) In addition to prototype tests and quality-control measures, each new production crane shall be tested by the manufacturer to the extent necessary to insure compliance with the operational requirements of this paragraph including functions such as the following:

(a) Load hoisting and lowering mechanisms.

(b) Boom hoisting and lower mechanisms.

(c) Swinging mechanism.

(d) Travel mechanism.

(e) Safety devices.

(ii) Where the complete production crane is not supplied by one manufacturer such tests shall be conducted at final assembly.

(iii) Certified production-crane test results shall be made available.

(2) *Rated load test.* (i) Written reports shall be available showing test procedures and confirming the adequacy of repairs or alterations.

(ii) Test loads shall not exceed 110 percent of the rated load at any selected working radius.

(iii) Where rerating is necessary:

(a) Crawler, truck, and wheel-mounted cranes shall be tested in accordance with SAE Recommended Practice, Crane Load Stability Test Code J765 (April 1961)

(b) Locomotive cranes shall be tested in accordance with paragraph (c) (1) (i) and (ii) of this section.

(c) Rerating test report shall be readily available.

(iv) No cranes shall be rerated in excess of the original load ratings unless such rating changes are approved by the crane manufacturer or final assembler.

(f) *Maintenance procedure—General.* After adjustments and repairs have been made the crane shall not be operated until all guards have been reinstalled, safety devices reactivated, and maintenance equipment removed.

(g) *Rope inspection*—(1) *Running ropes.* A thorough inspection of all ropes in use shall be made at least once a month and a full written, dated, and signed report of rope condition kept on file where readily available. All inspections shall be performed by an appointed or authorized person. Any deterioration, resulting in appreciable loss of original strength, such as described below, shall be carefully noted and determination made as to whether further use of the rope would constitute a safety hazard:

(i) Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.

(ii) A number of broken outside wires and the degree of distribution of concentration of such broken wires.

(iii) Worn outside wires.

(iv) Corroded or broken wires at end connections.

(v) Corroded, cracked, bent, worn, or improperly applied end connections.

(vi) Severe kinking, crushing, cutting, or unstranding.

(2) *Other ropes.* (i) Heavy wear and/or broken wires may occur in sections in contact with equalizer sheaves or other sheaves where rope travel is limited, or with saddles. Particular care shall be taken to inspect ropes at these locations.

(ii) All rope which has been idle for a period of a month or more due to shut down or storage of a crane on which it is installed shall be given a thorough inspection before it is placed in service. This inspection shall be for all types of deterioration and shall be performed by an appointed or authorized person whose approval shall be required for further use of the rope. A written and dated report of the rope condition shall be available.

(iii) Particular care shall be taken in the inspection of nonrotating rope.

(h) *Handling the load*—(1) *Size of load.* (i) No crane shall be loaded beyond the rated load, except for test purposes as provided in paragraph (e) of this section.

(ii) When loads which are limited by structural competence rather than by stability are to be handled, it shall be ascertained that the weight of the load has been determined within plus or minus 10 percent before it is lifted.

(2) *Attaching the load.* (i) The hoist rope shall not be wrapped around the load.

(ii) The load shall be attached to the hook by means of slings or other approved devices.

(3) *Moving the load.* (i) The employer shall assure that:

(a) The crane is level and where necessary blocked properly.

(b) The load is well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches.

(ii) Before starting to hoist, the following conditions shall be noted:

(a) Hoist rope shall not be kinked.

(b) Multiple part lines shall not be twisted around each other.

(c) The hook shall be brought over the load in such a manner as to prevent swinging.

(d) If there is a slack rope condition, it should be determined that the rope is properly seated on the drum and in the sheaves.

(iii) During hoisting care shall be taken that:

(a) There is no sudden acceleration or deceleration of the moving load.

(b) The load does not contact any obstructions.

(iv) Side loading of booms shall be limited to freely suspended loads. Cranes shall not be used for dragging loads sideways.

(v) No hoisting, lowering, swinging, or traveling shall be done while anyone is on the load or hook.

(vi) The operator should avoid carrying loads over people.

(vii) On truck-mounted cranes, no loads shall be lifted over the front area except as approved by the crane manufacturer.

(viii) The operator shall test the brakes each time a load approaching the rated load is handled by raising it a few inches and applying the brakes.

(ix) Outriggers shall be used when the load to be handled at that particular radius exceeds the rated load without outriggers as given by the manufacturer for that crane. Where floats are used they shall be securely attached to the outriggers. Wood blocks used to support outriggers shall:

(a) Be strong enough to prevent crushing.

(b) Be free from defects.

(c) Be of sufficient width and length to prevent shifting or toppling under load.

(x) Neither the load nor the boom shall be lowered below the point where less than two full wraps of rope remain on their respective drums.

(xi) Before lifting loads with locomotive cranes without using outriggers, means shall be applied to prevent the load from being carried by the truck springs.

(xii) When two or more cranes are used to lift one load, one designated person shall be responsible for the operation. He shall be required to analyze the operation and instruct all personnel involved in the proper positioning, riggins of the load, and the movements to be made.

(xiii) In transit the following additional precautions shall be exercised:

(a) The boom shall be carried in line with the direction of motion.

(b) The superstructure shall be secured against rotation, except when negotiating turns when there is an operator in the cab or the boom is supported on a dolly.

(c) The empty hook shall be lashed or otherwise restrained so that it cannot swing freely.

(xiv) Before traveling a crane with load, a designated person shall be responsible for determining and controlling safety. Decisions such as position of load, boom location, ground support, travel route, and speed of movement shall be in accord with his determinations.

(xv) A crane with or without load shall not be traveled with the boom so high that it may bounce back over the cab.

(xvi) When rotating the crane, sudden starts and stops shall be avoided. Rotational speed shall be such that the load does not swing out beyond the radii at which it can be controlled. A tag or restraint line shall be used when rotation of the load is hazardous.

(xvii) When a crane is to be operated at a fixed radius, the boom-hoist pawl or other positive locking device shall be engaged.

(xviii) Ropes shall not be handled on a winch head without the knowledge of the operator.

(xix) While a winch head is being used, the operator shall be within convenient reach of the power unit control lever.

(4) *Holding the load.* (i) The operator shall not be permitted to leave his position at the controls while the load is suspended.

(ii) No person should be permitted to stand or pass under a load on the hook.

(iii) If the load must remain suspended for any considerable length of time, the operator shall hold the drum from rotating in the lowering direction by activating the positive controllable means of the operator's station.

(i) *Other requirements*—(1) *Rail clamps.* Rail clamps shall not be used as a means of restraining tipping of a locomotive crane.

(2) *Ballast or counterweight.* Cranes shall not be operated without the full amount of any ballast or counterweight in place as specified by the maker, but truck cranes that have dropped the ballast or counterweight may be operated temporarily with special care and only for light loads without full ballast or counterweight in place. The ballast or counterweight in place specified by the manufacturer shall not be exceeded.

(3) *Cabs.* (i) Necessary clothing and personal belongings shall be stored in such a manner as to not interfere with access or operation.

(ii) Tools, oil cans, waste, extra fuses, and other necessary articles shall be stored in the tool box, and shall not be permitted to lie loose in or about the cab.

(4) *Refueling.* (i) Refueling with small portable containers shall be done with Underwriters' Laboratories or Factory Mutual Laboratories approved, or equivalent, safety type can equipped with an automatic closing cap and flame arrester.

(ii) Machines shall not be refueled with the engine running.

(5) *Fire extinguishers.* (i) A carbon dioxide, dry chemical, or equivalent fire extinguisher shall be kept in the cab or vicinity of the crane.

(ii) Operating and maintenance personnel shall be made familiar with the use and care of the fire extinguishers provided.

(6) *Swinging locomotive cranes.* A locomotive crane shall not be swung into a position where railway cars on an adjacent track might strike it, until it has been ascertained that cars are not being moved on the adjacent track and proper flag protection has been established.

(j) *Operating near electric power lines*—(1) *Clearances.* Except where the electrical distribution and transmission lines have been deenergized and visibly grounded at point of work or where insulating barriers not a part of or an attachment to the crane have been erected to prevent physical contact with the lines, cranes shall be operated proximate to, under, over, by, or near powerlines only in accordance with the following:

(i) For lines rated 50 kv. or below, minimum clearance between the lines and any part of the crane or load shall be 10 feet.

(ii) For lines rated over 50 kv. minimum, clearance between the lines and any part of the crane or load shall be 10 feet plus 0.4 inch for each 1 kv. over 50 kv., or twice the length of the line insulator but never less than 10 feet.

(iii) In transit with no load and boom lowered the clearance shall be a minimum of 4 feet.

(2) *Boom guards.* Cage-type boom guards, insulating links, or proximity warning devices may be used on cranes, but the use of such devices shall not operate to alter the requirements of subparagraph (1) of this paragraph.

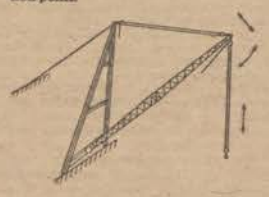
(3) *Notification.* Before the commencement of operations near electrical lines, the owners of the lines or their authorized representative shall be notified and provided with all pertinent information. The cooperation of the owner shall be requested.

(4) *Overhead wires.* Any overhead wire shall be considered to be an energized line unless and until the person owning such line or the electrical utility authorities indicate that it is not an energized line.

§ 1910.181 Derricks.

(a) *Definitions applicable to this section.* (1) A "derrick" is an apparatus consisting of a mast or equivalent member held at the head by guys or braces, with or without a boom, for use with a hoisting mechanism and operating ropes.

(2) "A-frame derrick" means a derrick in which the boom is hinged from a cross member between the bottom ends of two upright members spread apart at the lower ends and joined at the top; the boom point secured to the junction of the side members, and the side members are braced or guyed from this junction point.

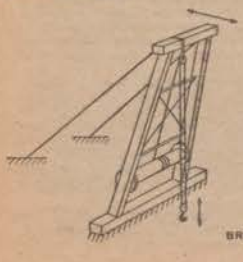


A-FRAME

(3) A "basket derrick" is a derrick without a boom, similar to a gin pole, with its base supported by ropes attached to corner posts or other parts of the structure. The base is at a lower elevation than its supports. The location of the base of a basket derrick can be changed by varying the length of the rope supports. The top of the pole is secured with multiple reeved guys to position the top of the pole to the desired location by varying the length of the upper guy lines. The load is raised and lowered by ropes through a sheave or block secured to the top of the pole.

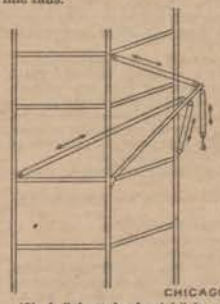
BASKET

(4) "Breast derrick" means a derrick without boom. The mast consists of two side members spread farther apart at the base than at the top and tied together at top and bottom by rigid members. The mast is prevented from tipping forward by guys connected to its top. The load is raised and lowered by ropes through a sheave or block secured to the top crosspiece.



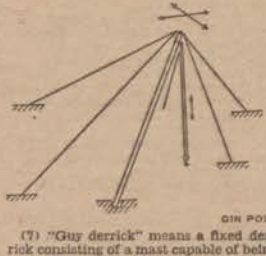
BREAST

(5) "Chicago boom derrick" means a boom which is attached to a structure, an outside upright member of the structure serving as the mast, and the boom being stepped in a fixed socket clamped to the upright. The derrick is complete with load, boom, and boom point swing line falls.



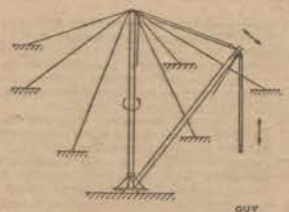
CHICAGO BOOM

(6) A "gin pole derrick" is a derrick without a boom. Its guys are so arranged from its top as to permit leaning the mast in any direction. The load is raised and lowered by ropes reeved through sheaves or blocks at the top of the mast.



GIN POLE

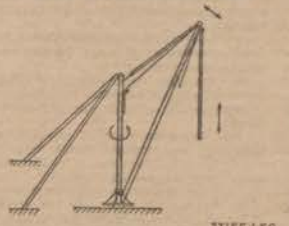
(7) "Guy derrick" means a fixed derrick consisting of a mast capable of being rotated, supported in a vertical position by guys, and a boom whose bottom end is hinged or pivoted to move in a vertical plane with a reeved rope between the head of the mast and the boom point for raising and lowering the boom, and a reeved rope from the boom point for raising and lowering the load.



GUY

(8) "Shearleg derrick" means a derrick without a boom and similar to a breast derrick. The mast, wide at the bottom and narrow at the top, is hinged at the bottom and has its top secured by a multiple reeved guy to permit handling loads at various radii by means of load tackle suspended from the mast top.

(9) A "stiffleg derrick" is a derrick similar to a guy derrick except that the mast is supported or held in place by two or more stiff members, called stiffegs, which are capable of resisting either tensile or compressive forces. Sills are generally provided to connect the lower ends of the stiffegs to the foot of the mast.



STIFF LEG

(10) "Appointed" means assigned specific responsibilities by the employer or the employer's representative.

(11) "ANSI" means the American National Standards Institute.

(12) A boom is a timber or metal section or strut, pivoted or hinged at the heel (lower end) at a location fixed in height on a frame or mast or vertical member, and with its point (upper end) supported by chains, ropes, or rods to the upper end of the frame, mast, or vertical member. A rope for raising and lowering the load is reeved through sheaves or a block at the boom point. The length of the boom shall be taken as the straight line distance between the axis of the foot pin and the axis of the boom point sheave pin, or where used, the axis of the upper load block attachment pin.

(13) "Boom harness" means the block and sheave arrangement on the boom point to which the topping lift cable is reeved for lowering and raising the boom.

(14) The "boom point" is the outward end of the top section of the boom.

(15) "Derrick bullwheel" means a horizontal ring or wheel, fastened to the foot of a derrick, for the purpose of turning the derrick by means of ropes leading from this wheel to a powered drum.

(16) "Designated" means selected or assigned by the employer or employer's representative as being qualified to perform specific duties.

(17) "Eye" means a loop formed at the end of a rope by securing the dead end to the live end at the base of the loop.

(18) A "fiddle block" is a block consisting of two sheaves in the same plane held in place by the same cheek plates.

(19) The "foot bearing" or "foot block" (sill block) is the lower support on which the mast rotates.

(20) A "gudgeon pin" is a pin connecting the mast cap to the mast allowing rotation of the mast.

(21) A "guy" is a rope used to steady or secure the mast or other member in the desired position.

(22) "Load, working" means the external load, in pounds, applied to the derrick, including the weight of load attaching equipment such as load blocks, shackles, and slings.

(23) "Load block, lower" means the assembly of sheaves, pins, and frame suspended by the hoisting rope.

(24) "Load block, upper" means the assembly of sheaves, pins, and frame suspended from the boom.

(25) "Mast" means the upright member of the derrick.

(26) "Mast cap (spider)" means the fitting at the top of the mast to which the guys are connected.

(27) "Reeving" means a rope system in which the rope travels around drums and sheaves.

(28) "Rope" refers to wire rope unless otherwise specified.

(29) "Safety Hook" means a hook with a latch to prevent slings or load from accidentally slipping off the hook.

(30) "Side loading" is a load applied at an angle to the vertical plane of the boom.

(31) The "sill" is a member connecting the foot block and stiffleg or a member connecting the lower ends of a double member mast.

(32) A "standby derrick" is a derrick not in regular service which is used occasionally or intermittently as required.

(33) "Stiffleg" means a rigid member supporting the mast at the head.

(34) "Swing" means rotation of the mast and/or boom for movements of loads in a horizontal direction about the axis of rotation.

(b) *General requirements*—(1) *Application.* This section applies to guy, stiffleg, basket, breast, gin pole, Chicago boom and A-frame derricks of the stationary type, capable of handling loads at variable reaches and powered by hoists through systems of rope reeving, used to perform lifting hook work, single or multiple line bucket work, grab, grapple, and magnet work. Derricks may be permanently installed for temporary use as in construction work. The requirements of this section also apply to any modification of these types which retain their fundamental features, except for floating derricks.

(2) *New and existing equipment.* All new derricks constructed and installed on or after August 31, 1971, shall meet the design specifications of the American National Standard Safety Code for Derricks, ANSI B30.6–1969. Derricks constructed prior to August 31, 1971, should be modified to conform to those design specifications by February 15, 1972, unless it can be shown that the derrick cannot feasibly or economically be altered and that the derrick substantially complies with the requirements of this section.

(3) *Designated personnel.*—Only designated personnel shall be permitted to operate a derrick covered by this section.

(c) *Load ratings*—(1) *Rated load marking.* For permanently installed derricks with fixed lengths of boom, guy, and mast, a substantial, durable, and clearly legible rating chart shall be provided with each derrick and securely affixed where it is visible to personnel responsible for the safe operation of the equipment. The chart shall include the following data:

(i) Manufacturer's approved load ratings at corresponding ranges of boom angle or operating radii.

(ii) Specific lengths of components on which the load ratings are based.

(iii) Required parts for hoist reeving. Size and construction of rope may be shown either on the rating chart or in the operating manual.

(2) *Nonpermanent installations.* For nonpermanent installations, the manufacturer shall provide sufficient information from which capacity charts can be prepared for the particular installation. The capacity charts shall be located at the derricks or the jobsite office.

(d) *Inspection*—(1) *Inspection classification.* (i) Prior to initial use all new and altered derricks shall be inspected to insure compliance with the provisions of this section.

(ii) Inspection procedure for derricks in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the critical components of the derrick and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as frequent and periodic with respective intervals between inspections as defined below:

(a) Frequent inspection—Daily to monthly intervals.

(b) Periodic inspection—1- to 12-month intervals, or as specified by the manufacturer.

(2) *Frequent inspection.* Items such as the following shall be inspected for defects at intervals as defined in subparagraph (1) (ii) (a) of this paragraph or as specifically indicated, including observation during operation for any defects which might appear between regular inspections. Deficiencies shall be carefully examined for any safety hazard:

(i) All control mechanisms: Inspect daily for adjustment, wear, and lubrication.

(ii) All chords and lacing: Inspect daily, visually.

(iii) Tension in guys: Daily.

(iv) Plumb of the mast.

(v) Deterioration or leakage in air or hydraulic systems: Daily.

(vi) Derrick hooks for deformations or cracks; for hooks with cracks or having more than 15 percent in excess of normal throat opening or more than 10° twist from the plane of the unbent hook, refer to paragraph (e) (3) (iii) of this section.

(vii) Rope reeving: visual inspection for noncompliance with derrick manufacturer's recommendations.

(viii) Hoist brakes, clutches, and operating levers: check daily for proper functioning before beginning operations.

(ix) Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation.

(3) *Periodic inspection.* (i) Complete inspections of the derrick shall be performed at intervals as generally defined in subparagraph (1) (ii) (b) of this paragraph depending upon its activity, severity of service, and environment, or as specifically indicated below. These inspections shall include the requirements of subparagraph (2) of this paragraph and in addition, items such as the following. Deficiencies shall be carefully examined and a determination made as to whether they constitute a safety hazard:

(a) Structural members for deformations, cracks, and corrosion.

(b) Bolts or rivets for tightness.

(c) Parts such as pins, bearings, shafts, gears, sheaves, drums, rollers, locking and clamping devices, for wear, cracks, and distortion.

(d) Gudgeon pin for cracks, wear, and distortion each time the derrick is to be erected.

(e) Powerplants for proper performance and compliance with applicable safety requirements.

(f) Hooks: should be magnetic particle or other suitable crack detecting inspection should be performed at least once each year.

(ii) Foundation or supports shall be inspected for continued ability to sustain the imposed loads.

(4) *Derricks not in regular use.* (i) A derrick which has been idle for a period of 1 month or more, but less than 6 months, shall be given an inspection conforming with requirements of subparagraph (3) of this paragraph and paragraph (g) (3) of this section before placing in service.

(ii) A derrick which has been idle for a period of over 6 months shall be given a complete inspection conforming with requirements of subparagraphs (2) and (3) of this paragraph and paragraph (g) (3) of this section before placing in service.

(iii) Standby derricks shall be inspected at least semiannually in accordance with requirements of subparagraph (2) of this paragraph and paragraph (g) (3) of this section. Those exposed to adverse environment should be inspected more frequently.

(e) *Testing*—(1) *Operational tests.* Prior to initial use all new and altered derricks shall be tested to insure compliance with this section including the following functions:

(i) Load hoisting and lowering.

(ii) Boom up and down.

(iii) Swing.

(iv) Operation of clutches and brakes of hoist.

(2) *Anchorages.* All anchorages shall be approved by the appointed person. Rock and hairpin anchorages may require special testing.

(f) *Maintenance*—(1) *Preventive maintenance.* A preventive maintenance program based on the derrick manufacturer's recommendations shall be established.

(2) *Maintenance procedure.* (i) Before adjustments and repairs are started on a derrick the following precautions shall be taken:

(a) The derrick to be repaired shall be arranged so it will cause the least interference with other equipment and operations in the area.

(b) All hoist drum dogs shall be engaged.

(c) The main or emergency switch shall be locked in the open position, if an electric hoist is used.

(d) Warning or out of order signs shall be placed on the derrick and hoist.

(e) The repairs of booms of derricks shall either be made when the booms are lowered and adequately supported or safely tied off.

(f) A good communication system shall be set up between the hoist operator and the appointed individual in charge of derrick operations before any work on the equipment is started.

(g) Welding repairs shall be approved by an appointed person.

(ii) After adjustments and repairs have been made the derrick shall not be operated until all guards have been reinstalled, safety devices reactivated, and maintenance equipment removed.

(3) *Adjustments and repairs.* (i) Any unsafe conditions disclosed by inspection shall be corrected before operation of the derrick is resumed.

(ii) Adjustments shall be maintained to assure correct functioning of components.

(iii) Repairs or replacements shall be provided promptly as needed for safe operation. The following are examples of conditions requiring prompt repair or replacement:

(a) Hooks showing defects described in paragraph (d) (2) (vi) of this section shall be discarded.

(b) All critical parts which are cracked, broken, bent, or excessively worn.

(c) Pitted or burned electrical contacts should be corrected only by replacement and in sets. Controller parts should be lubricated as recommended by the manufacturer.

(d) All replacement and repaired parts shall have at least the original safety factor.

(g) *Rope inspection*—(1) *Running ropes.* A thorough inspection of all ropes in use shall be made at least once a month and a full written, dated, and signed report of rope condition kept on file where readily available. Any deterioration, resulting in appreciable loss of original strength, such as described below, shall be carefully noted and determination made as to whether further use of the rope would constitute a safety hazard:

(i) Reduction of rope diameter below nominal diameter due to loss of core support, internal or external corrosion, or wear of outside wires.

(ii) A number of broken outside wires and the degree of distribution or concentration of such broken wires.

(iii) Worn outside wires.

(iv) Corroded or broken wires at end connections.

(v) Corroded, cracked, bent, worn, or improperly applied end connections.

(vi) Severe kinking, crushing, cutting, or unstranding.

(2) *Limited travel ropes.* Heavy wear and/or broken wires may occur in sections in contact with equalizer sheaves or other sheaves where rope travel is limited, or with saddles. Particular care shall be taken to inspect ropes at these locations.

(3) *Idle ropes.* All rope which has been idle for a period of a month or more due to shutdown or storage of a derrick on which it is installed shall be given a thorough inspection before it is placed in service. This inspection shall be for all types of deterioration. A written and dated report of the rope condition shall be available.

(4) *Nonrotating ropes.* Particular care shall be taken in the inspection of nonrotating rope.

(h) *Operations of derricks.* Derrick operations shall be directed only by the individual specifically designated for that purpose.

(i) *Handling the load*—(1) *Size of load.* (i) No derrick shall be loaded beyond the rated load.

(ii) When loads approach the maximum rating of the derrick, it shall be ascertained that the weight of the load has been determined within plus or minus 10 percent before it is lifted.

(2) *Attaching the load.* (i) The hoist rope shall not be wrapped around the load.

(ii) The load shall be attached to the hook by means of slings or other suitable devices.

(3) *Moving the load.* (i) The load shall be well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches.

(ii) Before starting to hoist, the following conditions shall be noted:

(a) Hoist rope shall not be kinked.

(b) Multiple part lines shall not be twisted around each other.

(c) The hook shall be brought over the load in such a manner as to prevent swinging.

(d) If there is a slack rope condition, it should be determined that the rope is properly seated on the drum and in the sheaves.

(iii) During hoisting, care shall be taken that:

(a) There is no sudden acceleration or deceleration of the moving load.

(b) Load does not contact any obstructions.

(iv) A derrick shall not be used for side loading except when specifically authorized by a responsible person who has determined that the various structural components will not be overstressed.

(v) No hoisting, lowering, or swinging shall be done while anyone is on the load or hook.

(vi) The operator should avoid carrying loads over people.

(vii) The operator shall test the brakes each time a load approaching the rated load is handled by raising it a few inches and applying the brakes.

(viii) Neither the load nor boom shall be lowered below the point where less than two full wraps of rope remain on their respective drums.

(ix) When rotating a derrick, sudden starts and stops shall be avoided. Rotational speed shall be such that the load does not swing out beyond the radius at which it can be controlled.

(x) Boom and hoisting rope systems shall not be twisted.

(4) *Holding the load.* (i) The operator shall not be allowed to leave his position at the controls while the load is suspended.

(ii) People should not be permitted to stand or pass under a load on the hook.

(iii) If the load must remain suspended for any considerable length of time, a dog, or pawl and ratchet, or other equivalent means, rather than the brake alone, shall be used to hold the load.

(5) *Use of winch heads.* (i) Ropes shall not be handled on a winch head without the knowledge of the operator.

(ii) While a winch head is being used, the operator shall be within convenient reach of the power unit control lever.

(6) *Securing boom.* Dogs, pawls, or other positive holding mechanism on the hoist shall be engaged. When not in use, the derrick boom shall:

(i) Be laid down;

(ii) Be secured to a stationary member, as nearly under the head as possible, by attachment of a sling to the load block; or

(iii) Be hoisted to a vertical position and secured to the mast.

(j) *Other requirements*—(1) *Guards.* (i) Exposed moving parts, such as gears, ropes, setscrews, projecting keys, chains, chain sprockets, and reciprocating components, which constitute a hazard under normal operating conditions shall be guarded.

(ii) Guards shall be securely fastened.

(iii) Each guard shall be capable of supporting without permanent distortion, the weight of a 200-pound person unless the guard is located where it is impossible for a person to step on it.

(2) *Hooks.* (i) Hooks shall meet the manufacturer's recommendations and shall not be overloaded.

(ii) Safety latch type hooks shall be used wherever possible.

(3) *Fire extinguishers.* (i) A carbon dioxide, dry chemical, or equivalent fire extinguisher shall be kept in the immediate vicinity of the derrick.

(ii) Operating and maintenance personnel shall be familiar with the use and care of the fire extinguishers provided.

(4) *Refueling.* (i) Refueling with portable containers shall be done with Underwriters' Laboratory, Inc. (UL), or Factory Mutual Laboratories approved, or equivalent, safety type containers equipped with automatic closing spout and flame arrester.

(ii) Machines shall not be refueled with the engine running.

(5) *Operating near electric powerlines.* (i) Except where the electrical distribution and transmission lines have been deenergized and visibly grounded at point of work or where insulating barriers not a part of or an attachment to the derrick have been erected to prevent physical contact with the lines, derricks shall be operated proximate to, under, over, by, or near powerlines only in accordance with the following:

(a) For lines rated 50 kv. or below minimum clearance between the lines and any part of the derrick or load shall be 10 feet.

(b) For lines rated over 50 kv. minimum clearance between the lines and any part of the derrick or load shall be 10 feet plus 0.4 inch for each 1 kv. over 50 kv., or use twice the length of the line insulator, but never less than 10 feet.

(ii) Cage-type boom guards, insulating links, or proximity warning devices may be used on derricks, but the use of such devices shall not operate to alter the requirements of subdivision (i) of this subparagraph.

(iii) Before the commencement of operations near electrical lines, the owners of the lines or their authorized representatives shall be notified and provided with all pertinent information. The owner's cooperation shall be requested.

(iv) Any overhead wire shall be considered to be an energized line until the owner of the line or their authorized representatives state that it is deenergized.

(6) *Cab or operating enclosure.* (i) Necessary clothing and personal belongings shall be stored in such a manner as to not interfere with access or operation.

(ii) Tools, oilcans, waste, extra fuses, and other necessary articles shall be stored in the toolbox, and shall not be permitted to lie loose in or about the cab or operating enclosure.

[37 FR 22163, Oct. 18, 1972, as amended at 38 FR 14973, June 1, 1973]

§ 1910.182 Effective dates.

(a) The provisions of this Subpart N shall become effective on August 27, 1971.

except as provided in the remaining paragraphs of this section.

(b) The following provisions shall become effective on February 15, 1972:

§ 1910.177 (d) and (f).
§ 1910.178 (a) (2) and (3), (c), (e), and (m) (11).
§ 1910.179 (b) (6), (c), (d), (e), (f), (g), and (h).
§ 1910.180(c).

(c) Notwithstanding anything in paragraph (a), (b), or (d) of this section, any provision in any other section of this subpart which contains in itself a specific effective date or time limitation shall become effective on such date or shall apply in accordance with such limitation.

(d) Notwithstanding anything in paragraph (a) of this section, if any standard in 41 CFR Part 50–204, other than a national consensus standard incorporated by reference in § 50–204.2(a)(1), is or becomes applicable at any time to any employment and place of employment, by virtue of the Walsh-Healey Public Contracts Act, or the Service Contract Act of 1965, or the National Foundation on Arts and Humanities Act of 1965, any corresponding established Federal Standard in this Subpart N which is derived from 41 CFR Part 50–204 shall also become effective and shall be applicable to such employment and place of employment, on the same date.

§ 1910.183 Helicopters.

(a) *Helicopter regulations.* Helicopter cranes shall be expected to comply with any applicable regulations of the Federal Aviation Administration.

(b) *Briefing.* Prior to each day's operation a briefing shall be conducted. This briefing shall set forth the plan of operation for the pilot and ground personnel.

(c) *Slings and tag lines.* Loads shall be properly slung. Tag lines shall be of a length that will not permit their being drawn up into the rotors. Pressed sleeve, swedged eyes, or equivalent means shall be used for all freely suspended loads to prevent hand splices from spinning open or cable clamps from loosening.

(d) *Cargo hooks.* All electrically operated cargo hooks shall have the electrical activating device so designed and installed as to prevent inadvertent operation. In addition, these cargo hooks shall be equipped with an emergency mechanical control for releasing the load. The employer shall ensure that the hooks are tested prior to each day's operation by a competent person to determine that the release functions properly, both electrically and mechanically.

(e) *Personal protective equipment.* (1) Personal protective equipment shall be provided and the employer shall ensure its use by employees receiving the load. Personal protective equipment shall consist of complete eye protection and hardhats secured by chinstraps.

(2) Loose-fitting clothing likely to flap in rotor downwash, and thus be snagged on the hoist line, may not be worn.

(f) *Loose gear and objects.* The employer shall take all necessary precautions to protect employees from flying objects in the rotor downwash. All loose gear within 100 feet of the place of lifting the load or depositing the load, or within all other areas susceptible to rotor downwash, shall be secured or removed.

(g) *Housekeeping.* Good housekeeping shall be maintained in all helicopter loading and unloading areas.

(h) *Load safety.* The size and weight of loads, and the manner in which loads are connected to the helicopter shall be checked. A lift may not be made if the helicopter operator believes the lift cannot be made safely.

(i) *Hooking and unhooking loads.* When employees perform work under hovering craft, a safe means of access shall be provided for employees to reach the hoist line hook and engage or disengage cargo slings. Employees may not be permitted to perform work under hovering craft except when necessary to hook or unhook loads.

(j) *Static charge.* Static charge on the suspended load shall be dissipated with a grounding device before ground personnel touch the suspended load, unless protective rubber gloves are being worn by all ground personnel who may be required to touch the suspended load.

(k) *Weight limitation.* The weight of an external load shall not exceed the helicopter manufacturer's rating.

(l) *Ground lines.* Hoist wires or other gear, except for pulling lines or conductors that are allowed to "pay out" from a container or roll off a reel, shall not be attached to any fixed ground structure, or allowed to foul on any fixed structure.

(m) *Visibility.* Ground personnel shall be instructed and the employer shall ensure that when visibility is reduced by dust or other conditions, they shall exercise special caution to keep clear of main and stabilizing rotors. Precautions shall also be taken by the employer to eliminate, as far as practical, the dust or other conditions reducing the visibility.

(n) *Signal systems.* The employer shall instruct the aircrew and ground personnel on the signal systems to be used and shall review the system with the employees in advance of hoisting the load. This applies to both radio and hand signal systems. Hand signals, where used, shall be as shown in Figure N–1.

(o) *Approach distance.* No employee shall be permitted to approach within 50 feet of the helicopter when the rotor blades are turning, unless his work duties require his presence in that area.

(p) *Approaching helicopter.* The employer shall instruct employees, and shall ensure, that whenever approaching or leaving a helicopter which has its blades rotating, all employees shall remain in full view of the pilot and keep in a crouched position. No employee shall be permitted to work in the area from the cockpit or cabin rearward while blades are rotating, unless authorized by the helicopter operator to work there.

(q) *Personnel.* Sufficient ground personnel shall be provided to ensure that helicopter loading and unloading operations can be performed safely.

(r) *Communications.* There shall be constant reliable communication between the pilot and a designated employee of the ground crew who acts as a signalman during the period of loading and unloading. The signalman shall be clearly distinguishable from other ground personnel.

(s) *Fires.* Open fires shall not be permitted in areas where they could be spread by the rotor downwash.

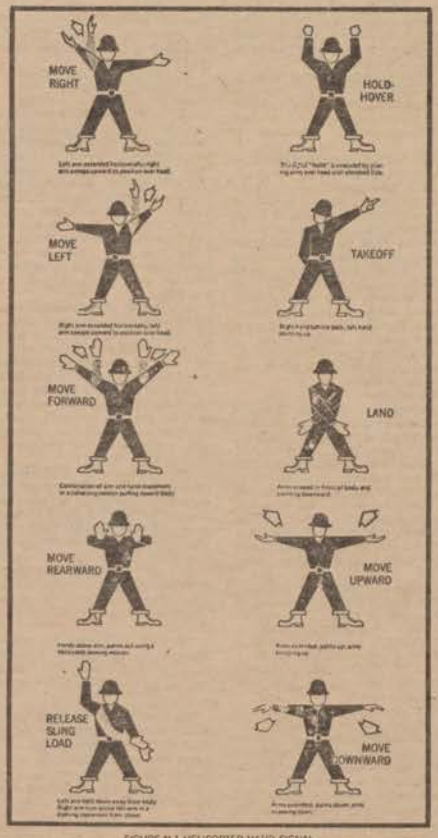


FIGURE N-1 HELICOPTER HAND SIGNAL

[40 FR 13440, Mar. 26, 1975]

§ 1910.184 Slings.

(a) *Scope.* This section applies to slings used in conjunction with other material handling equipment for the movement of material by hoisting, in employments covered by this Part. The types of slings covered are those made from alloy steel chain, wire rope, metal mesh, natural or synthetic fiber rope (conventional three strand construction), and synthetic web (nylon, polyester, and polypropylene).

(b) *Definitions.* "Angle of loading" is the inclination of a leg or branch of a sling measured from the horizontal or vertical plane as shown in Fig. N–184–5; provided that an angle of loading of five degrees or less from the vertical may be considered a vertical angle of loading.

"Basket hitch" is a sling configuration whereby the sling is passed under the load and has both ends, end attachments, eyes or handles on the hook or a single master link.

"Braided wire rope" is a wire rope formed by plaiting component wire ropes.

"Bridle wire rope sling" is a sling composed of multiple wire rope legs with the top ends gathered in a fitting that goes over the lifting hook.

"Cable laid endless sling-mechanical joint" is a wire rope sling made endless by joining the ends of a single length of cable laid rope with one or more metallic fittings.

"Cable laid grommet-hand tucked" is an endless wire rope sling made from one length of rope wrapped six times around a core formed by hand tucking the ends of the rope inside the six wraps.

"Cable laid rope" is a wire rope composed of six wire ropes wrapped around a fiber or wire rope core.

"Cable laid rope sling-mechanical joint" is a wire rope sling made from a cable laid rope with eyes fabricated by pressing or swaging one or more metal sleeves over the rope junction.

"Choker hitch" is a sling configuration with one end of the sling passing under the load and through an end attachment, handle or eye on the other end of the sling.

"Coating" is an elastomer or other suitable material applied to a sling or to a sling component to impart desirable properties.

"Cross rod" is a wire used to join spirals of metal mesh to form a complete fabric. (See Fig. N–184–2.)

"Designated" means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.

"Equivalent entity" is a person or organization (including an employer) which, by possession of equipment, technical knowledge and skills, can perform with equal competence the same repairs and tests as the person or organization with which it is equated.

"Fabric (metal mesh)" is the flexible portion of a metal mesh sling consisting of a series of transverse coils and cross rods.

"Female handle (choker)" is a handle with a handle eye and a slot of such dimension as to permit passage of a male handle thereby allowing the use of a metal mesh sling in a choker hitch. (See Fig. N–184–1.)

"Handle" is a terminal fitting to which metal mesh fabric is attached. (See Fig. N–184–1.)

"Handle eye" is an opening in a handle of a metal mesh sling shaped to accept a hook, shackle or other lifting device. (See Fig. N–184–1.)

"Hitch" is a sling configuration whereby the sling is fastened to an object or load, either directly to it or around it.

"Link" is a single ring of a chain.

"Male handle (triangle)" is a handle with a handle eye.

"Master coupling link" is an alloy steel welded coupling link used as an intermediate link to join alloy steel chain to master links. (See Fig. N–184–3.)

"Master link" or "gathering ring" is a forged or welded steel link used to support all members (legs) of an alloy steel chain sling or wire rope sling. (See Fig. N–184–3.)

"Mechanical coupling link" is a non-welded, mechanically closed steel link used to attach master links, hooks, etc., to alloy steel chain.

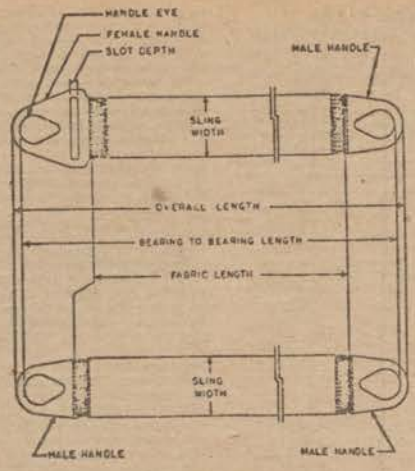


FIG. N-184-1
Metal Mesh Sling (Typical)

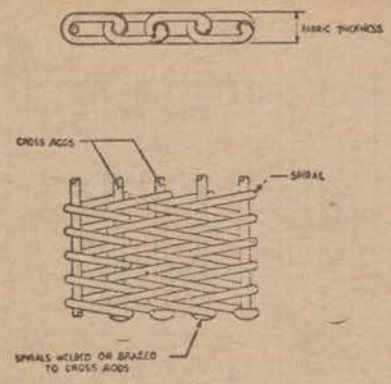


FIG. N-184-2
Metal Mesh Construction

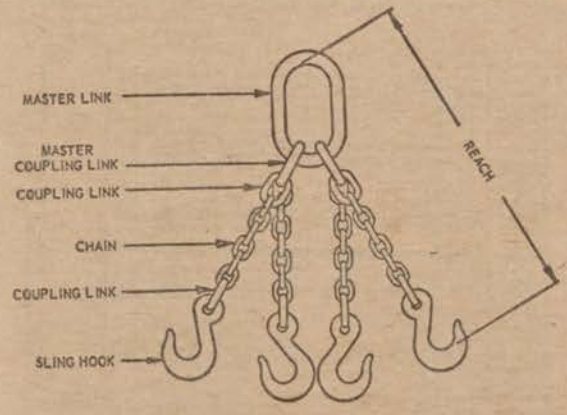


FIG. N-184-3 MAJOR COMPONENTS OF A QUADRUPLE SLING.

"Proof load" is the load applied in performance of a proof test.

"Proof test" is a nondestructive tension test performed by the sling manufacturer or an equivalent entity to verify construction and workmanship of a sling.

"Rated capacity" or "working load limit" is the maximum working load permitted by the provisions of this section.

"Reach" is the effective length of an alloy steel chain sling measured from the top bearing surface of the upper terminal component to the bottom bearing surface of the lower terminal component.

"Selvage edge" is the finished edge of synthetic webbing designed to prevent unraveling.

"Sling" is an assembly which connects the load to the material handling equipment.

"Sling manufacturer" is a person or organization that assembles sling components into their final form for sale to users.

"Spiral" is a single transverse coil that is the basic element from which metal mesh is fabricated. (See Fig. N-184-2.)

"Strand laid endless sling-mechanical joint" is a wire rope sling made endless from one length of rope with the ends joined by one or more metallic fittings.

"Strand laid grommet-hand tucked" is an endless wire rope sling made from one length of strand wrapped six times around a core formed by hand tucking the ends of the strand inside the six wraps.

"Strand laid rope" is a wire rope made with strands (usually six or eight) wrapped around a fiber core, wire strand core, or independent wire rope core (IWRC).

"Vertical hitch" is a method of supporting a load by a single, vertical part or leg of the sling. (See Fig. N-184-4.)

(c) *Safe operating practices.* Whenever any sling is used, the following practices shall be observed:

(1) Slings that are damaged or defective shall not be used.

(2) Slings shall not be shortened with knots or bolts or other makeshift devices.

(3) Sling legs shall not be kinked.

(4) Slings shall not be loaded in excess of their rated capacities.

(5) Slings used in a basket hitch shall have the loads balanced to prevent slippage.

(6) Slings shall be securely attached to their loads.

(7) Slings shall be padded or protected from the sharp edges of their loads.

(8) Suspended loads shall be kept clear of all obstructions.

(9) All employees shall be kept clear of loads about to be lifted and of suspended loads.

(10) Hands or fingers shall not be placed between the sling and its load while the sling is being tightened around the load.

(11) Shock loading is prohibited.

(12) A sling shall not be pulled from under a load when the load is resting on the sling.

(d) *Inspections.* Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer. Additional inspections shall be performed during sling use, where service conditions warrant. Damaged or defective slings shall be immediately removed from service.

(e) *Alloy steel chain slings.* (1) *Sling identification.* Alloy steel chain slings shall have permanently affixed durable identification stating size, grade, rated capacity, and reach.

(2) *Attachments.* (i) Hooks, rings, oblong links, pear shaped links, welded or mechanical coupling links or other attachments shall have a rated capacity at least equal to that of the alloy steel chain with which they are used or the sling shall not be used in excess of the rated capacity of the weakest component.

(ii) Makeshift links or fasteners formed from bolts or rods, or other such attachments, shall not be used.

(3) *Inspections.* (i) In addition to the inspection required by paragraph (d) of this section, a thorough periodic inspection of alloy steel chain slings in use shall be made on a regular basis, to be determined on the basis of (A) frequency of sling use; (B) severity of service conditions; (C) nature of lifts being made; and (D) experience gained on the service life of slings used in similar circumstances. Such inspections shall in no event be at intervals greater than once every 12 months.

(ii) The employer shall make and maintain a record of the most recent month in which each alloy steel chain sling was thoroughly inspected, and shall make such record available for examination.

(iii) The thorough inspection of alloy steel chain slings shall be performed by a competent person designated by the employer, and shall include a thorough inspection for wear, defective welds, deformation and increase in length. Where such defects or deterioration are present, the sling shall be immediately removed from service.

(4) *Proof testing.* The employer shall ensure that before use, each new, repaired, or reconditioned alloy steel chain sling, including all welded components in the sling assembly, shall be proof tested by the sling manufacturer or equivalent entity, in accordance with paragraph 5.2 of the American Society of Testing and Materials Specification A391-65 (ANSI G61.1-1968). The employer shall retain a certificate of the proof test and shall make it available for examination.

(5) *Sling use.* Alloy steel chain slings shall not be used with loads in excess of the rated capacities prescribed in Table N-184-1. Slings not included in this table shall be used only in accordance with the manufacturer's recommendations.

(6) *Safe operating temperatures.* Alloy steel chain slings shall be permanently removed from service if they are heated above 1000° F. When exposed to service temperatures in excess of 600° F, maximum working load limits permitted in Table N-184-1 shall be reduced in accordance with the chain or sling manufacturer's recommendations.

(7) *Repairing and reconditioning alloy steel chain slings.* (i) Worn or damaged alloy steel chain slings or attachments shall not be used until repaired. When welding or heat testing is performed, slings shall not be used unless repaired, reconditioned and proof tested by the sling manufacturer or an equivalent entity.

(ii) Mechanical coupling links or low carbon steel repair links shall not be used to repair broken lengths of chain.

(8) *Effects of wear.* If the chain size at any point of any link is less than that stated in Table N-184-2, the sling shall be removed from service.

(9) *Deformed attachments.* (i) Alloy steel chain slings. (i) Worn or damaged formed master links, coupling links or other components shall be removed from service.

(ii) Slings shall be removed from service if hooks are cracked, have been opened more than 15 percent of the

TABLE N-184-1
RATED CAPACITY (WORKING LOAD LIMIT), FOR ALLOY STEEL CHAIN SLINGS
RATED CAPACITY (WORKING LOAD LIMIT), POUNDS

Chain Size, Inches	Single Branch Sling — 90 degree Loading	Double Sling Vertical Angle (1)			Triple and Quadruple Sling (3) Vertical Angle (1)		
		Horizontal Angle (2)			Horizontal Angle (2)		
		30 degree	45 degree	60 degree	30 degree	45 degree	60 degree
		60 degree	45 degree	30 degree	60 degree	45 degree	30 degree
1/4	3,250	5,650	4,550	3,250	8,400	6,900	4,900
3/8	6,600	11,400	9,300	6,600	17,060	14,000	9,900
1/2	11,250	19,500	15,900	11,250	29,000	24,000	17,000
5/8	16,500	28,500	23,300	16,500	43,000	35,000	24,500
3/4	23,000	39,800	32,500	23,000	59,500	48,500	34,500
7/8	28,750	49,800	40,600	28,750	74,500	61,000	43,000
1	38,750	67,100	54,800	38,750	101,000	82,000	58,000
1-1/8	44,500	77,000	63,000	44,500	115,500	94,500	66,500
1-1/4	57,500	99,500	81,300	57,500	149,000	121,500	86,000
1-3/8	67,000	116,000	94,000	67,000	174,000	141,000	100,500
1-1/2	80,000	138,000	112,900	80,000	207,000	169,000	119,500
1-3/4	100,000	172,000	140,000	100,000	258,000	210,000	150,000

(1) Rating of multiple slings adjusted for angle of loading measured as the included angle between the inclined leg and the vertical as shown in Figure N-184-5.
(2) Rating of multiple slings adjusted for angle of loading between the inclined leg and the horizontal plane of the load, as shown in Figure N-184-5.
(3) Quadruple sling rating is same as triple sling because normal lifting practice may not distribute load uniformly to all 4 legs.

TABLE N-184-2
Minimum Allowable Chain Size At Any Point of Link

Chain Size, Inches	Minimum Allowable Chain Size, Inches
1/4	13/64
3/8	19/64
1/2	25/64
5/8	31/64
3/4	19/32
7/8	45/64
1	13/16
1-1/8	29/32
1-1/4	1
1-3/8	1-3/32
1-1/2	1-3/16
1-3/4	1-13/32

normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook.

(f) *Wire rope slings.* (1) *Sling use.* Wire rope slings shall not be used with loads in excess of the rated capacities shown in Tables N-184-3 through N-184-14. Slings not included in these tables shall be used only in accordance with the manufacturer's recommendations.

(2) *Minimum sling lengths.* (i) Cable laid and 6 x 19 and 6 x 37 slings shall have a minimum clear length of wire rope 10 times the component rope diameter between splices, sleeves or end fittings.

(ii) Braided slings shall have a minimum clear length of wire rope 40 times the component rope diameter between the loops or end fittings.

(iii) Cable laid grommets, strand laid grommets and endless slings shall have a minimum circumferential length of 96 times their body diameter.

(3) *Safe operating temperatures.* Fiber core wire rope slings of all grades shall be permanently removed from service if they are exposed to temperatures in excess of 200 F. When nonfiber core wire rope slings of any grade are used at temperatures above 400°F or below minus 60°F, recommendations of the sling manufacturer regarding use at that temperature shall be followed.

(4) *End attachments.* (i) Welding of end attachments, except covers to thimbles, shall be performed prior to the assembly of the sling.

(ii) All welded end attachments shall not be used unless proof tested by the manufacturer or equivalent entity at twice their rated capacity prior to initial use. The employer shall retain a certificate of the proof test, and make it available for examination.

TABLE N-184-3
RATED CAPACITIES FOR SINGLE LEG SLINGS
6 x 19 AND 6 x 37 CLASSIFICATION IMPROVED PLOW STEEL GRADE ROPE WITH FIBER CORE (FC)

Rope Dia (Inches)	Constr	Rated Capacities, Tons (2,000 lb)							
		Vertical		Choker		Vertical Basket*			
		HT	S	HT	MS	S	HT	MS	S
1/4	6 x 19	0.49	0.51	0.55	0.37	0.38	0.41	0.99	1.0	1.1
5/16	6 x 19	0.76	0.79	0.85	0.57	0.59	0.64	1.5	1.6	1.7
3/8	6 x 19	1.1	1.1	1.2	0.80	0.85	0.91	2.1	2.2	2.4
7/16	6 x 19	1.4	1.5	1.6	1.1	1.1	1.2	2.9	3.0	3.3
1/2	6 x 19	1.8	2.0	2.1	1.4	1.5	1.6	3.7	3.9	4.3
9/16	6 x 19	2.3	2.5	2.7	1.7	1.9	2.0	4.6	5.0	5.4
5/8	6 x 19	2.8	3.1	3.3	2.1	2.3	2.5	5.6	6.2	6.7
3/4	6 x 19	3.9	4.4	4.8	2.9	3.3	3.6	7.8	8.8	9.5
7/8	6 x 19	5.1	5.9	6.4	3.9	4.5	4.8	10.0	12.0	13.0
1	6 x 19	6.7	7.7	8.4	5.0	5.8	6.3	13.0	15.0	17.0
1-1/8	6 x 19	8.4	9.5	10.0	6.3	7.1	7.9	17.0	19.0	21.0
1-1/4	6 x 37	9.8	11.0	12.0	7.4	8.3	9.2	20.0	22.0	25.0
1-3/8	6 x 37	12.0	13.0	15.0	8.9	10.0	11.0	24.0	27.0	30.0
1-1/2	6 x 37	14.0	16.0	17.0	10.0	12.0	13.0	28.0	32.0	35.0
1-5/8	6 x 37	16.0	18.0	21.0	12.0	14.0	15.0	33.0	37.0	41.0
1-3/4	6 x 37	19.0	21.0	24.0	14.0	16.0	18.0	38.0	43.0	48.0
2	6 x 37	25.0	28.0	31.0	18.0	21.0	23.0	49.0	55.0	62.0

HT = Hand Tucked Splice and Hidden Tuck Splice
For hidden tuck splice (IWRC) use values in HT columns.
MS = Mechanical Splice
S = Swaged or Zinc Poured Socket
*These values only apply when the D/d ratio for HT slings is 10 or greater, and for MS and S slings is 20 or greater where:
D = Diameter of curvature around which the body of the sling is bent.
d = Diameter of rope.

TABLE N-184-4
RATED CAPACITIES FOR SINGLE LEG SLINGS
6 x 19 AND 6 x 37 CLASSIFICATION IMPROVED PLOW STEEL GRADE ROPE WITH INDEPENDENT WIRE ROPE CORE (IWRC)

Rope Dia (Inches)	Constr	Rated Capacities, Tons (2,000 lb)							
		Vertical		Choker			Vertical Basket*		
		HT	MS	S	HT	MS	S	HT	MS	S
1/4	6 x 19	0.53	0.56	0.59	0.40	0.42	0.44	1.0	1.1	1.2
5/16	6 x 19	0.81	0.87	0.92	0.61	0.65	0.69	1.6	1.7	1.8
3/8	6 x 19	1.1	1.2	1.3	0.85	0.93	0.98	2.3	2.5	2.6
7/16	6 x 19	1.5	1.7	1.8	1.2	1.3	1.3	3.1	3.4	3.5
1/2	6 x 19	2.0	2.2	2.3	1.5	1.6	1.7	3.9	4.4	4.6
9/16	6 x 19	2.5	2.7	2.9	1.8	2.1	2.2	4.9	5.5	5.8
5/8	6 x 19	3.0	3.4	3.6	2.2	2.5	2.7	6.0	6.8	7.2
3/4	6 x 19	4.2	4.9	5.1	3.1	3.6	3.8	8.4	9.7	10.0
7/8	6 x 19	5.5	6.6	6.9	4.1	4.9	5.2	11.0	13.0	14.0
1	6 x 19	7.2	8.5	9.0	5.4	6.4	6.7	14.0	17.0	18.0
1-1/8	6 x 19	9.0	10.0	11.0	6.8	7.8	8.5	18.0	21.0	23.0
1-1/4	6 x 37	10.0	12.0	13.0	7.9	9.2	9.9	21.0	24.0	26.0
1-3/8	6 x 37	13.0	15.0	16.0	9.6	11.0	12.0	25.0	29.0	32.0
1-1/2	6 x 37	15.0	17.0	19.0	11.0	13.0	14.0	30.0	35.0	38.0
1-5/8	6 x 37	18.0	20.0	22.0	13.0	15.0	17.0	35.0	41.0	44.0
1-3/4	6 x 37	20.0	24.0	26.0	15.0	18.0	19.0	41.0	47.0	51.0
2	6 x 37	26.0	30.0	33.0	20.0	23.0	25.0	53.0	61.0	66.0

HT = Hand Tucked Splice
For hidden tuck splice (IWRC) use Table 1 values in HT column.
MS = Mechanical Splice.
S = Swaged or Zinc Poured Socket.
*These values only apply when the D/d ratio for HT slings is 10 or greater, and for MS and S Slings is 20 or greater where:
D = Diameter of curvature around which the body of the sling is bent.
d = Diameter of rope.

TABLE N-184-7

RATED CAPACITIES FOR 2-LEG & 3-LEG BRIDLE SLINGS
6 x 19 AND 6 x 37 CLASSIFICATION IMPROVED PLOW STEEL GRADE ROPE
WITH FIBER CORE (FC)

Rope		Rated Capacities, Tons (2,000 lb)											
		2-Leg Bridle Slings						3-Leg Bridle Slings					
		Vert 30 degree Horz 60 degree		45 degree Angle		Vert 60 degree Horz 30 degree		Vert 30 degree Horz 60 degree		45 degree Angle		Vert 60 degree Horz 30 degree	
Dia (Inches)	Constr	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS
1/4	6 x 19	0.65	0.83	0.70	0.72	0.49	0.51	1.3	1.3	1.0	1.1	0.74	0.76
5/16	6 x 19	1.3	1.4	1.1	1.1	0.76	0.79	2.0	2.0	1.6	1.7	1.1	1.2
3/8	6 x 19	1.8	1.9	1.5	1.6	1.1	1.1	2.8	2.9	2.3	2.4	1.6	1.7
7/16	6 x 19	2.5	2.6	2.0	2.2	1.4	1.5	3.7	4.0	3.0	3.2	2.1	2.3
1/2	6 x 19	3.2	3.4	2.6	2.8	1.8	2.0	4.8	5.1	3.9	4.2	2.8	3.0
9/16	6 x 19	4.0	4.3	3.2	3.5	2.3	2.5	6.0	6.5	4.9	5.3	3.4	3.7
5/8	6 x 19	4.8	5.3	4.0	4.4	2.8	3.1	7.3	8.0	5.9	6.5	4.2	4.6
3/4	6 x 19	6.8	7.6	5.5	6.2	3.9	4.4	10.0	11.0	8.3	9.3	5.8	6.6
7/8	6 x 19	8.9	10.0	7.3	8.4	5.1	5.9	13.0	15.0	11.0	13.0	7.7	8.9
1	6 x 19	11.0	13.0	9.4	11.0	6.7	7.7	17.0	20.0	14.0	16.0	10.0	11.0
1-1/8	6 x 19	14.0	16.0	12.0	13.0	8.4	9.5	22.0	24.0	18.0	20.0	13.0	14.0
1-1/4	6 x 37	17.0	19.0	14.0	16.0	9.8	11.0	25.0	29.0	21.0	23.0	15.0	17.0
1-3/8	6 x 37	20.0	23.0	17.0	19.0	12.0	13.0	31.0	35.0	25.0	28.0	18.0	20.0
1-1/2	6 x 37	24.0	27.0	20.0	22.0	14.0	16.0	36.0	41.0	30.0	33.0	21.0	24.0
1-5/8	6 x 37	28.0	32.0	23.0	26.0	16.0	18.0	43.0	48.0	35.0	39.0	25.0	28.0
1-3/4	6 x 37	33.0	37.0	27.0	30.0	19.0	21.0	49.0	56.0	40.0	45.0	28.0	32.0
2	6 x 37	43.0	48.0	35.0	39.0	25.0	28.0	64.0	72.0	52.0	59.0	37.0	41.0

HT = Hand Tucked Splice.
MS = Mechanical Splice

TABLE N-184-8

RATED CAPACITIES FOR 2-LEG & 3-LEG BRIDLE SLINGS
6 x 19 and 6 x 37 CLASSIFICATION IMPROVED PLOW STEEL GRADE ROPE
WITH INDEPENDENT WIRE ROPE CORE (IWRC)

Rope		Rated Capacities, Tons (2,000 lb)											
		2-Leg Bridle Sling						3-Leg Bridle Sling					
		Vert 30 degree Horz 60 degree		45 degree Angle		Vert 60 degree Horz 30 degree		Vert 30 degree Horz 60 degree		45 degree Angle		Vert 60 degree Horz 30 degree	
Dia (Inches)	Constr	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS
1/4	6 x 19	0.92	0.97	0.75	0.79	0.53	0.56	1.4	1.4	1.1	1.2	0.79	0.84
5/16	6 x 19	1.4	1.5	1.1	1.2	0.81	0.87	2.1	2.3	1.7	1.8	1.2	1.3
3/8	6 x 19	2.0	2.1	1.6	1.8	1.1	1.2	3.0	3.2	2.4	2.6	1.7	1.9
7/16	6 x 19	2.7	2.9	2.2	2.4	1.5	1.7	4.0	4.4	3.3	3.6	2.3	2.5
1/2	6 x 19	3.4	3.8	2.8	3.1	2.0	2.2	5.1	5.7	4.2	4.6	3.0	3.3
9/16	6 x 19	4.3	4.8	3.5	3.9	2.5	2.7	6.4	7.1	5.2	5.8	3.7	4.1
5/8	6 x 19	5.2	5.9	4.2	4.8	3.0	3.4	7.8	8.8	6.4	7.2	4.5	5.1
3/4	6 x 19	7.3	8.4	5.9	6.9	4.2	4.9	11.0	13.0	8.9	10.0	6.3	7.3
7/8	6 x 19	9.6	11.0	7.8	9.3	5.5	6.6	14.0	17.0	12.0	14.0	8.3	9.9
1	6 x 19	12.0	15.0	10.0	12.0	7.2	8.5	19.0	22.0	15.0	18.0	11.0	13.0
1-1/8	6 x 19	16.0	18.0	13.0	15.0	9.0	10.0	23.0	27.0	19.0	22.0	13.0	16.0
1-1/4	6 x 37	18.0	21.0	15.0	17.0	10.0	12.0	27.0	32.0	22.0	26.0	16.0	18.0
1-3/8	6 x 37	22.0	25.0	18.0	21.0	13.0	15.0	33.0	38.0	27.0	31.0	19.0	22.0
1-1/2	6 x 37	26.0	30.0	21.0	25.0	15.0	17.0	39.0	45.0	32.0	37.0	23.0	26.0
1-5/8	6 x 37	31.0	35.0	25.0	29.0	18.0	20.0	46.0	53.0	38.0	43.0	27.0	31.0
1-3/4	6 x 37	35.0	41.0	29.0	33.0	20.0	24.0	53.0	61.0	43.0	50.0	31.0	35.0
2	6 x 37	46.0	53.0	37.0	43.0	26.0	30.0	68.0	79.0	56.0	65.0	40.0	46.0

HT = Hand Tucked Splice
MS = Mechanical Splice

TABLE N-184-5

RATED CAPACITIES FOR SINGLE LEG SLINGS
CABLE LAID ROPE – MECHANICAL SPLICE ONLY
7x7x7 & 7x7x19 CONSTRUCTIONS GALVANIZED AIRCRAFT GRADE ROPE
7x6x19 IWRC CONSTRUCTION IMPROVED PLOW STEEL GRADE ROPE

Rope		Rated Capacities, Tons (2,000 lb)		
Dia (Inches)	Constr	Vertical	Choker	Vertical Basket
1/4	7 x 7 x 7	0.50	0.38	1.0
3/8	7 x 7 x 7	1.1	0.81	2.0
1/2	7 x 7 x 7	1.8	1.4	3.7
5/8	7 x 7 x 7	2.8	2.1	5.5
3/4	7 x 7 x 7	3.8	2.9	7.6
5/8	7 x 7 x 19	2.9	2.2	5.8
3/4	7 x 7 x 19	4.1	3.0	8.1
7/8	7 x 7 x 19	5.4	4.0	11.0
1	7 x 7 x 19	6.9	5.1	14.0
1-1/8	7 x 7 x 19	8.2	6.2	16.0
1-1/4	7 x 7 x 19	9.9	7.4	20.0
3/4	7 x 6 x 19 IWRC	3.8	2.8	7.6
7/8	7 x 6 x 19 IWRC	5.0	3.8	10.0
1	7 x 6 x 19 IWRC	6.4	4.8	13.0
1-1/8	7 x 6 x 19 IWRC	7.7	5.8	15.0
1-1/4	7 x 6 x 19 IWRC	9.2	6.9	18.0
1-5/16	7 x 6 x 19 IWRC	10.0	7.5	20.0
1-3/8	7 x 6 x 19 IWRC	11.0	8.2	22.0
1-1/2	7 x 6 x 19 IWRC	13.0	9.6	26.0

*These values only apply when the D/d ratio is 10 or greater where:
D = Diameter of curvature around which the body of the sling is bent.
d = Diameter of rope.

TABLE N-184-6

RATED CAPACITIES FOR SINGLE LEG SLINGS
8-PART AND 6-PART BRAIDED ROPE
6 x 7 AND 6 x 19 CONSTRUCTION IMPROVED PLOW STEEL GRADE ROPE
7 x 7 CONSTRUCTION GALVANIZED AIRCRAFT GRADE ROPE

Component Ropes		Rated Capacities, Tons (2,000 lb)					
		Vertical		Choker		Basket, Vertical to 30 degree	
Diameter (Inches)	Constr	8-Part	6-Part	8-Part	6-Part	8-Part	6-Part
3/32	6 x 7	0.42	0.32	0.32	0.24	0.74	0.55
1/8	6 x 7	0.76	0.57	0.57	0.42	1.3	0.98
3/16	6 x 7	1.7	1.3	1.3	0.94	2.9	2.2
3/32	7 x 7	0.51	0.39	0.38	0.29	0.89	0.67
1/8	7 x 7	0.95	0.7	0.71	0.53	1.6	1.2
3/16	7 x 7	2.1	1.5	1.5	1.2	3.6	2.7
3/16	6 x 19	1.7	1.3	1.3	0.98	3.0	2.2
1/4	6 x 19	3.1	2.3	2.3	1.7	5.3	4.0
5/16	6 x 19	4.8	3.6	3.6	2.7	8.3	6.2
3/8	6 x 19	6.8	5.1	5.1	3.8	12.0	8.9
7/16	6 x 19	9.3	6.9	6.9	5.2	16.0	12.0
1/2	6 x 19	12.0	9.0	9.0	6.7	21.0	15.0
9/16	6 x 19	15.0	11.0	11.0	8.5	26.0	20.0
5/8	6 x 19	19.0	14.0	14.0	10.0	32.0	24.0
3/4	6 x 19	27.0	20.0	20.0	15.0	46.0	35.0
7/8	6 x 19	36.0	27.0	27.0	20.0	62.0	47.0
1	6 x 19	47.0	35.0	35.0	26.0	81.0	61.0

*These values only apply when the D/d ratio is 20 or greater where:
D = Diameter of curvature around which the body of the sling is bent.
d = Diameter of component rope.

TABLE N-184-11

RATED CAPACITIES FOR STRAND LAID GROMMET – HAND TUCKED
IMPROVED PLOW STEEL GRADE ROPE

ROPE BODY		RATED CAPACITIES, TONS (2,000 lb)		
Dia (Inches)	Constr	Vertical	Choker	Vertical Basket*
1/4	7 x 19	0.85	0.66	1.7
5/16	7 x 19	1.3	1.0	2.6
3/8	7 x 19	1.9	1.6	3.8
7/16	7 x 19	2.6	1.9	5.2
1/2	7 x 19	3.3	2.5	6.7
9/16	7 x 19	4.2	3.1	8.4
5/8	7 x 19	5.2	3.9	10.0
3/4	7 x 19	7.4	5.6	15.0
7/8	7 x 19	10.0	7.5	20.0
1	7 x 19	13.0	9.7	26.0
1-1/8	7 x 19	16.0	12.0	32.0
1-1/4	7 x 37	18.0	14.0	37.0
1-3/8	7 x 37	22.0	16.0	44.0
1-1/2	7 x 37	26.0	19.0	52.0

* These values only apply when the D/d ratio is 5 or greater where:
D = Diameter of curvature around which rope is bent.
d = Diameter of rope body.

TABLE N-184-12

RATED CAPACITIES FOR CABLE LAID GROMMET – HAND TUCKED
7 x 6 x 7 AND 7 x 6 x 19 CONSTRUCTIONS IMPROVED PLOW STEEL GRADE ROPE
7 x 7 x 7 CONSTRUCTION GALVANIZED AIRCRAFT GRADE ROPE

CABLE BODY		RATED CAPACITIES, TONS (2,000 lb)		
Dia (Inches)	Constr	Vertical	Choker	Vertical Basket*
3/8	7 x 6 x 7	1.3	0.95	2.5
9/16	7 x 6 x 7	2.8	2.1	5.6
5/8	7 x 6 x 7	3.8	2.8	7.6
3/8	7 x 7 x 7	1.6	1.2	3.2
9/16	7 x 7 x 7	3.5	2.6	6.9
5/8	7 x 7 x 7	4.5	3.4	9.0
5/8	7 x 6 x 19	3.9	3.0	7.9
3/4	7 x 6 x 19	5.1	3.8	10.0
15/16	7 x 6 x 19	7.9	5.9	16.0
1-1/8	7 x 6 x 19	11.0	8.4	22.0
1-5/16	7 x 6 x 19	15.0	11.0	30.0
1-1/2	7 x 6 x 19	19.0	14.0	39.0
1-11/16	7 x 6 x 19	24.0	18.0	49.0
1-7/8	7 x 6 x 19	30.0	22.0	60.0
2-1/4	7 x 6 x 19	42.0	31.0	84.0
2-5/8	7 x 6 x 19	56.0	42.0	112.0

* These values only apply when the D/d ratio is 5 or greater where:
D = Diameter of curvature around which cable body is bent.
d = Diameter of cable body.

TABLE N-184-9

RATED CAPACITIES FOR 2-LEG & 3-LEG BRIDLE SLINGS
CABLE LAID ROPE – MECHANICAL SPLICE ONLY
7 x 7 x 7 AND 7 x 7 x 19 CONSTRUCTIONS GALVANIZED AIRCRAFT GRADE ROPE
7 x 6 x 19 IWRC CONSTRUCTION IMPROVED PLOW STEEL GRADE ROPE

Rope		Rated Capacities, Tons (2,000 lb)					
		2-Leg Bridle Sling			3-Leg Bridle Sling		
Dia (Inches)	Constr	Vert 30 deg Horz 60 deg	45 degree Angle	Vert 60 deg Horz 30 deg	Vert 30 deg Horz 60 deg	45 degree Angle	Vert 60 deg Horz 30 deg
1/4	7 x 7 x 7	0.87	0.71	0.50	1.3	1.1	0.75
3/8	7 x 7 x 7	1.9	1.5	1.1	2.8	2.3	1.6
1/2	7 x 7 x 7	3.2	2.6	1.8	4.8	3.9	2.8
5/8	7 x 7 x 7	4.8	3.9	2.8	7.2	5.9	4.2
3/4	7 x 7 x 7	6.6	5.4	3.8	9.9	8.1	5.7
5/8	7 x 7 x 19	5.0	4.1	2.9	7.5	6.1	4.3
3/4	7 x 7 x 19	7.0	5.7	4.1	10.0	8.6	6.1
7/8	7 x 7 x 19	9.3	7.6	5.4	14.0	11.0	8.1
1	7 x 7 x 19	12.0	9.7	6.9	18.0	14.0	10.0
1-1/8	7 x 7 x 19	14.0	12.0	8.2	21.0	17.0	12.0
1-1/4	7 x 7 x 19	17.0	14.0	9.9	26.0	21.0	15.0
3/4	7x6x19 IWRC	6.6	5.4	3.8	9.9	8.0	5.7
7/8	7x6x19 IWRC	8.7	7.1	5.0	13.0	11.0	7.5
1	7x6x19 IWRC	11.0	9.0	6.4	17.0	13.0	9.6
1-1/8	7x6x19 IWRC	13.0	11.0	7.7	20.0	16.0	11.0
1-1/4	7x6x19 IWRC	16.0	13.0	9.2	24.0	20.0	14.0
1-5/16	7x6x19 IWRC	17.0	14.0	10.0	26.0	21.0	15.0
1-3/8	7x6x19 IWRC	19.0	15.0	11.0	28.0	23.0	16.0
1-1/2	7x6x19 IWRC	22.0	18.0	13.0	33.0	27.0	19.0

TABLE N-184-10

RATED CAPACITIES FOR 2-LEG AND 3-LEG BRIDLE SLINGS
8-PART AND 6-PART BRAIDED ROPE
6 x 7 AND 6 x 19 CONSTRUCTION IMPROVED PLOW STEEL GRADE ROPE
7 x 7 CONSTRUCTION GALVANIZED AIRCRAFT GRADE ROPE

Component Rope		Rated Capacities, Tons (2,000 lb)											
		2-Leg Bridle Slings						3-Leg Bridle Slings					
		Vert 30 degree Horz 60 degree		45 degree Angle		Vert 60 degree Horz 30 degree		Vert 30 degree Horz 60 degree		45 degree Angle		Vert 60 degree Horz 30 degree	
Dia (Inches)	Constr	8-Part	6-Part	8-Part	6-Part	8-Part	6-Part	8-Part	6-Part	8-Part	6-Part	8-Part	6-Part
3/32	6 x 7	0.74	0.55	0.60	0.45	0.42	0.32	1.1	0.83	0.90	0.68	0.64	0.48
1/8	6 x 7	1.3	0.98	1.1	0.80	0.76	0.57	2.0	1.5	1.6	1.2	1.1	0.85
3/16	6 x 7	2.9	2.2	2.4	1.8	1.7	1.3	4.4	3.3	3.6	2.7	2.5	1.9
3/32	7 x 7	0.89	0.67	0.72	0.55	0.51	0.39	1.3	1.0	1.1	0.82	0.77	0.58
1/8	7 x 7	1.6	1.2	1.3	1.0	0.95	0.71	2.5	1.8	2.0	1.5	1.4	1.1
3/16	7 x 7	3.6	2.7	2.9	2.2	2.1	1.5	5.4	4.0	4.4	3.3	3.1	2.3
3/16	6 x 19	3.0	2.2	2.4	1.8	1.7	1.3	4.5	3.4	3.7	2.8	2.6	1.9
1/4	6 x 19	5.3	4.0	4.3	3.2	3.1	2.3	8.0	6.0	6.5	4.9	4.6	3.4
5/16	6 x 19	8.3	6.2	6.7	5.0	4.8	3.6	12.0	9.3	10.0	7.6	7.1	5.4
3/8	6 x 19	12.0	8.9	9.7	7.2	6.8	5.1	18.0	13.0	14.0	11.0	10.0	7.7
7/16	6 x 19	15.0	12.0	13.0	9.8	9.3	6.9	24.0	18.0	20.0	15.0	14.0	10.0
1/2	6 x 19	21.0	15.0	17.0	13.0	12.0	9.0	31.0	23.0	25.0	19.0	18.0	13.0
9/16	6 x 19	26.0	20.0	21.0	16.0	15.0	11.0	39.0	29.0	32.0	24.0	23.0	17.0
5/8	6 x 19	32.0	24.0	26.0	20.0	19.0	14.0	48.0	36.0	40.0	30.0	28.0	21.0
3/4	6 x 19	46.0	35.0	38.0	28.0	27.0	20.0	69.0	52.0	56.0	42.0	40.0	30.0
7/8	6 x 19	62.0	47.0	51.0	38.0	36.0	27.0	94.0	70.0	76.0	57.0	54.0	40.0
1	6 x 19	81.0	61.0	66.0	50.0	47.0	35.0	122.0	91.0	99.0	74.0	70.0	53.0

TABLE N-184-13
RATED CAPACITIES FOR STRAND LAID ENDLESS SLINGS-MECHANICAL JOINT
IMPROVED PLOW STEEL GRADE ROPE

ROPE BODY		RATED CAPACITIES, TONS (2,000 lb)			
Dia (Inches)	Constr	Vertical	Choker	Vertical Basket*
1/4	6 x 19 IWRC	0.92	0.69	1.8
3/8	6 x 19 IWRC	2.0	1.5	4.1
1/2	6 x 19 IWRC	3.6	2.7	7.2
5/8	6 x 19 IWRC	5.6	4.2	11.0
3/4	6 x 19 IWRC	8.0	6.0	16.0
7/8	6 x 19 IWRC	11.0	8.1	21.0
1	6 x 19 IWRC	14.0	10.0	28.0
1-1/8	6 x 19 IWRC	18.0	13.0	35.0
1-1/4	6 x 37 IWRC	21.0	15.0	41.0
1-3/8	6 x 37 IWRC	25.0	19.0	50.0
1-1/2	6 x 37 IWRC	29.0	22.0	59.0

*These values only apply when the D/d ratio is 5 or greater where:
D = Diameter of curvature around which rope is bent.
d = Diameter of rope body.

TABLE N-184-14
RATED CAPACITIES FOR CABLE LAID ENDLESS SLINGS-MECHANICAL JOINT
7 x 7 x 7 AND 7 x 7 x 19 CONSTRUCTIONS GALVANIZED AIRCRAFT GRADE ROPE
7 x 6 x 19 IWRC CONSTRUCTION IMPROVED PLOW STEEL GRADE ROPE

CABLE BODY		RATED CAPACITIES, TONS (2,000 lb)			
Dia (Inches)	Constr	Vertical	Choker	Vertical Basket*
1/4	7 x 7 x 7	0.83	0.62	1.6
3/8	7 x 7 x 7	1.8	1.3	3.5
1/2	7 x 7 x 7	3.0	2.3	6.1
5/8	7 x 7 x 7	4.5	3.4	9.1
3/4	7 x 7 x 7	6.3	4.7	12.0
5/8	7 x 7 x 19	4.7	3.5	9.5
3/4	7 x 7 x 19	6.7	5.0	13.0
7/8	7 x 7 x 19	8.9	6.6	18.0
1	7 x 7 x 19	11.0	8.5	22.0
1-1/8	7 x 7 x 19	14.0	10.0	28.0
1-1/4	7 x 7 x 19	17.0	12.0	33.0
3/4	7 x 6 x 19 IWRC	6.2	4.7	12.0
7/8	7 x 6 x 19 IWRC	8.3	6.2	16.0
1	7 x 6 x 19 IWRC	10.0	7.9	21.0
1-1/8	7 x 6 x 19 IWRC	13.0	9.7	26.0
1-1/4	7 x 6 x 19 IWRC	16.0	12.0	31.0
1-3/8	7 x 6 x 19 IWRC	18.0	14.0	37.0
1-1/2	7 x 6 x 19 IWRC	22.0	16.0	43.0

*These values only apply when the D/d value is 5 or greater where:
D = Diameter of curvature around which cable body is bent.
d = Diameter of cable body.

(5) *Removal from service.* Wire rope slings shall be immediately removed from service if any of the following conditions are present:

(i) Ten randomly distributed broken wires in one rope lay, or five broken wires in one strand in one rope lay.

(ii) Wear or scraping of one-third the original diameter of outside individual wires.

(iii) Kinking, crushing, bird caging or any other damage resulting in distortion of the wire rope structure.

(iv) Evidence of heat damage.

(v) End attachments that are cracked, deformed or worn.

(vi) Hooks that have been opened more than 15 percent of the normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook.

(vii) Corrosion of the rope or end attachments.

(g) *Metal mesh slings.* (1) *Sling marking.* Each metal mesh sling shall have permanently affixed to it a durable marking that states the rated capacity for vertical basket hitch and choker hitch loadings.

(2) *Handles.* Handles shall have a rated capacity at least equal to the metal fabric and exhibit no deformation after proof testing.

(3) *Attachments of handles to fabric.* The fabric and handles shall be joined so that:

(i) The rated capacity of the sling is not reduced.

(ii) The load is evenly distributed across the width of the fabric.

(iii) Sharp edges will not damage the fabric.

(4) *Sling coatings.* Coatings which diminish the rated capacity of a sling shall not be applied.

(5) *Sling testing.* All new and repaired metal mesh slings, including handles, shall not be used unless proof tested by the manufacturer or equivalent entity at a minimum of 1½ times their rated capacity. Elastomer impregnated slings shall be proof tested before coating.

(6) *Proper use of metal mesh slings.* Metal mesh slings shall not be used to lift loads in excess of their rated capacities as prescribed in Table N-184-15. Slings not included in this table shall be used only in accordance with the manufacturer's recommendations.

(7) *Safe operating temperatures.* Metal mesh slings which are not impregnated with elastomers may be used in a temperature range from minus 20°F to plus 550°F without decreasing the working load limit. Metal mesh slings impregnated with polyvinyl chloride or neoprene may be used only in a temperature range from zero degrees to plus 200°F. For operations outside these temperature ranges or for metal mesh slings impregnated with other materials, the sling manufacturer's recommendations shall be followed.

(8) *Repairs.* (i) Metal mesh slings which are repaired shall not be used unless repaired by a metal mesh sling manufacturer or an equivalent entity.

(ii) Once repaired, each sling shall be permanently marked or tagged, or a written record maintained, to indicate the date and nature of the repairs and the person or organization that performed the repairs. Records of repairs shall be made available for examination.

(9) *Removal from service.* Metal mesh slings shall be immediately removed from service if any of the following conditions are present:

(i) A broken weld or broken brazed joint along the sling edge.

(ii) Reduction in wire diameter of 25 per cent due to abrasion or 15 per cent due to corrosion.

(iii) Lack of flexibility due to distortion of the fabric.

TABLE N-184-15
Rated Capacities
Carbon Steel & Stainless Steel
Metal Mesh Slings

SLING WIDTH IN INCHES	VERTICAL OR CHOKER	VERTICAL BASKET	EFFECT OF ANGLE ON RATED CAPACITIES IN BASKET HITCH		
			30 deg Vertical 60 deg Horizontal	45 deg Vertical 45 deg Horizontal	60 deg Vertical 30 deg Horizontal
Heavy Duty-10 Ga 35 Spirals/Ft of sling width					
3	1,500	3,000	2,600	2,100	1,500
4	2,100	4,200	3,600	2,900	2,100
6	4,000	8,000	6,900	5,600	4,000
8	6,000	12,000	10,400	8,400	6,000
9	8,000	16,000	13,800	11,200	8,000
12	10,000	20,000	17,300	14,100	10,000
13	12,000	24,000	20,700	16,900	12,000
14	14,000	28,000	24,200	19,700	14,000
16	16,000	32,000	27,700	22,500	16,000
18	18,000	36,000	31,100	25,400	18,000
20	20,000	40,000	34,600	28,200	20,000
Medium Duty-12 Ga 53 Spirals/Ft of sling width					
3	1,350	2,700	2,300	1,900	1,400
4	2,000	4,000	3,500	2,800	2,000
6	2,700	5,400	4,700	3,800	2,700
8	4,500	9,000	7,800	6,400	4,500
9	6,000	12,000	10,400	8,500	6,000
12	7,500	15,000	13,000	10,600	7,500
13	9,000	18,000	15,600	12,700	9,000
14	10,500	21,000	18,200	14,800	10,500
16	12,000	24,000	20,800	17,000	12,000
18	13,500	27,000	23,400	19,100	13,500
20	15,000	30,000	26,000	21,200	15,000
Light Duty-14 Ga 59 Spirals/Ft of sling width					
3	900	1,800	1,600	1,300	900
4	1,400	2,800	2,400	2,000	1,400
6	2,000	4,000	3,500	2,800	2,000
8	3,000	6,000	5,200	4,200	3,000
9	4,000	8,000	6,900	5,700	4,000
12	5,000	10,000	8,600	7,100	5,000
13	6,000	12,000	10,400	8,500	6,000
14	7,000	14,000	12,100	9,900	7,000
16	8,000	16,000	13,900	11,300	8,000
18	9,000	18,000	15,600	12,700	9,000
20	10,000	20,000	17,300	14,100	10,000

(iv) Distortion of the female handle so that the depth of the slot is increased more than 10 per cent.

(v) Distortion of either handle so that the width of the eye is decreased more than 10 per cent.

(vi) A 15 percent reduction of the original cross sectional area of metal at any point around the handle eye.

(vii) Distortion of either handle out of its plane.

(h) *Natural and synthetic fiber rope slings.*

(1) *Sling use.* (i) Fiber rope slings made from conventional three strand construction fiber rope shall not be used with loads in excess of the rated capacities prescribed in Tables N-184-16 through N-184-19.

(ii) Fiber rope slings shall have a diameter of curvature meeting at least the minimums specified in Figs. N-184-4 and N-184-5.

(iii) Slings not included in these tables shall be used only in accordance with the manufacturer's recommendations.

TABLE N-184-18
Polyester Rope Slings

ROPE DIA. NOMINAL IN INCHES	NOMINAL WEIGHT PER 100 Ft. IN POUNDS	EYE &EYE SLING VERTICAL HITCH	EYE &EYE SLING CHOKER HITCH	EYE &EYE SLING BASKET HITCH ANGLE OF ROPE TO HORIZONTAL 90°	60°	45°	30°	EYE &EYE SLING BASKET HITCH ANGLE OF ROPE TO VERTICAL 0°	30°	45°	60°	ENDLESS SLING VERTICAL HITCH	ENDLESS SLING CHOKER HITCH	ENDLESS SLING BASKET HITCH ANGLE OF ROPE TO HORIZONTAL 90°	60°	45°	30°	ENDLESS SLING BASKET HITCH ANGLE OF ROPE TO VERTICAL 0°	30°	45°	60°
1/2	8.0	635	320	1,270	1,100	900	635	1,140	570	2,290	1,980	1,620	1,140								
9/16	10.2	790	395	1,580	1,370	1,120	790	1,420	710	2,840	2,460	2,010	1,420								
5/8	13.0	990	495	1,980	1,710	1,400	990	1,780	890	3,570	3,090	2,520	1,780								
3/4	17.5	1,240	620	2,480	2,150	1,750	1,240	2,230	1,120	4,470	3,870	3,160	2,230								
13/16	21.0	1,540	770	3,080	2,670	2,180	1,540	2,770	1,390	5,540	4,800	3,920	2,770								
7/8	25.0	1,780	890	3,560	3,080	2,520	1,780	3,200	1,600	6,410	5,550	4,530	3,200								
1"	30.5	2,160	1,090	4,360	3,780	3,080	2,180	3,920	1,960	7,850	6,800	5,550	3,920								
1 1/16	34.5	2,530	1,270	5,060	4,380	3,580	2,530	4,550	2,280	9,110	7,990	6,440	4,550								
1 1/8	40.0	2,920	1,460	5,840	5,060	4,130	2,920	5,260	2,630	10,500	9,100	7,440	5,260								
1 1/4	46.3	3,290	1,650	6,580	5,700	4,650	3,290	5,920	2,960	11,800	10,300	8,380	5,920								
1 5/16	52.5	3,710	1,860	7,420	6,430	5,250	3,710	6,680	3,340	13,400	11,600	9,450	6,680								
1 1/2	66.8	4,630	2,320	9,260	8,020	6,550	4,630	8,330	4,170	16,700	14,400	11,800	8,330								
1 5/8	82.0	5,640	2,820	11,300	9,770	7,980	5,640	10,200	5,080	20,300	17,600	14,400	10,200								
1 3/4	98.0	6,710	3,360	13,400	11,600	9,490	6,710	12,100	6,040	24,200	20,900	17,100	12,100								
2"	116.0	7,920	3,960	15,800	13,700	11,200	7,920	14,300	7,130	28,500	24,700	20,200	14,300								
2 1/8	135.0	9,110	4,460	18,200	15,800	12,900	9,110	16,400	8,200	32,800	28,400	23,200	16,400								
2 1/4	157.0	10,600	5,300	21,200	18,400	15,000	10,600	19,100	9,540	38,200	33,100	27,000	19,100								
2 1/2	181.0	12,100	6,080	24,200	21,000	17,100	12,100	21,800	10,900	43,600	37,700	30,800	21,800								
2 5/8	205.0	13,600	6,800	27,200	23,600	19,200	13,600	24,500	12,200	49,000	42,400	34,600	24,500								

See Figs. N-184-4 & N-184-5 for sling configuration descriptions.

TABLE N-184-16
Manila Rope Slings

ROPE DIA. NOMINAL IN INCHES	NOMINAL WEIGHT PER 100 Ft. IN POUNDS	EYE &EYE SLING VERTICAL HITCH	EYE &EYE SLING CHOKER HITCH	EYE &EYE SLING BASKET HITCH ANGLE OF ROPE TO HORIZONTAL 90°	60°	45°	30°	EYE &EYE SLING BASKET HITCH ANGLE OF ROPE TO VERTICAL 0°	30°	45°	60°	ENDLESS SLING VERTICAL HITCH	ENDLESS SLING CHOKER HITCH	ENDLESS SLING BASKET HITCH ANGLE OF ROPE TO HORIZONTAL 90°	60°	45°	30°	ENDLESS SLING BASKET HITCH ANGLE OF ROPE TO VERTICAL 0°	30°	45°	60°
1/2	7.5	480	240	960	830	680	480	865	430	1,730	1,500	1,220	865								
9/16	10.4	620	310	1,240	1,070	875	620	1,120	560	2,230	1,930	1,580	1,120								
5/8	13.3	790	395	1,580	1,370	1,120	790	1,420	710	2,840	2,460	2,010	1,420								
3/4	16.7	970	485	1,940	1,680	1,370	970	1,750	875	3,490	3,020	2,470	1,750								
13/16	19.5	1,170	585	2,340	2,030	1,650	1,170	2,110	1,050	4,210	3,650	2,980	2,110								
7/8	22.5	1,390	695	2,780	2,410	1,970	1,390	2,500	1,250	5,000	4,330	3,540	2,500								
1"	27.0	1,620	810	3,240	2,810	2,290	1,620	2,920	1,460	5,830	5,050	4,120	2,920								
1 1/16	31.3	1,890	945	3,780	3,270	2,670	1,890	3,400	1,700	6,800	5,890	4,810	3,400								
1 1/8	36.0	2,160	1,080	4,320	3,740	3,050	2,160	3,890	1,940	7,780	6,730	5,500	3,890								
1 1/4	41.7	2,430	1,220	4,860	4,210	3,440	2,430	4,370	2,190	8,750	7,580	6,190	4,370								
1 5/16	47.9	2,700	1,350	5,400	4,680	3,820	2,700	4,860	2,430	9,720	8,420	6,870	4,860								
1 1/2	59.9	3,330	1,670	6,660	5,770	4,710	3,330	5,990	3,000	12,000	10,400	8,480	5,990								
1 5/8	74.6	4,050	2,030	8,100	7,010	5,730	4,050	7,290	3,650	14,600	12,600	10,300	7,290								
1 3/4	89.3	4,770	2,390	9,540	8,260	6,740	4,770	8,590	4,290	17,200	14,900	12,100	8,590								
2"	107.5	5,580	2,790	11,200	9,660	7,890	5,580	10,000	5,020	20,100	17,400	14,200	10,000								
2 1/8	125.0	6,400	3,240	13,000	11,200	9,160	6,480	11,700	5,830	23,300	20,200	16,500	11,700								
2 1/4	146.0	7,380	3,690	14,800	12,800	10,400	7,380	13,300	6,640	26,600	23,000	18,800	13,300								
2 1/2	166.7	8,370	4,190	16,700	14,500	11,800	8,370	15,100	7,530	30,100	26,100	21,300	15,100								
2 5/8	190.8	9,360	4,680	18,700	16,200	13,200	9,360	16,800	8,420	33,700	29,200	23,800	16,800								

See Figs. N-184-4 & N-184-5 for sling configuration descriptions.

TABLE N-184-19
Polypropylene Rope Slings

ROPE DIA. NOMINAL IN INCHES	NOMINAL WEIGHT PER 100 Ft. IN POUNDS	EYE &EYE SLING VERTICAL HITCH	EYE &EYE SLING CHOKER HITCH	EYE &EYE SLING BASKET HITCH ANGLE OF ROPE TO HORIZONTAL 90°	60°	45°	30°	EYE &EYE SLING BASKET HITCH ANGLE OF ROPE TO VERTICAL 0°	30°	45°	60°	ENDLESS SLING VERTICAL HITCH	ENDLESS SLING CHOKER HITCH	ENDLESS SLING BASKET HITCH ANGLE OF ROPE TO HORIZONTAL 90°	60°	45°	30°	ENDLESS SLING BASKET HITCH ANGLE OF ROPE TO VERTICAL 0°	30°	45°	60°
1/2	4.7	645	325	1,290	1,120	910	645	1,160	580	2,320	2,010	1,640	1,160								
9/16	6.1	780	390	1,560	1,350	1,100	780	1,400	700	2,810	2,430	1,990	1,400								
5/8	7.5	950	475	1,900	1,650	1,340	950	1,710	855	3,420	2,960	2,420	1,710								
3/4	10.7	1,300	650	2,600	2,250	1,840	1,300	2,340	1,170	4,680	4,050	3,310	2,340								
13/16	12.7	1,520	760	3,040	2,630	2,150	1,520	2,740	1,370	5,470	4,740	3,870	2,740								
7/8	15.0	1,760	880	3,520	3,050	2,490	1,760	3,170	1,580	6,340	5,490	4,480	3,170								
1"	18.0	2,140	1,070	4,280	3,700	3,030	2,140	3,850	1,930	7,700	6,670	5,450	3,865								
1 1/16	20.4	2,450	1,230	4,900	4,240	3,460	2,450	4,410	2,210	8,820	7,640	6,240	4,410								
1 1/8	23.7	2,800	1,400	5,600	4,850	3,960	2,800	5,040	2,520	10,100	8,730	7,130	5,040								
1 1/4	27.0	3,210	1,610	6,420	5,560	4,540	3,210	5,780	2,890	11,600	10,000	8,170	5,780								
1 5/16	30.5	3,600	1,800	7,200	6,240	5,090	3,600	6,480	3,240	13,000	11,200	9,170	6,480								
1 1/2	38.5	4,540	2,270	9,080	7,860	6,420	4,540	8,170	4,090	16,300	14,200	11,600	8,170								
1 5/8	47.5	5,510	2,760	11,000	9,540	7,790	5,510	9,920	4,960	19,800	17,200	14,000	9,920								
1 3/4	57.0	6,580	3,290	13,200	11,400	9,300	6,580	11,800	5,920	23,700	20,500	16,800	11,800								
2"	69.0	7,960	3,980	15,900	13,800	11,300	7,960	14,300	7,160	28,700	24,800	20,300	14,300								
2 1/8	80.0	9,330	4,670	18,700	16,200	13,200	9,330	16,800	8,400	33,600	29,100	23,800	16,800								
2 1/4	92.0	10,600	5,300	21,200	18,400	15,000	10,600	19,100	9,540	38,200	33,100	27,000	19,100								
2 1/2	107.0	12,200	6,100	24,400	21,100	17,300	12,200	22,000	11,000	43,900	38,000	31,100	22,000								
2 5/8	120.0	13,800	6,900	27,600	23,900	19,600	13,800	24,800	12,400	49,700	43,000	35,100	24,800								

See Figs. N-184-4 & N-184-5 for sling configuration descriptions.

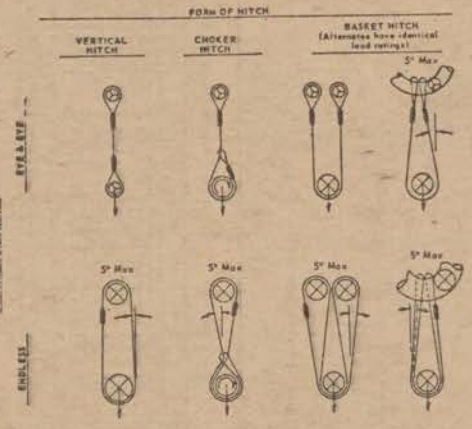
TABLE N-184-17
Nylon Rope Slings

ROPE DIA. NOMINAL IN INCHES	NOMINAL WEIGHT PER 100 Ft. IN POUNDS	EYE &EYE SLING VERTICAL HITCH	EYE &EYE SLING CHOKER HITCH	EYE &EYE SLING BASKET HITCH ANGLE OF ROPE TO HORIZONTAL 90°	60°	45°	30°	EYE &EYE SLING BASKET HITCH ANGLE OF ROPE TO VERTICAL 0°	30°	45°	60°	ENDLESS SLING VERTICAL HITCH	ENDLESS SLING CHOKER HITCH	ENDLESS SLING BASKET HITCH ANGLE OF ROPE TO HORIZONTAL 90°	60°	45°	30°	ENDLESS SLING BASKET HITCH ANGLE OF ROPE TO VERTICAL 0°	30°	45°	60°
1/2	6.5	635	320	1,270	1,100	900	635	1,140	570	2,290	1,980	1,620	1,140								
9/16	8.3	790	395	1,580	1,370	1,120	790	1,420	710	2,840	2,460	2,010	1,420								
5/8	10.5	1,030	515	2,060	1,780	1,460	1,030	1,850	925	3,710	3,210	2,620	1,850								
3/4	14.5	1,410	705	2,820	2,440	1,990	1,410	2,540	1,270	5,080	4,400	3,590	2,540								
13/16	17.0	1,680	840	3,360	2,910	2,380	1,680	3,020	1,510	6,050	5,240	4,280	3,020								
7/8	20.0	1,980	990	3,960	3,430	2,800	1,980	3,560	1,780	7,130	6,170	5,040	3,560								
1"	24.0	2,480	1,240	4,960	4,300	3,510	2,480	4,460	2,230	8,930	7,730	6,310	4,460								
1 1/16	29.0	2,850	1,430	5,700	4,940	4,030	2,850	5,130	2,570	10,300	8,890	7,260	5,129								
1 1/8	34.0	3,270	1,640	6,540	5,660	4,620	3,270	5,890	2,940	11,800	10,200	8,330	5,890								
1 1/4	40.0	3,710	1,860	7,420	6,430	5,250	3,710	6,680	3,340	13,400	11,600	9,450	6,680								
1 5/16	45.0	4,260	2,130	8,520	7,380	6,030	4,260	7,670	3,830	15,300	13,300	10,800	7,670								
1 1/2	55.0	5,250	2,630	10,500	9,090	7,420	5,250	9,450	4,730	18,900	16,400	13,400	9,450								
1 5/8	68.0	6,440	3,220	12,900	11,200	9,110	6,440	11,600	5,800	23,200	20,100	16,400	11,600								
1 3/4	83.0	7,720	3,860	15,400	13,400	10,900	7,720	13,900	6,950	27,800	24,100	19,700	13,900								
2"	95.0	9,110	4,560	18,200	15,800	12,900	9,110	16,400	8,200	32,800	28,400	23,200	16,400								
2 1/8	109.0	10,500	5,250	21,000	18,200	14,800	10,500	18,900	9,450	37,800	32,700	26,700	18,900								
2 1/4	129.0	12,400	6,200	24,800	21,500	17,500	12,400	22,300	11,200	44,600	38,700	31,600	22,300								
2 1/2	149.0	13,900	6,950	27,800	24,100	19,700	13,900	25,000	12,500	50,000	43,300	35,400	25,000								
2 5/8	168.0	16,000	8,000	32,000	27,700	22,600	16,000	28,800	14,400	57,600	49,900	40,700	28,800								

See Figs. N-184-4 & N-184-5 for sling configuration descriptions.

FIGURE N-184-4

Basic Sling Configurations
with Vertical Legs



NOTES: Angles 5° or less from the vertical may be considered vertical angles.

For slings with legs more than 5° off vertical, the actual angle as shown in Figure N-184-5 must be considered.

EXPLANATION OF SYMBOLS: MINIMUM DIAMETER OF CURVATURE

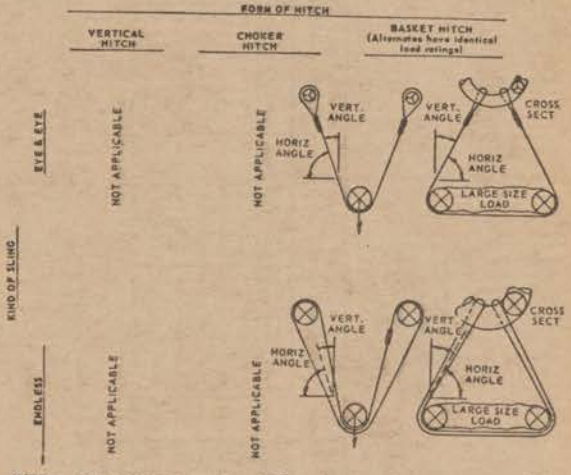
Represents a contact surface which shall have a diameter of curvature at least double the diameter of the rope from which the sling is made.

Represents a contact surface which shall have a diameter of curvature at least 8 times the diameter of the rope.

Represents a load in a choker hitch and illustrates the rotary force on the load and/or the slippage of the rope in contact with the load. Diameter of curvature of load surface shall be at least double the diameter of the rope.

FIGURE N-184-5

Sling Configurations
with Angled Legs



NOTES: For vertical angles of 5° or less, refer to Figure N-184-4 "Basic Sling Configurations with Vertical Legs".

See Figure N-184-4 for explanation of symbols.

(2) *Safe operating temperatures.* Natural and synthetic fiber rope slings, except for wet frozen slings, may be used in a temperature range from minus 20°F to plus 180°F without decreasing the working load limit. For operations outside this temperature range and for wet frozen slings, the sling manufacturer's recommendations shall be followed.

(3) *Splicing.* Spliced fiber rope slings shall not be used unless they have been spliced in accordance with the following minimum requirements and in accordance with any additional recommendations of the manufacturer:

(i) In manila rope, eye splices shall consist of at least three full tucks, and short splices shall consist of at least six full tucks, three on each side of the splice center line.

(ii) In synthetic fiber rope, eye splices shall consist of at least four full tucks, and short splices shall consist of at least eight full tucks, four on each side of the center line.

(iii) Strand end tails shall not be trimmed flush with the surface of the rope immediately adjacent to the full tucks. This applies to all types of fiber rope and both eye and short splices. For fiber rope under one inch in diameter, the tail shall project at least six rope diameters beyond the last full tuck. For fiber rope one inch in diameter and larger, the tail shall project at least six inches beyond the last full tuck. Where a projecting tail interferes with the use of the sling, the tail shall be tapered and spliced into the body of the rope using at least two additional tucks (which will require a tail length of approximately six rope diameters beyond the last full tuck).

(iv) Fiber rope slings shall have a minimum clear length of rope between eye splices equal to 10 times the rope diameter.

(v) Knots shall not be used in lieu of splices.

(vi) Clamps not designed specifically for fiber ropes shall not be used for splicing.

(vii) For all *eye* splices, the eye shall be of such size to provide an included angle of not greater than 60 degrees at the splice when the eye is placed over the load or support.

(4) *End attachments.* Fiber rope slings shall not be used if end attachments in contact with the rope have sharp edges or projections.

(5) *Removal from service.* Natural and synthetic fiber rope slings shall be immediately removed from service if any of the following conditions are present:

(i) Abnormal wear.

(ii) Powdered fiber between strands.

(iii) Broken or cut fibers.

(iv) Variations in the size or roundness of strands.

(v) Discoloration or rotting.

(vi) Distortion of hardware in the sling.

(6) *Repairs.* Only fiber rope slings made from new rope shall be used. Use of repaired or reconditioned fiber rope slings is prohibited.

(i) *Synthetic web slings.* (1) *Sling identification.* Each sling shall be marked or coded to show the rated capacities for each type of hitch and type of synthetic web material.

(2) *Webbing.* Synthetic webbing shall be of uniform thickness and width and selvage edges shall not be split from the webbing's width.

(3) *Fittings.* Fittings shall be:

(A) Of a minimum breaking strength equal to that of the sling; and

(B) Free of all sharp edges that could in any way damage the webbing.

(4) *Attachment of end fittings to webbing and formation of eyes.* Stitching shall be the only method used to attach end fittings to webbing and to form eyes. The thread shall be in an even pattern and contain a sufficient number of stitches to develop the full breaking strength of the sling.

(5) *Sling use.* Synthetic web slings illustrated in Fig. N-184-6 shall not be used with loads in excess of the rated capacities specified in Tables N-184-20 through N-184-22. Slings not included in these tables shall be used only in accordance with the manufacturer's recommendations.

(6) *Environmental conditions.* When synthetic web slings are used, the following precautions shall be taken:

(i) Nylon web slings shall not be used where fumes, vapors, sprays, mists or liquids of acids or phenolics are present.

(ii) Polyester and polypropylene web slings shall not be used where fumes, vapors, sprays, mists or liquids of caustics are present.

(iii) Web slings with aluminum fittings shall not be used where fumes, vapors, sprays, mists or liquids of caustics are present.

(7) *Safe operating temperatures.* Synthetic web slings of polyester and nylon shall not be used at temperatures in excess of 180°F. Polypropylene web slings

Fig. N-184-6
Basic Synthetic Web Sling Constructions

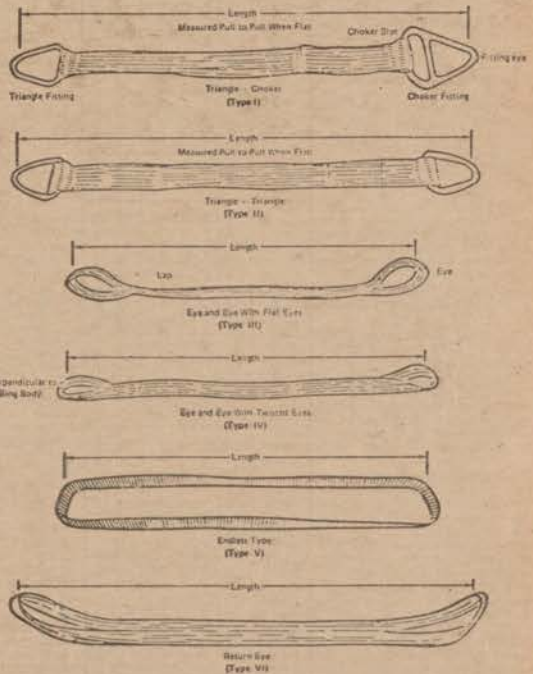


TABLE N-184-20
Rated Capacity in Pounds
Synthetic Web Slings
1,000 lbs Per Inch of Width
Single Ply

Sling Body Width, Inches	Triangle - Choker Slings, Type I Triangle - Triangle Slings, Type II Eye & Eye with Flat Eye Slings, Type III Eye & Eye with Twisted Eye Slings, Type IV			Endless Slings, Type V					Return Eye Slings, Type VI					
	Vert.	Choker	Vert. Basket	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket
1	1,000	750	2,000	1,700	1,400	1,000	1,600	1,300	1,000	1,600	1,300	3,200	2,800	2,300	1,600
2	2,000	1,500	4,000	3,500	2,800	2,000	3,200	2,600	2,000	3,200	2,600	6,400	5,500	4,500	3,200
3	3,000	2,200	6,000	5,200	4,200	3,000	4,800	3,800	3,000	4,800	3,800	9,600	8,300	6,800	4,800
4	4,000	3,000	8,000	6,900	5,700	4,000	6,400	5,100	4,000	6,400	5,100	12,800	11,100	9,000	6,400
5	5,000	3,700	10,000	8,700	7,100	5,000	8,000	6,400	5,000	8,000	6,400	16,000	13,900	11,300	8,000
6	6,000	4,500	12,000	10,400	8,500	6,000	9,600	7,700	6,000	9,600	7,700	19,200	16,600	13,600	9,600

Notes: 1. All angles shown are measured from the vertical.
2. Capacities for intermediate widths not shown may be obtained by interpolation.

TABLE N-184-21
Rated Capacity in Pounds
Synthetic Web Slings
1,200 lbs Per Inch of Width
Single Ply

Sling Body Width, Inches	Triangle - Choker Slings, Type I Triangle - Triangle Slings, Type II Eye & Eye with Flat Eye Slings, Type III Eye & Eye with Twisted Eye Slings, Type IV			Endless Slings, Type V					Return Eye Slings, Type VI					
	Vert.	Choker	Vert. Basket	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket
1	1,200	900	2,400	2,100	1,700	1,200	1,900	1,600	1,200	1,900	1,500	3,800	3,300	2,700	1,900
2	2,400	1,800	4,800	4,200	3,400	2,400	3,800	3,200	2,400	3,800	3,000	7,600	6,600	5,400	3,800
3	3,600	2,700	7,200	6,200	5,100	3,600	5,800	4,800	3,600	5,800	4,600	11,600	10,000	8,200	5,800
4	4,800	3,600	9,600	8,300	6,800	4,800	7,700	6,200	4,800	7,700	6,200	15,400	13,300	10,900	7,700
5	6,000	4,500	12,000	10,400	8,500	6,000	9,600	7,700	6,000	9,600	7,700	19,200	16,600	13,600	9,600
6	7,200	5,400	14,400	12,500	10,200	7,200	11,500	9,200	7,200	11,500	9,200	23,000	19,900	16,300	11,500

Sling Body Width, Inches	Return Eye Slings, Type VI					
	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket
1	950	750	1,900	1,650	1,350	950
2	1,900	1,500	3,800	3,300	2,700	1,900
3	2,850	2,250	5,700	4,950	4,050	2,850
4	3,800	3,000	7,600	6,600	5,400	3,800
5	4,750	3,750	9,500	8,250	6,750	4,750
6	5,800	4,600	11,600	10,000	8,200	5,800

Notes: 1. All angles shown are measured from the vertical.
2. Capacities for intermediate widths not shown may be obtained by interpolation.

TABLE N-184-22
Rated Capacity in Pounds
Synthetic Web Slings
1,600 lbs Per Inch of Width
Single Ply

Sling Body Width, Inches	Triangle - Choker Slings, Type I Triangle - Triangle Slings, Type II Eye & Eye with Flat Eye Slings, Type III Eye & Eye with Twisted Eye Slings, Type IV				Endless Slings, Type V					Return Eye Slings, Type VI					
	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket	Vert.	Choker	Vert. Basket	30° Basket	45° Basket	60° Basket
1	1,600	1,200	3,200	2,800	2,300	1,600	1,400	1,050	2,100	3,200	4,500	3,700	2,600	1,050	2,600	2,250	1,850	1,300
2	3,200	2,400	6,400	5,500	4,500	3,200	2,800	2,100	4,100	6,400	9,000	7,400	5,200	2,100	5,200	4,500	3,700	2,600
3	4,800	3,600	9,600	8,300	6,800	4,800	4,200	3,150	6,200	9,600	13,500	10,900	7,800	3,150	7,800	6,750	5,500	3,900
4	6,400	4,800	12,800	11,100	9,000	6,400	5,700	4,100	8,200	12,800	17,700	14,400	10,200	4,100	10,200	8,800	7,200	5,100
5	8,000	6,000	16,000	13,800	11,300	8,000	7,100	5,150	10,200	16,000	22,200	18,100	12,800	5,150	12,800	11,050	9,050	6,400
6	9,600	7,200	19,200	16,600	13,600	9,600	8,500	6,400	12,300	19,200	26,700	21,800	15,400	6,400	15,400	13,300	10,900	7,700

Notes: 1. All angles shown are measured from the vertical.
2. Capacities for intermediate widths not shown may be obtained by interpolation.

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shall not be used at temperatures in excess of 200°F.

(8) *Repairs.* (i) Synthetic web slings which are repaired shall not be used unless repaired by a sling manufacturer or an equivalent entity.

(ii) Each repaired sling shall be proof tested by the manufacturer or equivalent entity to twice the rated capacity prior to its return to service. The employer shall retain a certificate of the proof test and make it available for examination.

(iii) Slings, including webbing and fittings, which have been repaired in a temporary manner shall not be used.

(9) *Removal from service.* Synthetic web slings shall be immediately removed from service if any of the following conditions are present:

(i) Acid or caustic burns;

(ii) Melting or charring of any part of the sling surface;

(iii) Snags, punctures, tears or cuts;

(iv) Broken or worn stitches; or

(v) Distortion of fittings.

[40 FR 27369, June 27, 1975]

NOTE: New § 1910.184 is effective July 27, 1975.

§ 1910.189 Sources of standards.

Sec.	Source
1910.176	41 CFR 50-204.3.
1910.177	NFPA No. 231-1970, General Indoor Storage.
1910.178(a)(1)	NFPA No. 505-1969, Powered Industrial Trucks.
1910.178(a)(2)	ANSI B56.1-1969, Standard for Powered Industrial Trucks. Part II.
1910.178(a)(3)	NFPA No. 505-1969, Powered Industrial Trucks.
1910.178(a)(4)-(7)	ANSI B56.1-1969, Standard for Powered Industrial Trucks.
1910.178(b)-(d)	NFPA No. 505-1969, Powered Industrial Trucks.
1910.178(e)-(p)	ANSI B56.1-1969, Powered Industrial Trucks.
1910.178(q)	NFPA No. 505-1969, Powered Industrial Trucks.
1910.179	ANSI B30.2.0-1967, Safety Code for Overhead and Gantry Cranes.
1910.180	ANSI B30.5-1968, Safety Code for Crawler, Locomotive, and Truck Cranes.
1910.181	ANSI B30.6-1969, Safety Code for Derricks.

[39 FR 23502, June 27, 1974. Redesignated at 40 FR 13441, March 26, 1975]

§ 1910.190 Standards organizations.

Specific standards of the following organizations have been referenced in this part. Copies of the referenced materials may be obtained from the issuing organizations.

American Society of Heating, Refrigeration, and Air Conditioning Engineers, Inc., 345 East 47th Street, New York, NY 10017.

Crane Manufacturers Association of America, Inc., 1 Thomas Circle NW., Washington, DC 20005.

American National Standards Institute, 1430 Broadway, New York, NY 10018.

National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210.

Society of Automotive Engineers, Inc., 485 Lexington Avenue, New York, NY 10017.

American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

[39 FR 23502, June 27, 1974. Redesignated at 40 FR 13441, March 26, 1975, and amended at 40 FR 18426, April 28, 1975; 40 FR 27400, June 27, 1975]

NOTE: The addition of American Society of Heating, Refrigeration and Air Conditioning Engineers, Inc. to the list is effective July 27, 1975.

Subpart O—Machinery and Machine Guarding

§ 1910.211 Definitions.

(a) As used in §§ 1910.213 and 1910.214 unless the context clearly requires otherwise, the following woodworking machinery terms shall have the meaning prescribed in this paragraph.

(1) "Point of operations" means that point at which cutting, shaping, boring, or forming is accomplished upon the stock.

(2) "Push stick" means a narrow strip of wood or other soft material with a notch cut into one end and which is used to push short pieces of material through saws.

(3) "Block" means a short block of wood, provided with a handle similar to that of a plane and a shoulder at the rear end, which is used for pushing short stock over revolving cutters.

(b) As used in § 1910.215 unless the context clearly requires otherwise, the following abrasive wheel machinery

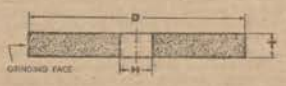
terms shall have the meanings prescribed in this paragraph.

(1) "Type 1 straight wheels" means wheels having diameter, thickness, and hole size dimensions, and they should be used only on the periphery. Type 1 wheels shall be mounted between flanges.

LIMITATION: Hole dimension (H) should not be greater than two-thirds of wheel diameter dimension, (D) for precision, grinding, centerless, or surface grinding applications. Maximum hole size for all other applications should not exceed one-half wheel diameter.

Figure No. 0-1

TYPE 1 STRAIGHT WHEELS



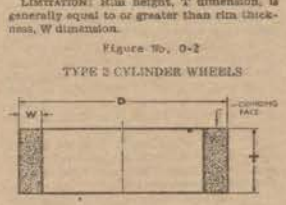
Type 1 — Straight Wheel
Peripheral grinding wheel having a diameter, thickness and hole.

(2) "Type 2 cylinder wheels" means wheels having diameter, wheel thickness, and rim thickness dimensions. Grinding is performed on the rim face only, dimension W. Cylinder wheels may be plain, plate mounted, inserted nut, or of the projecting stud type.

LIMITATION: Rim height, T dimension, is generally equal to or greater than rim thickness, W dimension.

Figure No. 0-2

TYPE 2 CYLINDER WHEELS



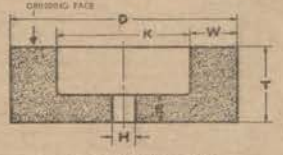
Type 2 — Cylinder Wheel
Side grinding wheel having a diameter, thickness and wall—wheel is mounted on the diameter.

(3) "Type 6 straight cup wheels" means wheels having diameter, thickness, hole size, rim thickness, and back thickness dimensions. Grinding is always performed on rim face, W dimension.

LIMITATION: Minimum back thickness, E dimension, should not be less than one-fourth T dimension. In addition, when unthreaded hole wheels are specified the inside flat, K dimension, must be large enough to accommodate a suitable flange.

Figure No. 0-3

TYPE 6 STRAIGHT CUP WHEELS



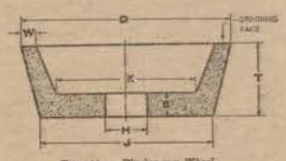
Type 6 — Straight-cup Wheel
Side grinding wheel having a diameter, thickness and hole with one side straight or flat and the opposite side recessed. This type, however, differs from Type 5 in that the grinding is performed on the wall of the abrasive created by the difference between the diameter of the recess and the outside diameter of the wheel. Therefore, the wall dimension "W" takes precedence over the diameter of the recess as an essential intermediate dimension to describe this shape type.

(4) "Type 11 flaring cup wheels" mean wheels having double diameter dimensions D and J, and in addition have thickness, hole size, rim and back thickness dimensions. Grinding is always performed on rim face, W dimension. Type 11 wheels are subject to all limitations of use and mounting listed for type 6 straight sided cup wheels definition.

LIMITATION: Minimum back thickness, E dimension, should not be less than one-fourth T dimension. In addition when unthreaded hole wheels are specified the inside flat, K dimension, shall be large enough to accommodate a suitable flange.

Figure No. 0-4

TYPE 11 FLARING CUP WHEELS



Type 11 — Flaring-cup Wheel
Side grinding wheel having a wall flared or tapered outward from the back. Wall thickness at the back is normally greater than at the grinding face (W).

(5) "Modified types 6 and 11 wheels (terrazzo)" mean some type 6 and 11 cup wheels used in the terrazzo trade having tapered K dimensions to match a special tapered flange furnished by the machine builder.

LIMITATION: These wheels shall be mounted only with a special tapered flange.

Figure No. 0-5
Type 6X 11 Wheels (Terrazzo)

Tapered remainder of modified types 6 and 11 wheels. (Terrazzo) drawings reserved K dimensions.

(6) "Types 27 and 28 depressed center wheels" mean wheels having diameter, thickness, and hole size dimensions. Both types are reinforced, organic bonded wheels having offset hubs which permit side and peripheral grinding operations without interference with the mounting. Type 27 wheels are manufactured with flat grinding rims permitting notching and cutting operations. Type 28 wheels have saucer shaped grinding rims.

(i) Limitations: Special supporting, back adapter and inside flange nuts are required for the proper mounting of these types of wheels subject to limitations of § 1910.215(c)(4) (i) and (ii).

(ii) Mounts which are affixed to the wheel by the manufacturer may not require an inside nut and shall not be reused.

(7) "Type 27A depressed center, cutting-off wheels" mean wheels having diameter, thickness, and hole size dimensions. They are reinforced, organic bonded, offset hub type wheels, usually 16 inches diameter and larger, specially designed for use on cutting-off machines where mounting nut or outer flange interference cannot be tolerated.

LIMITATIONS: See § 1910.215(c)(3).

(8) "Surface feet per minute" (s.f.p.m.) means the distance in feet any one abrasive grain on the peripheral surface of a grinding wheel travels in 1 minute.

$$\text{Surface Feet Per Minute} = \frac{3.1416 \times \text{diameter in inches} \times \text{r.p.m.}}{12}$$

or

$$.262 \times \text{diameter in inches} \times \text{r.p.m.}$$

Examples: (a) 24-inch diameter wheel, 1,000 revolutions per minute. Surface Feet per minute $.262 \times 24 \times 1{,}000 = 6{,}288$ s.f.p.m.

(b) 12-inch diameter wheel, 1,000 revolutions per minute. Surface Feet per minute $262 \times 12 \times 1{,}000 = 3{,}144$ s.f.p.m.

(9) "Flanges" means collars, discs or plates between which wheels are mounted and are referred to as adaptor, sleeve, or back up type. See paragraph (c) of § 1910.215 for full description.

(10) "Snagging" means grinding which removes relatively large amounts of material without regard to close tolerances or surface finish requirements.

(11) "Off-hand grinding" means the grinding of any material or part which is held in the operator's hand.

(12) "Safety guard" means an enclosure designed to restrain the pieces of the grinding wheel and furnish all possible protection in the event that the wheel is broken in operation. See paragraph (b) of § 1910.215.

(13) "Cutting off wheels" mean wheels having diameter thickness and hole size dimensions and are subject to all limitations of mounting and use listed for type 1 wheels, the definition in subparagraph (1) of this paragraph and paragraph (d) of § 1910.215. They may be steel centered, diamond abrasive or organic bonded abrasive of the plain or reinforced type.

(i) Limitation: Cutting off wheels are recommended only for use on specially designed and fully guarded machines and are subject to the following maximum thickness and hole size limitations.

Wheel diameter:	Max. thickness (inch)
6 inch and smaller	3/64
Larger than 6 inches to 12 inches	1/16
Larger than 12 inches to 23 inches	3/32
Larger than 23 inches	1/8

(ii) Maximum hole size for cutting-off wheels should not be larger than 1/4-wheel diameter.

(14) "Abrasive wheel" means a cutting tool consisting of abrasive grains held together by organic or inorganic bonds. Diamond and reinforced wheels are included.

(15) "Organic wheels" means wheels which are bonded by means of an organic material such as resin, rubber, shellac, or other similar bonding agent.

(16) "Inorganic wheels" means wheels which are bonded by means of inorganic material such as clay, glass, porcelain, sodium silicate, magnesium oxychloride, or metal. Wheels bonded with clay, glass, porcelain or related ceramic materials are characterized as "vitrified bonded wheels."

(c) As used in 1910.216, unless the context clearly requires otherwise, the following mills and calendars in the rubber and plastic industries terms shall have the meanings prescribed in this paragraph

(1) "Bite" means the nip point between any two inrunning rolls.

(2) "Calender" means a machine equipped with two or more metal rolls revolving in opposite directions and used for continuously sheeting or plying up rubber and plastics compounds and for frictioning or coating materials with rubber and plastics compounds.

(3) "Mill" means a machine consisting of two adjacent metal rolls, set horizontally, which revolve in opposite directions (i.e., toward each other as viewed from above) used for the mechanical working of rubber and plastics compounds.

(d) As used in § 1910.217, unless the context clearly requires otherwise, the following power press terms shall have the meanings prescribed in this paragraph.

(1) "Antirepeat" means the part of the clutch/brake control system designed to limit the press to a single stroke if the tripping means is held operated. Antirepeat requires release of all tripping mechanisms before another stroke can be initiated. "Antirepeat" is also called single stroke reset or reset circuit.

(2) "Brake" means the mechanism used on a mechanical power press to stop and/or hold the crankshaft, either directly or through a gear train, when the clutch is disengaged.

(3) "Bolster plate" means the plate attached to the top of the bed of the press having drilled holes or T-slots for attaching the lower die or die shoe.

(4) "Clutch" means the coupling mechanism used on a mechanical power press to couple the flywheel to the crankshaft, either directly or through a gear train.

(5) "Full revolution clutch" means a type of clutch that, when tripped, cannot be disengaged until the crankshaft has completed a full revolution and the press slide a full stroke.

(6) "Part revolution clutch" means a type of clutch that can be disengaged at any point before the crankshaft has completed a full revolution and the press slide a full stroke.

(7) "Direct drive" means the type of driving arrangement wherein no clutch is used; coupling and decoupling of the driving torque is accomplished by energization and deenergization of a motor. Even though not employing a clutch, direct drives match the operational characteristics of "part revolution clutches" because the driving power may be disengaged during the stroke of the press.

(8) "Concurrent" means acting in conjunction, and is used to describe a situation wherein two or more controls exist in an operated condition at the same time.

(9) "Continuous" means uninterrupted multiple strokes of the slide without intervening stops (or other clutch control action) at the end of individual strokes.

(10) "Counterbalance" means the mechanism that is used to balance or support the weight of the connecting rods, slide, and slide attachments.

(11) "Device" means a press control or attachment that:

(i) Restrains the operator from inadvertently reaching into the point of operation, or

(ii) Prevents normal press operation if the operator's hands are inadvertently within the point of operation, or

(iii) Automatically withdraws the operator's hands if the operator's hands are inadvertently within the point of operation as the dies close.

(12) "Presence sensing device" means a device designed, constructed and arranged to create a sensing field or area and to deactivate the clutch control of the press when an operator's hand or any other parts of his body is within such field or area.

(13) "Gate or movable barrier device" means a movable barrier arranged to enclose the point of operation before the press stroke can be started.

(14) "Holdout or restraint device" means a mechanism, including attachments for operator's hands, that when anchored and adjusted prevent the operator's hands from entering the point of operation.

(15) "Pull-out device" means a mechanism attached to the operator's hands and connected to the upper die or slide of the press, that is designed, when properly adjusted, to withdraw the operator's hands as the dies close, if the operator's hands are inadvertently within the point of operation.

(16) "Sweep device" means a single or double arm (rod) attached to the upper die or slide of the press and designed to move the operator's hands to a safe position as the dies close, if the operator's hands are inadvertently within the point of operation.

(17) "Two hand control device" means a two hand trip that further requires concurrent pressure from both hands of the operator during a substantial part of the die-closing portion of the stroke of the press.

(18) "Die" means the tooling used in a press for cutting or forming material. An upper and a lower die make a complete set.

(19) "Die builder" means any person who builds dies for power presses.

(20) "Die set" means a tool holder held in alignment by guide posts and bushings and consisting of a lower shoe, an upper shoe or punch holder, and guide posts and bushings.

(21) "Die setter" means an individual who places or removes dies in or from mechanical power presses, and who, as a part of his duties, makes the necessary adjustments to cause the tooling to function properly and safely.

(22) "Die setting" means the process of placing or removing dies in or from a mechanical power press, and the process of adjusting the dies, other tooling and safeguarding means to cause them to function properly and safely.

(23) "Die shoe" means a plate or block upon which a die holder is mounted. A die shoe functions primarily as a base for the complete die assembly, and, when used, is bolted or clamped to the bolster plate or the face of slide.

(24) "Ejector" means a mechanism for removing work or material from between the dies.

(25) "Face of slide" means the bottom surface of the slide to which the punch or upper die is generally attached.

(26) "Feeding" means the process of placing or removing material within or from the point of operation.

(27) "Automatic feeding" means feeding wherein the material or part being processed is placed within or removed from the point of operation by a method or means not requiring action by an operator on each stroke of the press.

(28) "Semiautomatic feeding" means feeding wherein the material or part being processed is placed within or removed from the point of operation by an auxiliary means controlled by operator on each stroke of the press.

(29) "Manual feeding" means feeding wherein the material or part being processed is handled by the operator on each stroke of the press.

(30) "Foot control" means the foot operated control mechanism designed to be used with a clutch or clutch/brake control system.

(31) "Foot pedal" means the foot operated lever designed to operate the mechanical linkage that trips a full revolution clutch.

(32) "Guard" means a barrier that prevents entry of the operator's hands or fingers into the point of operation.

(33) "Die enclosure guard" means an enclosure attached to the die shoe or stripper, or both, in a fixed position.

(34) "Fixed barrier guard" means a die space barrier attached to the press frame.

(35) "Interlocked press barrier guard" means a barrier attached to the press frame and interlocked so that the press stroke cannot be started normally unless the guard itself, or its hinged or movable sections, enclose the point of operation.

(36) "Adjustable barrier guard" means a barrier requiring adjustment for each job or die setup.

(37) "Guide post" means the pin attached to the upper or lower die shoe, operating within the bushing on the opposing die shoe, to maintain the alignment of the upper and lower dies.

(38) "Hand feeding tool" means any hand held tool designed for placing or removing material or parts to be processed within or from the point of operation.

(39) "Inch" means an intermittent motion imparted to the slide (on machines using part revolution clutches) by momentary operation of the "Inch" operating means. Operation of the "Inch" operating means engages the driving clutch so that a small portion of one stroke or indefinite stroking can occur, depending upon the length of time the "Inch" operating means is held operated. "Inch" is a function used by the die setter for setup of dies and tooling, but is not intended for use during production operations by the operator.

(40) "Jog" means an intermittent motion imparted to the slide by momentary operation of the drive motor, after the clutch is engaged with the flywheel at rest.

(41) "Knockout" means a mechanism for releasing material from either die.

(42) "Liftout" means the mechanism also known as knockout.

(43) "Operator's station" means the complete complement of controls used by or available to an operator on a given operation for stroking the press.

(44) "Pinch point" means any point other than the point of operation at which it is possible for a part of the body to be caught between the moving parts of a press or auxiliary equipment, or between moving and stationary parts of a press or auxiliary equipment or between the material and moving part or parts of the press or auxiliary equipment.

(45) "Point of operation" means the area of the press where material is actually positioned and work is being performed during any process such as shearing, punching, forming, or assembling.

(46) "Press" means a mechanically powered machine that shears, punches, forms or assembles metal or other material by means of cutting, shaping, or combination dies attached to slides. A press consists of a stationary bed or anvil, and a slide (or slides) having a controlled reciprocating motion toward and away from the bed surface, the slide being guided in a definite path by the frame of the press.

(47) "Repeat" means an unintended or unexpected successive stroke of the press resulting from a malfunction.

(48) "Safety block" means a prop that, when inserted between the upper and lower dies or between the bolster plate and the face of the slide, prevents the slide from falling of its own deadweight.

(49) "Single stroke" means one complete stroke of the slide, usually initiated from a full open (or up) position, followed by closing (or down), and then a return to the full open position.

(50) "Single stroke mechanism" means an arrangement used on a full revolution clutch to limit the travel of the slide to one complete stroke at each engagement of the clutch.

(51) "Slide" means the main reciprocating press member. A slide is also called a ram, plunger, or platen.

(52) "Stop control" means an operator control designed to immediately deactivate the clutch control and activate the brake to stop slide motion.

(53) "Stripper" means a mechanism or die part for removing the parts or material from the punch.

(54) "Stroking selector" means the part of the clutch/brake control that determines the type of stroking when the operating means is actuated. The stroking selector generally includes positions for "Off" (Clutch Control), "Inch," "Single Stroke," and "Continuous" (when Continuous is furnished).

(55) "Trip or (tripping)" means activation of the clutch to "run" the press.

(56) "Turnover bar" means a bar used in die setting to manually turn the crankshaft of the press.

(57) "Two-hand trip" means a clutch actuating means requiring the concurrent use of both hands of the operator to trip the press.

(58) "Unitized tooling" means a type of die in which the upper and lower members are incorporated into a selfcontained unit so arranged as to hold the die members in alignment.

(59) "Control system" means sensors, manual input and mode selection elements, interlocking and decision-making circuitry, and output elements to the press operating mechanism.

(60) "Brake monitor" means a sensor designed, constructed, and arranged to monitor the effectiveness of the press braking system.

(c) As used in § 1910.218, unless the context clearly requires otherwise, the following forging and hot metal terms shall have the meaning prescribed in this paragraph.

(1) "Forging" means the product of work on metal formed to a desired shape by impact or pressure in hammers, forging machines (upsetters), presses, rolls, and related forming equipment. Forging hammers, counterblow equipment and high-energy-rate forging machines impart impact to the workpiece, while most other types of forging equipment impart squeeze pressure in shaping the stock. Some metals can be forged at room temperature, but the majority of metals are made more plastic for forging by heating.

(2) "Open framehammers (or blacksmith hammers)" mean hammers used primarily for the shaping of forgings by means of impact with flat dies. Open frame hammers generally are so constructed that the anvil assembly is separate from the operating mechanism and machine supports; it rests on its own independent foundation. Certain exceptions are forging hammers made with frame mounted on the anvil; e.g., the smaller, single-frame hammers are usually made with the anvil and frame in one piece.

(3) "Steam hammers" mean a type of drop hammer where the ram is raised for each stroke by a double-action steam cylinder and the energy delivered to the workpiece is supplied by the velocity and weight of the ram and attached upper die driven downward by steam pressure. Energy delivered during each stroke may be varied.

(4) "Gravity hammers" mean a class of forging hammer wherein energy for forging is obtained by the mass and velocity of a freely falling ram and the attached upper die. Examples: board hammers and air-lift hammers.

(5) "Forging presses" mean a class of forging equipment wherein the shaping of metal between dies is performed by mechanical or hydraulic pressure, and usually is accomplished with a single workstroke of the press for each die station.

(6) "Trimming presses" mean a class of auxiliary forging equipment which removes flash or excess metal from a forging. This trimming operation can also be done cold, as can coining, a product sizing operation.

(7) "High-energy-rate forging machines" mean a class of forging equipment wherein high ram velocities resulting from the sudden release of a compressed gas against a free piston impart impact to the workpiece.

(8) "Forging rolls" mean a class of auxiliary forging equipment wherein stock is shaped between power driven rolls bearing contoured dies. Usually used for preforming, roll forging is often employed to reduce thickness and increase length of stock.

(9) "Ring rolls" mean a class for forging equipment used for shaping weldless rings from pierced discs or thick-walled, ring-shaped blanks between rolls which control wall thickness, ring diameter, height and contour.

(10) "Bolt-headers" mean the same as an upsetter or forging machine except that the diameter of stock fed into the machine is much smaller, i.e., commonly three-fourths inch or less.

(11) Rivet making machines mean the same as upsetters and boltheaders when producing rivets with stock diameter of 1-inch or more. Rivet making with less than 1-inch diameter is usually a cold forging operation, and therefore not included in this subpart.

(12) Upsetters (or forging machines, or headers) type of forging equipment, related to the mechanical press, in which the main forming energy is applied horizontally to the workpiece which is gripped and held by prior action of the dies.

(f) As used in § 1910.219, unless the context clearly requires otherwise, the following mechanical power-transmission guarding terms shall have the meaning prescribed in this paragraph.

(1) "Belts" include all power transmission belts, such as flat belts, round belts, V-belts, etc., unless otherwise specified.

(2) "Belt shifter" means a device for mechanically shifting belts from tight to loose pulleys or vice versa, or for shifting belts on cones of speed pulleys.

(3) "Belt pole" (sometimes called a "belt shipper" or "shipper pole,") means a device used in shifting belts on and off fixed pulleys on line or countershaft where there are no loose pulleys.

(4) "Exposed to contact" means that the location of an object is such that a person is likely to come into contact with it and be injured.

(5) "Flywheels" include flywheels, balance wheels, and flywheel pulleys mounted and revolving on crankshaft of engine or other shafting.

(6) "Maintenance runway" means any permanent runway or platform used for oiling, maintenance, running adjustment, or repair work, but not for passageway.

(7) "Nip-point belt and pulley guard" means a device which encloses the pulley and is provided with rounded or rolled edge slots through which the belt passes.

(8) "Point of operation" means that point at which cutting, shaping, or forming is accomplished upon the stock and shall include such other points as may offer a hazard to the operator in inserting or manipulating the stock in the operation of the machine.

(9) "Prime movers" include steam, gas, oil, and air engines, motors, steam and hydraulic turbines, and other equipment used as a source of power.

(10) "Sheaves" mean grooved pulleys, and shall be so classified unless used as flywheels.

[39 FR 23502, June 27, 1974, as amended at 39 FR 41846, Dec. 3, 1974]

§ 1910.212 General requirements for all machines.

(a) *Machine guarding.*—(1) *Types of guarding.* One or more methods of machine guarding shall be provided to protect the operator and other employees

in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips and sparks. Examples of guarding methods are—barrier guards, two-hand tripping devices, electronic safety devices, etc.

(2) *General requirements for machine guards.* Guards shall be affixed to the machine where possible and secured elsewhere if for any reason attachment to the machine is not possible. The guard shall be such that it does not offer an accident hazard in itself.

(3) *Point of operation guarding.* (i) Point of operation is the area on a machine where work is actually performed upon the material being processed.

(ii) The point of operation of machines whose operation exposes an employee to injury, shall be guarded. The guarding device shall be in conformity with any appropriate standards therefor, or, in the absence of applicable specific standards, shall be so designed and constructed as to prevent the operator from having any part of his body in the danger zone during the operating cycle.

(iii) Special handtools for placing and removing material shall be such as to permit easy handling of material without the operator placing a hand in the danger zone. Such tools shall not be in lieu of other guarding required by this section, but can only be used to supplement protection provided.

(iv) The following are some of the machines which usually require point of operation guarding:

(a) Guillotine cutters
(b) Shears.
(c) Alligator shears.
(d) Power presses.
(e) Milling machines.
(f) Power saws
(g) Jointers.
(h) Portable power tools
(i) Forming rolls and calenders

(4) *Barrels, containers, and drums.* Revolving drums, barrels, and containers shall be guarded by an enclosure which is interlocked with the drive mechanism, so that the barrel, drum, or container cannot revolve unless the guard enclosure is in place.

(5) *Exposure of blades.* When the periphery of the blades of a fan is less than seven (7) feet above the floor or working level, the blades shall be guarded. The guard shall have openings no larger than one-half (½) inch.

(b) *Anchoring fixed machinery.* Machines designed for a fixed location shall be securely anchored to prevent walking or moving.

§ 1910.213 Woodworking machinery requirements.

(a) *Machine construction general.* (1) Each machine shall be so constructed as to be free from sensible vibration when the largest size tool is mounted and run idle at full speed.

(2) Arbors and mandrels shall be constructed so as to have firm and secure bearing and be free from play.

(3) The use of wooden bandsaw wheels other than those of commercial manufacture is prohibited.

(4) Any automatic cutoff saw that strokes continuously without the operator being able to control each stroke shall not be used.

(5) Saw frames or tables shall be constructed with lugs cast on the frame or with an equivalent means to limit the size of the saw blade that can be mounted, so as to avoid overspeed caused by mounting a saw larger than intended.

(6) Circular saw fences shall be so constructed that they can be firmly secured to the table or table assembly without changing their alignment with the saw. For saws with tilting tables or tilting arbors the fence shall be so constructed that it will remain in a line parallel with the saw, regardless of the angle of the saw with the table.

(7) Circular saw gages shall be so constructed as to slide in grooves or tracks that are accurately machined, to insure exact alignment with the saw for all positions of the guide.

(8) Hinged saw tables shall be so constructed that the table can be firmly secured in any position and in true alignment with the saw.

(9) All belts, pulleys, gears, shafts, and moving parts shall be guarded in accordance with the specific requirements of § 1910.219.

(10) It is recommended that each power-driven woodworking machine be provided with a disconnect switch that can be locked in the off position.

(11) The frames and all exposed, non-current-carrying metal parts of portable electric woodworking machinery operated at more than 90 volts to ground shall be grounded and other portable motors driving electric tools which are held in the hand while being operated shall be grounded if they operate at more

than 90 volts to ground. The ground shall be provided through use of a separate ground wire and polarised plug and receptacle.

(12) For all circular saws where conditions are such that there is a possibility of contact with the portion of the saw either beneath or behind the table, that portion of the saw shall be covered with an exhaust hood, or, if no exhaust system is required, with a guard that shall be so arranged as to prevent accidental contact with the saw.

(13) Revolving double arbor saws shall be fully guarded in accordance with all the requirements for circular crosscut saws or with all the requirements for circular ripsaws, according to the kind of saws mounted on the arbors.

(14) No saw, cutter head, or tool collar shall be placed or mounted on a machine arbor unless the tool has been accurately machined to size and shape to fit the arbor.

(15) Combs (featherboards) or suitable jigs shall be provided at the workplace for use when a standard guard cannot be used, as in dadoing, grooving, jointing, moulding, and rabbeting.

(b) *Machine controls and equipment.* (1) A mechanical or electrical power control shall be provided on each machine to make it possible for the operator to cut off the power from each machine without leaving his position at the point of operation.

(2) On machines driven by belts and shafting, a locking-type belt shifter or an equivalent positive device shall be used.

(3) On applications where injury to the operator might result if motors were to restart after power failures, provision shall be made to prevent machines from automatically restarting upon restoration of power.

(4) Power controls and operating controls should be located within easy reach of the operator while he is at his regular work location, making it unnecessary for him to reach over the cutter to make adjustments. This does not apply to constant pressure controls used only for setup purposes.

(5) On each machine operated by electric motors, positive means shall be provided for rendering such controls or devices inoperative while repairs or adjustments are being made to the machines they control.

(6) Each operating treadle shall be protected against unexpected or accidental tripping.

(7) Feeder attachments shall have the feed rolls or other moving parts so covered or guarded as to protect the operator from hazardous points.

(c) *Hand-fed ripsaws.* (1) Each circular hand-fed ripsaw shall be guarded by a hood which shall completely enclose that portion of the saw above the table and that portion of the saw above the material being cut. The hood and mounting shall be arranged so that the hood will automatically adjust itself to the thickness of and remain in contact with the material being cut but it shall not offer any considerable resistance to insertion of material to saw or to passage of the material being sawed. The hood shall be made of adequate strength to resist blows and strains incidental to reasonable operation, adjusting, and handling, and shall be so designed as to protect the operator from flying splinters and broken saw teeth. It shall be made of material that is soft enough so that it will be unlikely to cause tooth breakage. The material should not shatter when broken, should be nonexplosive, and should be no more flammable than wood. The hood shall be so mounted as to insure that its operation will be positive, reliable, and in true alignment with the saw; and the mounting shall be adequate in strength to resist any reasonable side thrust or other force tending to throw it out of line.

(2) Each hand-fed circular ripsaw shall be furnished with a spreader to prevent material from squeezing the saw or being thrown back on the operator. The spreader shall be made of hard tempered steel, or its equivalent, and shall be thinner than the saw kerf. It shall be of sufficient width to provide adequate stiffness or rigidity to resist any reasonable side thrust or blow tending to bend or throw it out of position. The spreader shall be attached so that it will remain in true alignment with the saw even when either the saw or table is tilted, and should be placed so that there is not more than ½-inch space between the spreader and the back of the saw when the largest saw is mounted in the machine. The provision of a spreader in connection with grooving, dadoing, or rabbeting is not required. On the completion of such operations,

the spreader shall be immediately replaced.

(3) Each hand-fed circular ripsaw shall be provided with nonkickback fingers or dogs so located as to oppose the thrust or tendency of the saw to pick up the material or to throw it back toward the operator. They shall be designed to provide adequate holding power for all the thicknesses of materials being cut.

(d) *Hand-fed crosscut table saws.* (1) Each circular crosscut table saw shall be guarded by a hood which shall meet all the requirements of paragraph (c)(1) of this section for hoods for circular ripsaws.

(2) Each circular crosscut saw should also be provided with a spreader which should meet all the requirements of paragraph (c)(2) of this section.

(e) *Circular resaws.* (1) Each circular resaw shall be guarded by a hood or shield of metal above the saw. This hood or shield shall be so designed as to guard against danger from flying splinters or broken saw teeth.

(2) Each circular resaw (other than self-feed saws with a roller or wheel at back of the saw) shall be provided with a spreader fastened securely behind the saw. The spreader shall be slightly thinner than the saw kerf and slightly thicker than the saw disk.

(f) *Self-feed circular saws.* (1) Feed rolls and saws shall be protected by a hood or guard to prevent the hands of the operator from coming in contact with the in-running rolls at any point. The guard shall be constructed of heavy material preferably metal, and the bottom of the guard shall come down to within three-eighths inch of the plane formed by the bottom or working surfaces of the feed rolls. This distance (three-eighths inch) may be increased to three-fourths inch, provided the lead edge of the hood is extended to be not less than 5½ inches in front of the nip point between the front roll and the work.

(2) Each self-feed circular ripsaw shall be provided with sectional nonkickback fingers for the full width of the feed rolls. They shall be located in front of the saw and so arranged as to be in continual contact with the wood being fed.

(g) *Swing cutoff saws.* The requirements of this paragraph are also applicable to sliding cutoff saws mounted above the table.

(1) Each swing cutoff saw shall be provided with a hood that will completely enclose the upper half of the saw, the arbor end, and the point of operation at all positions of the saw. The hood shall be constructed in such a manner and of such material that it will protect the operator from flying splinters and broken saw teeth. Its hood shall be so designed that it will automatically cover the lower portion of the blade, so that when the saw is returned to the back of the table the hood will rise on top of the fence, and when the saw is moved forward the hood will drop on top of and remain in contact with the table or material being cut.

(2) Each swing cutoff saw shall be provided with an effective device to return the saw automatically to the back of the table when released at any point of its travel. Such a device shall not depend for its proper functioning upon any rope, cord, or spring. If there is a counterweight, the bolts supporting the bar and counterweight shall be provided with cotter pins; and the counterweight shall be prevented from dropping by either a bolt passing through both the bar and counterweight, or a bolt put through the extreme end of the bar, or, where the counterweight does not encircle the bar, a safety chain attached to it.

(3) Limit chains or other equally effective devices shall be provided to prevent the saw from swinging beyond the front or back edges of the table, or beyond a forward position where the gullets of the lowest saw teeth will rise above the table top.

(4) Inverted swing cutoff saws shall be provided with a hood that will cover the part of the saw that protrudes above the top of the table or above the material being cut. It shall automatically adjust itself to the thickness of and remain in contact with the material being cut.

(h) *Radial saws.* (1) The upper hood shall completely enclose the upper portion of the blade down to a point that will include the end of the saw arbor. The upper hood shall be constructed in such a manner and of such material that it will protect the operator from flying splinters, broken saw teeth, etc., and will deflect sawdust away from the operator. The sides of the lower exposed portion of the blade shall be guarded to the full diameter of the blade by a device that will automatically adjust itself to the thickness of the stock and remain in contact with stock being cut to give maximum protection possible for the operation being performed.

(2) Each radial saw used for ripping shall be provided with nonkickback fingers or dogs located on both sides of the saw so as to oppose the thrust or tendency of the saw to pick up the material or to throw it back toward the operator. They shall be designed to provide adequate holding power for all the thicknesses of material being cut.

(3) An adjustable stop shall be provided to prevent the forward travel of the blade beyond the position necessary to complete the cut in repetitive operations.

(4) Installation shall be in such a manner that the front end of the unit will be slightly higher than the rear, so as to cause the cutting head to return gently to the starting position when released by the operator.

(5) Ripping and ploughing shall be against the direction in which the saw turns. The direction of the saw rotation shall be conspicuously marked on the hood. In addition, a permanent label not less than 1½ inches by ¾ inch shall be affixed to the rear of the guard at approximately the level of the arbor, reading as follows: "Danger: Do Not Rip or Plough From This End". Such a label should be colored standard danger red.

(i) *Bandsaws and band resaws.* (1) All portions of the saw blade shall be enclosed or guarded, except for the working portion of the blade between the bottom of the guide rolls and the table. Bandsaw wheels shall be fully encased. The outside periphery of the enclosure shall be solid. The front and back of the band wheels shall be either enclosed by solid material or by wire mesh or perforated metal. Such mesh or perforated metal shall be not less than 0.037 inch (U.S. Gage No. 20), and the openings shall be not greater than three-eighths inch. Solid material used for this purpose shall be of an equivalent strength and firmness. The guard for the portion of the blade between the sliding guide and the upper-saw-wheel guard shall protect the saw blade at the front and outer side. This portion of the guard shall be self-adjusting to raise and lower with the guide. The upper-wheel guard shall be made to conform to the travel of the saw on the wheel, and the top member of the guard should have at least a 2-inch clearance outside the saw and be lined with smooth material, preferably metal. Effective brakes should be provided to stop the wheel in case of blade breakage.

(2) Each bandsaw machine shall be provided with a tension control device to indicate a proper tension for the standard saws used on the machine, in order to assist in the elimination of saw breakage due to improper tension.

(3) Feed rolls of band resaws shall be protected with a suitable guard to prevent the hands of the operator from coming in contact with the in-running rolls at any point. The guard shall be constructed of heavy material, preferably metal, and the edge of the guard shall come to within three-eighths inch of the plane formed by the inside face of the feed roll in contact with the stock being cut.

(j) *Jointers.* (1) Each hand-fed planer and jointer with horizontal head shall be equipped with a cylindrical cutting head, the knife projection of which shall not exceed one-eighth inch beyond the cylindrical body of the head.

(2) The opening in the table shall be kept as small as possible. The clearance between the edge of the rear table and the cutter head shall be not more than one-eighth inch. The table throat opening shall be not more than 2½ inches when tables are set or aligned with each other for zero cut.

(3) Each hand-fed jointer with a horizontal cutting head shall have an automatic guard which will cover all the section of the head on the working side of the fence or gage. The guard shall effectively keep the operator's hand from coming in contact with the revolving knives. The guard shall automatically adjust itself to cover the unused portion of the head and shall remain in contact with the material at all times.

(4) Each hand-fed jointer with horizontal cutting head shall have a guard which will cover the section of the head back of the gage or fence.

(5) Each wood jointer with vertical head shall have either an exhaust hood or other guard so arranged as to enclose completely the revolving head, except for a slot of such width as may be necessary and convenient for the application of the material to be jointed.

(k) *Tenoning machines.* (1) Feed chains and sprockets of all double end tenoning machines shall be completely enclosed, except for that portion of chain used for conveying the stock.

(2) At the rear ends of frames over which feed conveyors run, sprockets and chains shall be guarded at the sides by plates projecting beyond the periphery of sprockets and the ends of lugs.

(3) Each tenoning machine shall have all cutting heads, and saws if used, covered by metal guards. These guards shall cover at least the unused part of the periphery of the cutting head. If such a guard is constructed of sheet metal, the material used shall be not less than one-sixteenth inch in thickness, and if cast iron is used, it shall be not less than three-sixteenths inch in thickness.

(4) Where an exhaust system is used, the guard shall form part or all of the exhaust hood and shall be constructed of metal of a thickness not less than that specified in subparagraph (3) of this paragraph.

(l) *Boring and mortising machines.* (1) Safety-bit chucks with no projecting set screws shall be used.

(2) Boring bits should be provided with a guard that will enclose all portions of the bit and chuck above the material being worked.

(3) The top of the cutting chain and driving mechanism shall be enclosed.

(4) If there is a counterweight, one of the following or equivalent means shall be used to prevent its dropping:

(i) It shall be bolted to the bar by means of a bolt passing through both bar and counterweight;

(ii) A bolt shall be put through the extreme end of the bar;

(iii) Where the counterweight does not encircle the bar, a safety chain shall be attached to it;

(iv) Other types of counterweights shall be suspended by chain or wire rope and shall travel in a pipe or other suitable enclosure wherever they might fall and cause injury.

(5) Universal joints on spindles of boring machines shall be completely enclosed in such a way as to prevent accidental contact by the operator.

(6) Each operating treadle shall be covered by an inverted U-shaped metal guard, fastened to the floor, and of adequate size to prevent accidental tripping.

(m) *Wood shapers and similar equipment.* (1) The cutting heads of each wood shaper, hand-fed panel raiser, or other similar machine not automatically fed, shall be enclosed with a cage or adjustable guard so designed as to keep the operator's hand away from the cutting edge. The diameter of circular shaper guards shall be not less than the greatest diameter of the cutter. In no case shall a warning device of leather or other material attached to the spindle be acceptable.

(2) Cylindrical heads should be used whenever the nature of the work will permit. Single cutter knives in shaper heads shall not be used unless properly balanced.

(3) All double-spindle shapers shall be provided with a spindle starting and stopping device for each spindle.

(n) *Planing, molding, sticking, and matching machines.* (1) Each planing, molding, sticking, and matching machine shall have all cutting heads, and saws if used, covered by a metal guard. If such guard is constructed of sheet metal, the material used shall be not less than 1/16 inch in thickness, and if cast iron is used, it shall be not less than three-sixteenths inch in thickness.

(2) Where an exhaust system is used, the guards shall form part or all of the exhaust hood and shall be constructed of metal of a thickness not less than that specified in subparagraph (1) of this paragraph.

(3) Feed rolls shall be guarded by a hood or suitable guard to prevent the hands of the operator from coming in contact with the in-running rolls at any point. The guard shall be fastened to the frame carrying the rolls so as to remain in adjustment for any thickness of stock.

(4) Surfacers or planers used in thicknessing multiple pieces of material simultaneously shall be provided with sectional infeed rolls having sufficient yield in the construction of the sections to provide feeding contact pressure on the stock, over the permissible range of variation in stock thickness specified or for which the machine is designed. In lieu of such yielding sectional rolls, suitable section kickback finger devices shall be provided at the infeed end.

(o) *Profile and swing-head lathes and wood heel turning machine.* (1) Each profile and swing-head lathe shall have all cutting heads covered by a metal guard. If such a guard is constructed of sheet metal, the material used shall be not less than one-sixteenth inch in thickness; and if cast iron is used, it shall not be less than three-sixteenths inch in thickness.

(2) Cutting heads on wood-turning lathes, whether rotating or not, shall be covered as completely as possible by hoods or shields, which should be hinged to the machines so that they can be thrown back for making adjustments.

(3) Shoe last and spoke lathes, doweling machines, wood heel turning machines, and other automatic wood-turning lathes of the rotating knife type shall be equipped with hoods enclosing the cutter blades completely except at the contact points while the stock is being cut.

(4) Lathes used for turning long pieces of wood stock held only between the two centers shall be equipped with long curved guards extending over the tops of the lathes in order to prevent the work pieces from being thrown out of the machines if they should become loose.

(5) Where an exhaust system is used, the guard shall form part or all of the exhaust hood and shall be constructed of metal of a thickness not less than that specified in subparagraph (1) of this paragraph.

(p) *Sanding machines.* (1) Feed rolls of self-feed sanding machines shall be protected with a semicylindrical guard to prevent the hands of the operator from coming in contact with the in-running rolls at any point. The guard shall be constructed of heavy material, preferably metal, and firmly secured to the frame carrying the rolls so as to remain in adjustment for any thickness of stock. The bottom of the guard should come down to within three-eighths inch of a plane formed by the bottom or contact face of the feed roll where it touches the stock.

(2) Each drum sanding machine shall have an exhaust hood, or other guard if no exhaust system is required, so arranged as to enclose the revolving drum, except for that portion of the drum above the table, if a table is used, which may be necessary and convenient for the application of the material to be finished.

(3) Each disk sanding machine shall have the exhaust hood, or other guard if no exhaust system is required, so arranged as to enclose the revolving disk, except for that portion of the disk above the table, if a table is used, which may be necessary for the application of the material to be finished.

(4) Belt sanding machines shall be provided with guards at each nip point where the sanding belt runs on to a pulley. These guards shall effectively prevent the hands or fingers of the operator from coming in contact with the nip points. The unused run of the sanding belt shall be guarded against accidental contact.

(q) *Veneer cutters and wringers.* (1) Veneer slicer knives shall be guarded to prevent accidental contact with knife edge, at both front and rear.

(2) Veneer clippers shall have automatic feed or shall be provided with a guard which will make it impossible to place a finger or fingers under the knife while feeding or removing the stock.

(3) Sprockets on chain or slat-belt conveyors shall be enclosed.

(4) Where practicable, hand and foot-power guillotine veneer cutters shall be provided with rods or plates or other satisfactory means, so arranged on the feeding side that the hands cannot reach the cutting edge of the knife while feeding or holding the stock in place.

(5) Power-driven guillotine veneer cutters, except continuous feed trimmers, shall be equipped with:

(i) Starting devices which require the simultaneous action of both hands to start the cutting motion and of at least one hand on a control during the complete stroke of the knife; or

(ii) An automatic guard which will remove the hands of the operator from the danger zone at every descent of the blade, used in conjunction with one-hand starting devices which require two distinct movements of the device to start the cutting motion, and so designed as to return positively to the nonstarting position after each complete cycle of the knife.

(6) Where two or more workers are employed at the same time on the same power-driven guillotine veneer cutter equipped with two-hand control, the device shall be so arranged that each worker shall be required to use both hands simultaneously on the controls to start the cutting motion, and at least one hand on a control to complete the cut.

(7) Power-driven guillotine veneer cutters, other than continuous trimmers, shall be provided, in addition to the brake or other stopping mechanism, with an emergency device which will prevent the machine from operating in the event of

failure of the brake when the starting mechanism is in the nonstarting position.

(r) *Miscellaneous woodworking machines.* (1) The feed rolls of roll type glue spreaders shall be guarded by a semicylindrical guard. The bottom of the guard shall come to within three-eighths inch of a plane formed by bottom or contact face of the feed roll where it touches the stock.

(2) Drag saws shall be so located as to give at least a 4-foot clearance for passage when the saw is at the extreme end of the stroke; or if such clearance is not obtainable, the saw and its driving mechanism shall be provided with a standard enclosure.

(3) For combination or universal woodworking machines each point of operation of any tool shall be guarded as required for such a tool in a separate machine.

(4) The mention of specific machines in paragraphs (a) thru (q) and this paragraph (r) of this section, inclusive, is not intended to exclude other woodworking machines from the requirement that suitable guards and exhaust hoods be provided to reduce to a minimum the hazard due to the point of operation of such machines.

(s) *Inspection and maintenance of woodworking machinery.* (1) Dull, badly set, improperly filed, or improperly tensioned saws shall be immediately removed from service, before they begin to cause the material to stick, jam, or kick back when it is fed to the saw at normal speed. Saws to which gum has adhered on the sides shall be immediately cleaned.

(2) All knives and cutting heads of woodworking machines shall be kept sharp, properly adjusted, and firmly secured. Where two or more knives are used in one head, they shall be properly balanced.

(3) Bearings shall be kept free from lost motion and shall be well lubricated.

(4) Arbors of all circular saws shall be free from play.

(5) Sharpening or tensioning of saw blades or cutters shall be done only by persons of demonstrated skill in this kind of work.

(6) Emphasis is placed upon the importance of maintaining cleanliness around woodworking machinery, particularly as regards the effective functioning of guards and the prevention of fire hazards in switch enclosures, bearings, and motors.

(7) All cracked saws shall be removed from service.

(8) The practice of inserting wedges between the saw disk and the collar to form what is commonly known as a "wobble saw" shall not be permitted.

(9) Push sticks or push blocks shall be provided at the work place in the several sizes and types suitable for the work to be done.

(10) Twists or kinks in bandsaws and band resaws shall be promptly removed with a hammer.

(11) To avoid vibration, brazed joints in bandsaws and band resaws shall be the same thickness as the saw blade.

(12) The knife blade of jointers shall be so installed and adjusted that it does not protrude more than one-eighth inch beyond the cylindrical body of the head. Push sticks or push blocks shall be provided at the work place in the several sizes and types suitable for the work to be done.

(13) Whenever veneer slicers or rotary veneer-cutting machines have been shutdown for the purpose of inserting logs or to make adjustments, operators shall make sure that machine is clear and other workmen are not in a hazardous position before starting the machine.

(14) Operators shall not ride the carriage of a veneer slicer.

§ 1910.214 Cooperage machinery.

(a) *Heading bolt sawing machine.* (1) Each heading saw shall be guarded by a hood curved to the contour of the saw. The hood shall cover the saw at least to the depth of the teeth, except for that portion actually used in making the cut. The exhaust hood shall be so arranged and maintained as to guard effectively the bottom portion of the saw. The hood shall be made of adequate strength to resist strains incidental to reasonable operation.

(2) The balance wheel shall be covered to enclose the rim and outside portion of the wheel. Expanded metal curved to fit the contour of the wheel is recommended.

(3) The swing carriage shall be provided with an effective device that will return the carriage automatically to a position in front of the saw. Such a device shall not depend entirely upon any rope, cord, or spring for its proper functioning. If a counterweight is used, a safety chain shall be attached to it to prevent dropping, should the bar break or the weight become disengaged. All bolts supporting the bar, weight, and chain shall be provided with cotter pins or equally effective devices. A bolt shall be put through the extreme end of the counterweight bar to prevent dropping of the weight.

(4) A limit stop shall be provided to prevent the carriage from swinging too far back and thereby exposing the unguarded portion of the saw to contact.

(b) *Bolt equalizer, stave, and heading saws (tilting table style).* (1) All heading and stave bolt equalizer saws shall be guarded by hoods, curved to the contour of the saws. The hood shall cover the saw at least to the depth of the teeth, except for that portion actually used in making the cut. The exhaust hood shall be so arranged and maintained as to guard effectively the bottom portion of the saws.

(2) Hoods shall be attached to each end of the tilting table and shall extend forward to cover the portion of the saws which cannot be enclosed by a stationary guard.

(3) A limit stop shall be provided to prevent the table from coming too far back and thereby exposing the unguarded portion of the saws to contact.

(c) *Barrel stave saws (cylindrical saws).* (1) Each machine of this type shall have the saw and the revolving part (head) to which the saw blade is bolted enclosed with a hinged guard to prevent accidental contact, except for that part of the saw immediately adjacent to the carriage, which is the point of operation of the saw.

(2) The exhaust hood shall be so arranged and maintained as to guard effectively the bottom portion of the saw. The hood shall be made of adequate strength to resist strains incidental to reasonable operation.

(d) *Hand-fed ripsaws.* (1) Each circular hand-fed ripsaw shall be guarded with a hood. The hood shall be stationary and cover the saw to a distance of approximately three-fourths inch above the stave being ripped. This will prevent the material being cut from being raised by upward centrifugal force of the saw in cases of pinching or binding before the stave reaches the splitter. The hood shall provide inside clearance between the top edge of saw and guard to allow an accidental blow to strike it to the table and not engage the teeth with the guard. The hood shall be constructed of heavy material, preferably metal. That portion of the saw remaining below the table shall be completely enclosed in an exhaust hood.

(2) Spreader requirements for this equipment are contained in § 1910.213 (c)(2).

(e) *Self-feed stave and heading equalizer saws.* (1) Self-feed equalizer saws shall be guarded with a hood guard which will cover the top and sides of the saws. The hood should adjust itself automatically to the thickness of, and remain in contact with, the material being cut.

(2) The portion of the saw blade extending beneath the mandrel shall be enclosed in an exhaust hood and be easily accessible for changing saws.

(f) *Stave and heading planers (single and double heads).* (1) The exhaust hood, or other guards, if no exhaust system is required, shall be so arranged and maintained as to guard effectively all cutting heads and knives of single and double planers.

(2) Feed rolls, except for such portion as may be necessary to admit stock, shall be completely enclosed.

(3) Pressure bars or holddown arrangements shall be properly adjusted to assure correct pressure and clearance at all times.

(g) *Stave jointing machines (wheel).* (1) Stave jointer wheels shall be covered on both sides with a removable metal hood connected to the exhaust system, except for that portion where the stock is applied to the knives.

(2) A limit stop should be installed on the frame to prevent any part of the carriage from coming in contact with any moving part of the wheel.

(3) The equipment described in subparagraphs (1) and (2) of this paragraph include double independent stave jointer wheels, double jointer stave wheels, single jointer stave wheels, and all kinds of keg stave jointer wheels.

(h) *Heading jointer and doweler machine (wheel).* (1) Each heading jointer shall be equipped with a removable guard covering the upper half of the wheel, except for that portion where the stock is applied to the knives.

(2) The lower portion of the wheel shall be guarded with sheet metal or expanded metal to prevent accidental contact with the knives.

(i) *Heading rounder.* The cutter head shall be enclosed in a hood attached to the exhaust system, arranged and maintained in such a manner as to guard effectively the entire cutting mechanism, except for that portion of the cutting head where the stock is applied.

(j) *Power windlass machine.* Windlass machines having counterweights shall operate with the weights in a stationary casing. On all machines having a friction gear, the gear shall be properly guarded.

(k) *Crozing machine (stationary heads).* Feed chains and sprockets shall be completely enclosed. This includes all types of barrel, keg, bucket, tub, and individual stave crozers, chamfering, crozing, and doweling machines.

(l) *Heading-up machine.* The outside portion and teeth of both drive gears for the racks shall be completely guarded. This includes all types of heading-up machines.

(m) *Head charring machine.* All tripping mechanisms shall be completely guarded.

(n) *Bilge truss hoop ring removing machine.* (1) Both eccentric cams and gear works on horizontal machines shall be guarded.

(2) Combined flywheel and gear shall be completely enclosed by a guard. This includes the horizontal and upright-type machines.

(o) *Hoop elevators and conveyors.* Lower sprockets and chains shall be guarded by complete enclosure to a height of at least 7 feet.

(p) *Barrel sanding machine.* Belt sanding machines shall be provided with guards at each nip point where the sanding belt runs onto a pulley. This guard may be a part of the exhaust system. The unused run of the sanding belt shall be enclosed.

(q) *Hoop drivers and trussers.* (1) All friction pulleys shall be enclosed by a guard. A hinged gate should be provided for that portion of the guard covering adjustments to the friction blocks.

(2) The foregoing recommendation covers drivers for keg hoops, tin barrel hoops, truss hoops, and both screw and rack and pinion-type hoop drivers.

(r) *Head sanding machine.* The exhaust hood of automatic horizontal disk head sanders shall be so arranged as to enclose each disk, except for that portion necessary for the application of the barrel being finished.

(s) *Hand jointer.* All hand-fed jointers shall be guarded in accordance with the provisions of § 1910.213(j).

(t) *Hoop punching and coiling machine.* Miter gears, spur gears, drive pulley, and pulley for coiling attachment shall be guarded. This includes the horizontal hoop punching and coiling machine as well as the upright hoop punching machine.

(u) *Hoop riveting machine.* The balance and drive wheels shall be effectively guarded. This includes automatic, single, and double hoop riveters.

(v) *Hoop flaring and expanding machine.* Gearing shall be completely enclosed.

(w) *Inspection and maintenance of cooperage machinery.* For inspection and maintenance of cooperage machinery see § 1910.213(s).

§ 1910.215 Abrasive wheel machinery.

(a) *General requirements.*—(1) *Machine guarding.* Abrasive wheels shall be used only on machines provided with safety guards as defined in the following paragraphs of this section, except:

(i) Wheels used for internal work while within the work being ground;

(ii) Mounted wheels, used in portable operations, 2 inches and smaller in diameter; and

(iii) Types 16, 17, 18, 18R, and 19 cones, plugs, and threaded hole pot balls where the work offers protection.

(2) *Guard design.* The safety guard shall cover the spindle end, nut, and flange projections. The safety guard shall be mounted so as to maintain proper alignment with the wheel, and the strength of the fastenings shall exceed the strength of the guard, except:

(i) Safety guards on all operations where the work provides a suitable measure of protection to the operator, may be so constructed that the spindle end, nut, and outer flange are exposed; and where the nature of the work is such as to entirely cover the side of the wheel, the side covers of the guard may be omitted; and

(ii) The spindle end, nut, and outer flange may be exposed on machines designed as portable saws.

(3) *Flanges.* Grinding machines shall be equipped with flanges in accordance with paragraph (c) of this section.

(4) *Work rests.* On offhand grinding machines, work rests shall be used to support the work. They shall be of rigid construction and designed to be adjustable to compensate for wheel wear. Work rests shall be kept adjusted closely to the wheel with a maximum spacing of one-eighth inch to prevent the work from being jammed between the wheel and the rest, which may cause wheel breakage. The work rest shall be securely clamped after each adjustment. The adjustment shall not be made with the wheel in motion.

(5) *Excluded machinery.* Natural sandstone wheels and metal, wooden, cloth, or paper discs, having a layer of abrasive on the surface are not covered by this section.

(b) *Guarding of abrasive wheel machinery.*—(1) *Cup wheels.* Cup wheels (Types 6 and 11) shall be protected by:

(i) Safety guards as specified in subparagraphs (1) through (10) of this paragraph;

(ii) Band type guards as specified in subparagraph (11) of this paragraph; and

(iii) Special "Revolving Cup Guards" which mount behind the wheel and turn with it. They shall be made of steel or other material with adequate strength and shall enclose the wheel sides upward from the back for one-third of the wheel thickness. The mounting features shall conform with all requirements of this section. It is necessary to maintain clearance between the wheel side and the guard. This clearance shall not exceed one-sixteenth inch.

(2) *Guard exposure angles.* The maximum exposure angles specified in subparagraphs (3) through (8) of this paragraph shall not be exceeded. Visors or other accessory equipment shall not be included as a part of the guard when measuring the guard opening, unless such equipment has strength equal to that of the guard.

(3) *Bench and floor stands.* The angular exposure of the grinding wheel periphery and sides for safety guards used on machines known as bench and floor stands should not exceed 90° or one-fourth of the periphery. This exposure shall begin at a point not more than 65° above the horizontal plane of the wheel spindle. (See Figures O–6 and O–7 and subparagraph (9) of this paragraph.)

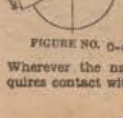


FIGURE NO. O–6

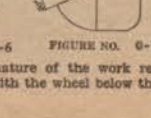


FIGURE NO. O–7

Wherever the nature of the work requires contact with the wheel below the horizontal plane of the spindle, the exposure shall not exceed 125°. (See Figures O–8 and O–9.)

FIGURE NO. O–8

FIGURE NO. O–9

(4) *Cylindrical grinders.* The maximum angular exposure of the grinding wheel periphery and sides for safety guards used on cylindrical grinding machines shall not exceed 180°. This exposure shall begin at a point not more than 65° above the horizontal plane of the wheel spindle. (See Figures O–10 and O–11 and subparagraph (9) of this paragraph.)

FIGURE NO. O–10

FIGURE NO. O–11

(5) *Surface grinders and cutting-off machines.* The maximum angular exposure of the grinding wheel periphery and sides for safety guards used on cutting-off machines and on surface grinding machines which employ the wheel periphery shall not exceed 150°. This exposure shall begin at a point not less than 15° below the horizontal plane of the wheel spindle. (See Figures O–12 and O–13)

FIGURE NO. O–12

FIGURE NO. O–13

(6) *Swing frame grinders.* The maximum angular exposure of the grinding wheel periphery and sides for safety guards used on machines known as swing frame grinding machines shall not exceed 180°, and the top half of the wheel shall be enclosed at all times. (See Figure O–14 and O–15.)

FIGURE NO. 0-14

FIGURE NO. 0-15

(7) *Automatic snagging machines.* The maximum angular exposure of the grinding wheel periphery and sides for safety guards used on grinders known as automatic snagging machines shall not exceed 180° and the top half of the wheel shall be enclosed at all times. (See Figures O-14 and O-15.)

(8) *Top grinding.* Where the work is applied to the wheel above the horizontal centerline, the exposure of the grinding wheel periphery shall be as small as possible and shall not exceed 60°. (See Figures O-16 and O-17.)

FIGURE NO. 0-16

FIGURE NO. 0-17

(9) *Exposure adjustment.* Safety guards of the types described in subparagraphs (3) and (4) of this paragraph, where the operator stands in front of the opening, shall be constructed so that the peripheral protecting member can be adjusted to the constantly decreasing diameter of the wheel. The maximum angular exposure above the horizontal plane of the wheel spindle as specified in subparagraphs (3) and (4) of this paragraph shall never be exceeded, and the distance between the wheel periphery and the adjustable tongue or the end of the peripheral member at the top shall never exceed one-fourth inch. (See Figures O-18, O-19, O-20, O-21, O-22, and O-23.)

(10) *Material requirements and minimum dimensions.* (i) See Figures O-36 and O-37 and Table O-9 for minimum basic thickness of peripheral and side members for various types of safety guards and classes of service.

(ii) If operating speed does not exceed 8,000 surface feet per minute cast iron safety guards, malleable iron guards or other guards as described in subparagraph (10)(iii) of this paragraph shall be used.

(iii) Cast steel, or structural steel, safety guards as specified in Figures O-36 and O-37 and Table O-9 shall be used where operating speeds of wheels are faster than 8,000 surface feet per minute up to a maximum of 16,000 surface feet per minute.

(iv) For cutting-off wheels 16 inches diameter and smaller and where speed does not exceed 16,000 surface feet per minute, cast iron or malleable iron safety guards as specified in Figures O-36 and O-37, and in Table O-9 shall be used.

FIGURE NO. 0-18

FIGURE NO. 0-19

CORRECT

Showing adjustable tongue giving required angular protection for all sizes of wheel used.

FIGURE NO. 0-20

FIGURE NO. 0-21

CORRECT

Showing movable guard with opening small enough to give required protection for smallest size wheel used.

FIGURE NO. 0-22

FIGURE NO. 0-23

INCORRECT

Showing movable guard with size of opening correct for full size wheel but too large for smaller wheels.

(v) For cutting-off wheels larger than 16 inches diameter and where speed does not exceed 14,200 surface feet per minute, safety guards as specified in figures O-27 and O-28, and in Table O-1 shall be used.

(vi) For thread grinding wheels not exceeding 1 inch in thickness cast iron or malleable iron safety guards as specified in Figures O-36 and O-37, and in Table O-9 shall be used.

(11) *Band type guards—general specifications.* Band type guards shall conform to the following general specifications:

(i) The bands shall be of steel plate or other material of equal or greater strength. They shall be continuous, the ends being either riveted, bolted, or welded together in such a manner as to leave the inside free from projections.

(ii) The inside diameter of the band shall not be more than 1 inch larger than the outside diameter of the wheel, and shall be mounted as nearly concentric with the wheel as practicable.

(iii) The band shall be of sufficient width and its position kept so adjusted that at no time will the wheel protrude beyond the edge of the band a distance greater than that indicated in Figure O-29 and in Table O-2 or the wall thickness (W), whichever is smaller.

(12) *Guard design specifications.* Abrasive wheel machinery guards shall meet the design specifications of the American National Standard Safety Code for the Use, Care, and Protection of Abrasive Wheels, ANSI B7.1-1970. This requirement shall not apply to natural sandstone wheels or metal, wooden, cloth, or paper discs, having a layer of abrasive on the surface.

(c) *Flanges*—(1) *General requirements.* All abrasive wheels shall be mounted between flanges which shall not be less than one-third the diameter of the wheel.

(i) Exceptions:

(a) Mounted wheels.

(b) Portable wheels with threaded inserts or projecting studs.

(c) Abrasive discs (inserted nut, inserted washer and projecting stud type).

(d) Plate mounted wheels.

(e) Cylinders, cup, or segmental wheels that are mounted in chucks.

(f) Types 27 and 28 wheels.

(g) Certain internal wheels.

(h) Modified types 6 and 11 wheels (terrazzo).

(i) Cutting-off wheels, Types 1 and 27A (see subdivisions (ii) and (iii) of this subparagraph).

(ii) Type 1 cutting-off wheels are to be mounted between properly relieved flanges which have matching bearing surfaces. Such flanges shall be at least one-fourth the wheel diameter.

(iii) Type 27A cutting-off wheels are designed to be mounted by means of flat, not relieved, flanges having matching bearing surfaces and which may be less than one-third but shall not be less than one-fourth the wheel diameter. (See Figure O-24 for one such type of mounting.)

(iv) There are three general types of flanges:

(a) straight relieved flanges (see Figure O-32);

(b) straight unrelieved flanges (see Figure O-30);

(c) adaptor flanges (see Figures O-33 and O-34);

(v) Regardless of flange type used, the wheel shall always be guarded. Blotters shall be used in accordance with subparagraph (6) of this paragraph.

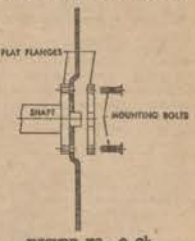


FIGURE NO. 0-24

The Type 27A Wheel is mounted between flat non-relieved flanges of equal bearing surfaces.

(2) *Design and material.* (i) Flanges shall be of such design as to satisfactorily transmit the driving torque from the spindle to the grinding wheel.

(ii) Flanges may be made of steel, cast iron, or other material of equal or greater strength and rigidity.

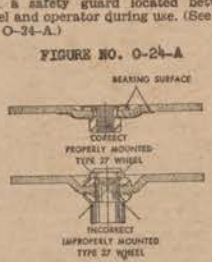
(iii) Flanges shall be designed with respect to rigidity so that when tightened, the radial width of bearing surface of contact on the wheel is maintained. (See Table O-6 and Figure O-32.)

(3) *Finish and balance.* Flanges shall be dimensionally accurate and in good balance. There shall be no rough surfaces or sharp edges.

(4) *Uniformity of diameter.* (i) Both flanges, of any type, between which a wheel is mounted, shall be of the same diameter and have equal bearing surface. Exceptions are set forth in the remaining subdivisions of this subparagraph.

(ii) Type 27 and Type 28 wheels, because of their shape and usage, require specially designed adaptors. The back flange shall extend beyond the central hub or raised portion and contact the wheel to counteract the side pressure on the wheel in use. The adaptor nut which is less than the minimum one-third diameter of wheel fits in the depressed side of wheel to prevent interference in side grinding and serves to drive the wheel by its clamping force against the depressed portion of the back flange. The variance in flange diameters, the adaptor nut being less than one-third wheel diameter, and the use of side pressure in wheel operation limits the use to reinforced organic bonded wheels. Mounts which are affixed to the wheel by the manufacturer shall not be reused. Type 27 and Type 28 wheels shall be used only with a safety guard located between wheel and operator during use. (See Figure O-24-A.)

FIGURE NO. 0-24-A



Types 27 and 28 wheels, because of their shape, require specially designed adaptors.

(iii) Modified Types 6 and 11 wheels (terrazzo) with tapered K dimension.

(5) *Recess and undercut.* (i) Straight relieved flanges made according to Table O-6 and Figure O-32 shall be recessed at least one-sixteenth inch on the side next to the wheel for a distance as specified in Table O-6.

(ii) Straight flanges of the adaptor or sleeve type (Table O-7 and Figures O-33 and O-34) shall be undercut so that there will be no bearing on the sides of the wheel within one-eighth inch of the arbor hole.

(6) *Blotters.* (i) Blotters (compressible washers) shall always be used between flanges and abrasive wheel surfaces to insure uniform distribution of flange pressure. (See paragraph (d)(5) of this section.)

(ii) Exception:

(a) Mounted wheels.

(b) Abrasive discs (inserted nut, inserted washer, and projecting stud type)

(c) Plate mounted wheels.

(d) Cylinders, cups, or segmental wheels that are mounted in chucks.

(e) Types 27 and 28 wheels.

(f) Certain Type 1 and Type 27A cutting-off wheels.

(g) Certain internal wheels.

(h) Type 4 tapered wheels.

(i) Diamond wheels, except certain vitrified diamond wheels.

(j) Modified Types 6 and 11 wheel (terrazzo)—blotters applied flat side of wheel only.

(7) *Driving flange.* The driving flange shall be securely fastened to the spindle and the bearing surface shall run true. When more than one wheel is mounted between a single set of flanges, wheels may be cemented together or separated by specially designed spacers. Spacers shall be equal in diameter to the mounting flanges and have equal bearing surfaces. (See paragraph (d)(6) of this section.)

(8) *Dimensions.* (i) Tables O-4 and O-6 and Figures O-30 and O-32 show minimum dimensions for straight relieved and unrelieved flanges for use with wheels with small holes that fit directly on the machine spindle. Dimensions of such flanges shall never be less than indicated and should be greater where practicable.

(ii) Table O-5, and Table O-7 and Figures O-31, O-33, O-34 show minimum dimensions for straight adaptor flanges for use with wheels having holes larger than the spindle. Dimensions of such adaptor flanges shall never be less than indicated and should be greater where practicable.

(iii) Table O-8 and Figure O-35 show minimum dimensions for straight flanges that are an integral part of wheel sleeves which are frequently used on precision grinding machines. Dimensions of such flanges shall never be less than indicated and should be greater where practicable.

(9) *Repairs and maintenance.* All flanges shall be maintained in good condition. When the bearing surfaces become worn, warped, sprung, or damaged they should be trued or refaced. When refacing or truing, care shall be exercised to make sure that proper relief and rigidity is maintained as specified in subparagraphs (2) and (5) of this paragraph and they shall be replaced when they do not conform to these subparagraphs and Table O-4, Figure O-30, Table O-5, Figure O-31, Table O-6, Figure O-32, and Table O-8, Figure O-35. Failure to observe these rules might cause excessive flange pressure around the hole of the wheel. This is especially true of wheel-sleeve or adaptor flanges.

(d) *Mounting*—(1) *Inspection.* Immediately before mounting, all wheels shall be closely inspected and sounded by the user (ring test) to make sure they have not been damaged in transit, storage, or otherwise. The spindle speed of the machine shall be checked before mounting of the wheel to be certain that it does not exceed the maximum operating speed marked on the wheel. Wheels should be tapped gently with a light nonmetallic implement, such as the handle of a screwdriver for light wheels, or a wooden mallet for heavier wheels. If they sound cracked (dead), they shall not be used. This is known as the "Ring Test".

(i) Wheels must be dry and free from sawdust when applying the ring test, otherwise the sound will be deadened. It should also be noted that organic bonded wheels do not emit the same clear metallic ring as do vitrified and silicate wheels.

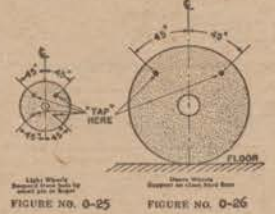


FIGURE NO. 0-25 FIGURE NO. 0-26

(ii) "Tap" wheels about 45° each side of the vertical centerline and about 1 or 2 inches from the periphery as indicated by the spots in Figure O-25 and Figure O-26. Then rotate the wheel 45° and repeat the test. A sound and undamaged wheel will give a clear metallic tone. If cracked, there will be a dead sound and not a clear "ring."

(2) *Arbor size.* Grinding wheels shall fit freely on the spindle and remain free under all grinding conditions. A controlled clearance between the wheel hole and the machine spindle (or wheel sleeves or adaptors) is essential to avoid excessive pressure from mounting and spindle expansion. To accomplish this, the machine spindle shall be made to nominal (standard) size plus zero minus .002 inch, and the wheel hole shall be made suitably oversize to assure safety clearance under the conditions of operating heat and pressure.

(3) *Surface condition.* All contact surfaces of wheels, blotters and flanges shall be flat and free of foreign matter.

(4) *Bushing.* When a bushing is used in the wheel hole it shall not exceed the width of the wheel and shall not contact the flanges.

(5) *Blotters.* When blotters or flange facings of compressible material are required, they shall cover entire contact area of wheel flanges. Highly compressible material such as blotting paper as normally used should not exceed .025 inch in thickness. If material of lower compressibility is used, greater thickness may be necessary. Blotters need not be used with the following types of wheels:

(i) Mounted wheels.

(ii) Abrasive discs (inserted nut, inserted washer, and projecting-stud type).

(iii) Plate mounted wheels.

(iv) Cylinders, cups, or segmental wheels that are mounted in chucks.

(v) Types 27 and 28 wheels.

(vi) Certain Type 1 and Type 27A cutting-off wheels.

(vii) Certain internal wheels.

(viii) Type 4 tapered wheels.

(ix) Diamond wheels, except certain vitrified diamond wheels.

(6) *Multiple wheel mounting.* When more than one wheel is mounted between a single set of flanges, wheels may be cemented together or separated by specially designed spacers. Spacers shall be equal in diameter to the mounting flanges and have equal bearing surfaces. When mounting wheels which have not been cemented together, or ones which do not utilize separating spacers, care must be exercised to use wheels specially manufactured for that purpose.

(7) *Replacing safety guard.* After mounting a wheel, care should be taken to see that the safety guard is properly positioned before starting the wheel.

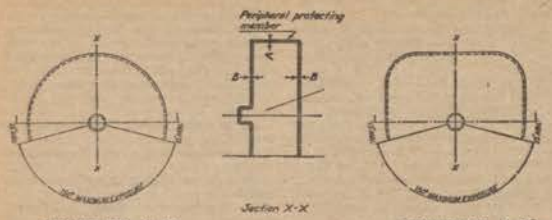


FIGURE NO. 0-27 FIGURE NO. 0-28

TABLE O-1—MINIMUM BASIC THICKNESS FOR PERIPHERAL AND SIDE MEMBERS FOR SAFETY GUARDS USED WITH CUTTING-OFF WHEELS

Material used in construction of guard	Maximum thickness of cutting off wheel	Speed not to exceed	Cutting off wheel diameters: 6 to 11 inches		Over 11 to 20 inches		Over 20 to 30 inches		Over 30 to 45 inches		Over 45 to 72 inches	
			A	B	A	B	A	B	A	B	A	B
Structural steel (min. tensile strength 60,000 p.s.i.)	1/8 inch or less	14,200 SFPM	1/16	1/16	1/32	1/32	3/64	3/64	1/16	1/16	1/32	1/32
	1/8 inch or less	16,000 SFPM	3/32	3/32	3/32	3/32	3/64	3/64	3/64	3/64	1/32	1/32

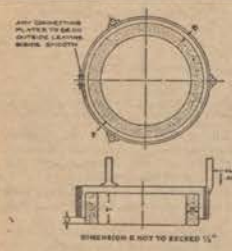


FIGURE NO. 0-29

TABLE O-2—EXPOSURE VERSUS WHEEL THICKNESS

Overall thickness of wheel (T) (inches)	Maximum exposure of wheel (C) (inches)
1/2	1/4
1	1/2
2	3/4
3	1
4	1 1/2
5 and over	2

TABLE O-3—GUIDE FOR CONSTRUCTION OF DAND TYPE GUARDS
[Maximum Wheel Speed 7,000 SFPM]

Minimum material specifications	Diameter of wheel	Minimum thickness of band A	Minimum diameter of rivets	Maximum distance between centers of rivets
	Inches	Inches	Inches	Inches
Hot rolled steel SAE 1008	Under 8	1/16	3/16	3/4
	8 to 24	1/8	1/4	1
	Over 24 to 30	1/4	5/16	1 1/4

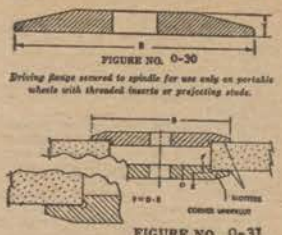


FIGURE NO. 0-30

Driving flange secured to spindle for use only on portable wheels with threaded inserts or projecting studs.

FIGURE NO. 0-31

TABLE O-4—MINIMUM DIMENSIONS FOR STRAIGHT UNRELIEVED FLANGES FOR WHEELS WITH THREADED INSERTS OR PROJECTING STUDS

A Diameter of wheel	B[1] Minimum outside diameter of flange	T Minimum thickness of flange
Inches	Inches	Inches
1	3/4	1/8
2	1	1/8
3	1	1/16
4	1 1/4	3/16
5	1 3/4	1/4
6	2	3/8

[1] NOTE: Must be large enough to extend beyond the bushing. Where prong anchor or cupback bushing are used, this footnote does not apply.

TABLE O-5—MINIMUM DIMENSIONS FOR STRAIGHT ADAPTOR FLANGE—FOR ORGANIC BONDED WHEELS OVER 1 1/4 INCHES THICK[1]

Wheel diameter	Wheel hole diameter	B Minimum flange diameter	D Minimum thickness of flange at bore	E Minimum thickness of flange at edge of undercut	F[2] (D-E) minimum thickness
Inches	Inches	Inches	Inches	Inches	Inches
12 to 14	4	6	1/2	1/4	1/4
	5	7	1/2	1/4	1/4
	6	8	1/2	1/4	1/4
Larger than 14 to 18	4	6	1/2	1/4	1/4
	5	7	1/2	1/4	1/4
	6	8	1/2	1/4	1/4
	7	9	1/2	1/4	1/4
Larger than 18 to 24	8	10	1/2	1/4	1/4
	6	8	1	1/2	1/2
	7	9	1	1/2	1/2
	8	10	1	1/2	1/2
	10	12	1	1/2	1/2
Larger than 24 to 30	12	14	1	1/2	1/2
Larger than 30 to 36	12	16	1	1/2	1/2
	12	15	1 3/4	1/2	1/2

[1] For wheels under 1 1/4 inches thick F dimension shall not exceed 40 percent of wheel thickness.

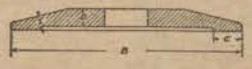


FIGURE NO. 0-32

Driving flange secured to spindle.

TABLE O-6—MINIMUM DIMENSIONS FOR STRAIGHT RELIEVED FLANGES[1]

A Diameter of wheel	B Minimum outside diameter of flanges	C Radial width of bearing surface: Minimum	C Radial width of bearing surface: Maximum	D Minimum thickness of flange at bore	E Minimum thickness of flange at edge of recess
Inches	Inches	Inches	Inches	Inches	Inches
1	3/4	1/16	1/8	1/16	1/16
2	3/4	1/8	3/16	1/8	1/16
3	1	1/8	3/16	1/8	1/16
4	1 1/4	1/8	3/16	1/8	1/16
5	1 1/4	1/16	1/4	1/8	1/16
6	2	1/8	1/4	1/8	1/16
7	2 1/2	1/8	1/4	1/8	1/16
8	3	1/8	1/4	1/8	1/16
10	3 1/2	1/8	1/4	1/8	1/16
12	4	1/16	1/4	1/8	1/16
14	4 1/2	1/8	1/4	1/8	1/16
16	5 1/2	1/8	1	1/4	1/16
18	6	1/8	1	1/4	1/16
20	7	1/8	1 1/4	1/4	1/16
22	7 1/2	1/8	1 1/4	1/4	1/16
24	8	1/8	1 1/4	1/4	1/16
26	8 1/2	1/8	1 1/4	1/4	1/16
28	10	1/8	1 1/2	1/4	1/16
30	10	1/8	1 1/2	1/4	1/16
36	12	1/8	1 1/2	1/4	1/16
42	14	1	2	1/4	1/16
48	16	1	2	1/4	1/16
60	20	1 1/4	2	1 1/4	1 1/16
72	24	1 1/2	2 1/2	1 1/4	1 1/16

[1] Flanges for wheels under 2 inches diameter may be unrelieved and shall be maintained flat and true.

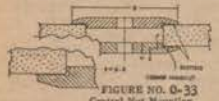


FIGURE NO. 0-33
Central Nut Mounting
Driving flange secured to spindle.

FIGURE NO. 0-34
Multiple Screw Mounting
Driving flange secured to spindle.

TABLE O-7—MINIMUM DIMENSIONS FOR STRAIGHT FLANGES—FOR MECHANICAL GRINDERS 12,500 S.F.P.M. TO 16,5 S.F.P.M.[1]

Wheel diameter	Wheel hole diameter	B Minimum flange diameter	D Minimum thickness of flange at bore	E Minimum thickness of flange at edge of undercut	F[2] (D-E) minimum thickness
20	6	8	1	1/2	1/2
20	8	10	1 1/2	1/4	1/4
24	10	12	2	1	1
30	12	16	2	1	1
36	12	16	2	1	1

[1] Flanges shall be of steel, quality SAE 1040 or equivalent, annealed plate, heat treated to R, 28-30.
[2] For wheels under 1 1/4 inch thick F dimension shall not exceed 40 percent of wheel thickness.

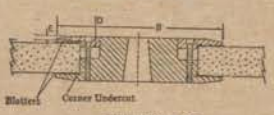


FIGURE NO. 0-35

Driving flange secured to spindle.

TABLE O-8—MINIMUM DIMENSIONS FOR STRAIGHT FLANGES USED AS WHEEL SLEEVES FOR PRECISION GRINDING ONLY

Wheel diameter	Wheel hole diameter	B Minimum outside diameter of flange	D Minimum thickness of flange at bore	E Minimum thickness of flange at edge of undercut
Inches	Inches	Inches	Inches	Inches
12 to 14	5	7	1/4	1/16
Larger than 14 to 20	5	7	1/4	1/16
	6	8	1/4	1/16
	8	10	1/4	1/16
	10	13 3/8	1/4	1/16
	12	13 3/8	1/4	1/16
Larger than 20 to 30	8	13 3/8	1/4	1/16
	10	13 3/8	1/4	1/16
	12	13 3/8	1/4	1/16
	16	17 1/4	1/4	1/16
Larger than 30 to 42	12	13 3/8	1/4	1/16
	16	17 1/4	1/4	1/16
	20	21 1/4	1/4	1/16
Larger than 42 to 60	16	20	1/4	1/16
	20	24	1/4	1/16
	24	29	1/4	1/16

NOTE: These flanges may be clamped together by means of a central nut, or by a series of bolts or some other equivalent means of fastening. For hole sizes smaller than shown in this table, use table 12.

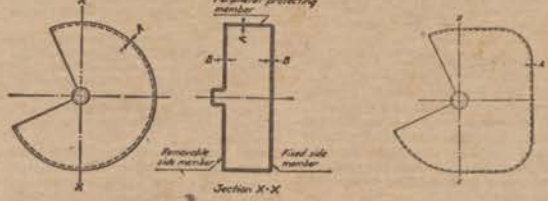


FIGURE NO. 0-36 FIGURE NO. 0-37

TABLE O-9—MINIMUM BASIC THICKNESSES OF PERIPHERAL AND SIDE MEMBERS FOR SAFETY GUARDS

Material used in construction of guard	Maximum thickness of grinding wheel	Grinding wheel diameters: 3 to 6 inches		Over 6 to 12 inches		Over 12 to 16 inches		Over 16 to 20 inches		Over 20 to 24 inches		Over 24 to 30 inches		Over 30 to 48 inches	
		A	B	A	B	A	B	A	B	A	B	A	B	A	B
	Inches	Inches		Inches		Inches		Inches		Inches		Inches		Inches	
Material satisfactory [1] for speeds up to 9,000 S.F.P.M. Cast iron (min. tensile strength 20,000 p.s.i.) Class 20.	2	1/4	1/4	1/4	5/16	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
	4	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16
	6	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16
	8			3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16
	10			1/2	3/8	1/2	3/8	1/2	3/8	1/2	3/8	1/2	3/8	1/2	3/8
	16					1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
	20							5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8
Material satisfactory [1] for speeds up to 9,000 S.F.P.M. Malleable iron (min. tensile strength 50,000 p.s.i.) Grade 35818.	2	1/4	1/4	1/4	5/16	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
	4	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16
	6	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16
	8			3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16
	10					1/2	3/8	1/2	3/8	1/2	3/8	1/2	3/8	1/2	3/8
	16							1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
	20							5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8
Materials satisfactory [1] for speeds up to 9,000 S.F.P.M. Steel castings (min. tensile strength 60,000 p.s.i.) Grade Y60-30.	2	1/4	1/4	1/4	5/16	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
	4	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16
	6	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16
	8			3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16
	10			1/2	3/8	1/2	3/8	1/2	3/8	1/2	3/8	1/2	3/8	1/2	3/8
	16					1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
	20							5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8
Structural steel (min. tensile strength 60,000 p.s.i.).	2	1/4	5/16	5/16	1/4	5/16	1/4	5/16	1/4	5/16	1/4	5/16	5/16	1/4	1/4
	4	5/16	5/16	1/4	5/16	1/4	5/16	1/4	5/16	1/4	5/16	1/4	5/16	1/4	5/16
	6	3/8	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16
	8			3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16	3/8	5/16
	10			1/2	3/8	1/2	3/8	1/2	3/8	1/2	3/8	1/2	3/8	1/2	3/8
	16					5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8
	20							13/16	13/16	13/16	13/16	13/16	13/16	13/16	13/16

[1] The recommendations listed in the above table are guides for the conditions stated. Other material, designs or dimensions affording equal or superior protection are also acceptable.

§ 1910.216 Mills and calenders in the rubber and plastics industries.

(a) *General requirements*—(1) *New installations.* All new installations on or after August 31, 1971, shall be in conformity with this section.

(2) *Existing installations.* All existing plant installations or equipment contracted for prior to August 31, 1971, shall comply with this section.

(3) *Auxiliary equipment.* Mechanical and electrical equipment and auxiliaries shall be installed in accordance with this section and Subpart S of this part.

(4) *Mill roll heights.* All new mill installations shall be installed so that the top of the operating rolls is not less than 50 inches above the level on which the operator stands, irrespective of the size of the mill. This distance shall apply to the actual working level, whether it be at the general floor level, in a pit, or on a platform.

(b) *Mill safety controls*—(1) *Safety trip control.* A safety trip control shall be provided in front and in back of each mill. It shall be accessible and shall operate readily on contact. The safety trip control shall be one of the following types or a combination thereof:

(i) *Pressure-sensitive body bars.* Installed at front and back of each mill having a 48-inch roll height or over. These bars shall operate readily by pressure of the mill operator's body. Pressure-sensitive body bars should be installed on new equipment.

(ii) *Safety triprod.* Installed in the front and in the back of each mill and located within 3 inches of a vertical plane tangent to the front and rear rolls. The trip rods shall be not more than 72 inches above the level on which the operator stands. The triprods shall be accessible and shall operate readily whether the rods are pushed or pulled.

(iii) *Safety tripwire cable or wire center cord.* Installed in the front and in the back of each mill and located within 2 inches of a vertical plane tangent to the front and rear rolls. The cables shall not be more than 72 inches above the level on which the operator stands. The tripwire cable or wire center cord shall operate readily whether cable or cord is pushed or pulled.

(2) *Fixed guards.* A fixed bar across the front and one across the back of the mill approximately 40 inches vertically above the working level and 20 inches horizontally from the crown face of the roll should be used where they are applicable.

(3) *Auxiliary equipment.* All auxiliary equipment such as mill divider, support bars, spray pipes, feed conveyors, strip knives, etc., shall be located in such a manner as to avoid interference with access to and operation of safety devices.

(c) *Calender safety controls*—(1) *Safety trip, face.* A safety triprod, cable, or wire center cord shall be provided across each pair of in-running rolls extending the length of the face of the rolls. It shall be readily accessible and operate whether pushed or pulled. The safety tripping devices shall be located within reach of the operator and the bite.

(2) *Safety trip, side.* On both sides of the calender and near each end of the face of the roll, there shall be a cable or wire center cord connected to the safety trip. These lines should be not more than 12 inches from the faces of the respective rolls and not less than 2 inches from the calender frame. They should be anchored to the frame not more than 6 inches from the floor or operator's platform. They shall operate readily when pushed or pulled.

(d) *Protection by location*—(1) *Mills.* Where a mill is so installed that persons cannot normally reach through, over, under, or around to come in contact with the roll bite or be caught between a roll and an adjacent object, then, provided such elements are made a fixed part of a mill, safety control devices listed in paragraph (b) of this section shall not apply.

(2) *Calenders.* Where a calender is so installed that persons cannot normally reach through, over, under, or around to come in contact with the roll bite or be caught between a roll and an adjacent object, then, provided such elements are made a fixed part of a calender, safety control devices listed in paragraph (c) of this section shall not apply.

(e) *Trip and emergency switches.* All trip and emergency switches shall not be of the automatically resetting type, but shall require manual resetting.

(f) *Stopping limits*—(1) *Determination of distance of travel.* All measurements on mills and calenders shall be taken with the rolls running empty at maximum operating speed. Stopping distances shall be expressed in inches of surface travel of the roll from the instant the emergency stopping device is actuated.

(2) *Stopping limits for mills.* All mills irrespective of the size of the rolls or their arrangement (individually or group-driven) shall be stopped within a distance, as measured in inches of surface travel, not greater than 1½ percent of the peripheral no-load surface speeds of the respective rolls as determined in feet per minute.

(3) *Stopping limits for calenders.* (i) All calenders, irrespective of size of the rolls or their configuration, shall be stopped within a distance, as measured in inches of surface travel, not greater than 1¾ percent of the peripheral no-load surface speeds of the respective calender rolls as determined in feet per minute.

(ii) Where speeds above 250 feet per minute as measured on the surface of the drive roll are used, stopping distances of more than 1¾ percent are permissible. Such stopping distances shall be subject to engineering determination.

(g) *Alarms.* Where an exposure is created by the operation, and the operators are not within sight or hearing of other employees, a suitable alarm device should be provided so that assistance will be available in case of accidents.

§ 1910.217 Mechanical power presses.

(a) *General requirements.* [1] *New installations.* The requirements of this section shall apply to all mechanical power presses installed on or after August 31, 1971, except that the requirements of paragraphs (b)(13), (b)(14), and (c)(5) of this section shall be complied with by November 1, 1975.

(2) *Former installations.* The requirements of this section shall apply to all mechanical power presses installed prior to August 31, 1971, except that the requirements of paragraphs (b) and (c)(5) of this section shall be complied with by November 1, 1978.

(3) *All installations.* The requirements of this section pertaining to the care and use of mechanical power presses

shall apply to all mechanical power press operations as of February 15, 1972.

(4) *Reconstruction and modification.* It shall be the responsibility of any person reconstructing, or modifying a mechanical power press to do so in accordance with paragraph (b) of this section.

(5) *Excluded machines.* Press brakes, hydraulic and pneumatic power presses, bulldozers, hot bending and hot metal presses, forging presses and hammers, riveting machines and similar types of fastener applicators are excluded from the requirements of this section.

(b) *Mechanical power press guarding and construction, general*—(1) *Hazards to personnel associated with broken or falling machine components.* Machine components shall be designed, secured, or covered to minimize hazards caused by breakage, or loosening and falling or release of mechanical energy (i.e. broken springs).

(2) *Brakes.*—Friction brakes provided for stopping or holding a slide movement shall be inherently self-engaging by requiring power or force from an external source to cause disengagement. Brake capacity shall be sufficient to stop the motion of the slide quickly and capable of holding the slide and its attachments at any point in its travel.

(3) *Machines using full revolution positive clutches.* (i) Machines using full revolution clutches shall incorporate a single-stroke mechanism.

(ii) If the single-stroke mechanism is dependent upon spring action, the spring(s) shall be of the compression type, operating on a rod or guided within a hole or tube, and designed to prevent interleaving of the spring coils in event of breakage.

(4) *Foot pedals (treadle).* (i) The pedal mechanism shall be protected to prevent unintended operation from falling or moving objects or by accidental stepping onto the pedal.

(ii) A pad with a nonslip contact area shall be firmly attached to the pedal.

(iii) The pedal return spring(s) shall be of the compression type, operating on a rod or guided within a hole or tube, or designed to prevent interleaving of spring coils in event of breakage.

(iv) If pedal counterweights are provided, the path of the travel of the weight shall be enclosed.

(5) *Hand operated levers.* (i) Hand-lever-operated power presses shall be equipped with a spring latch on the operating lever to prevent premature or accidental tripping.

(ii) The operating levers on hand-tripped presses having more than one operating station shall be interlocked to prevent the tripping of the press except by the "concurrent" use of all levers.

(6) *Two-hand trip.* (i) A two-hand trip shall have the individual operator's hand controls protected against unintentional operation and have the individual operator's hand controls arranged by design and construction and/or separation to require the use of both hands to trip the press and use a control arrangement requiring concurrent operation of the individual operator's hand controls.

(ii) Two-hand trip systems on full revolution clutch machines shall incorporate an antirepeat feature.

(iii) If two-hand trip systems are used on multiple operator presses, each operator shall have a separate set of controls.

(7) *Machines using part revolution clutches.* (i) The clutch shall release and the brake shall be applied when the external clutch engaging means is removed, deactivated, or deenergized.

(ii) A red color stop control shall be provided with the clutch/brake control system. Momentary operation of the stop control shall immediately deactivate the clutch and apply the brake. The stop control shall override any other control, and reactuation of the clutch shall require use of the operating (tripping) means which has been selected.

(iii) A means of selecting Off, "Inch," Single Stroke, and Continuous (when the continuous function is furnished) shall be supplied with the clutch/brake control to select type of operation of the press. Fixing of selection shall be by means capable of supervision by the employer.

(iv) The "Inch" operating means shall be designed to prevent exposure of the workers hands within the point of operation by:

(a) Requiring the concurrent use of both hands to actuate the clutch, or

(b) Being a single control protected against accidental actuation and so located that the worker cannot reach into the point of operation while operating the single control.

(v) Two-hand controls for single stroke shall conform to the following requirements:

(a) Each hand control shall be protected against unintended operation and arranged by design, construction, and/or

separation so that the concurrent use of both hands is required to trip the press.

(b) The control system shall be designed to permit an adjustment which will require concurrent pressure from both hands during the die closing portion of the stroke.

(c) The control system shall incorporate an antirepeat feature.

(d) The control systems shall be designed to require release of all operators' hand controls before an interrupted stroke can be resumed. This requirement pertains only to those single-stroke, two-hand controls manufactured and installed on or after August 31, 1971.

(vi) [Reserved]

(vii) Controls for more than one operating station shall be designed to be activated and deactivated in complete sets of two operator's hand controls per operating station by means capable of being supervised by the employer. The clutch/brake control system shall be designed and constructed to prevent actuation of the clutch if all operating stations are bypassed.

(viii) Those clutch/brake control systems which contain both single and continuous functions shall be designed so that completion of continuous circuits may be supervised by the employer. The initiation of continuous run shall require a prior action or decision by the operator in addition to the selection of Continuous on the stroking selector, before actuation of the operating means will result in continuous stroking.

(ix) If foot control is provided, the selection method between hand and foot control shall be separate from the stroking selector and shall be designed so that the selection may be supervised by the employer.

(x) Foot operated tripping controls, if used, shall be protected so as to prevent operation from falling or moving objects, or from unintended operation by accidental stepping onto the foot control.

(xi) The control of air-clutch machines shall be designed to prevent a significant increase in the normal stopping time due to a failure within the operating valve mechanism, and to inhibit further operation if such failure does occur. This requirement shall apply only to those clutch/brake air-valve controls manufactured and installed on or after August 31, 1971, but shall not apply to machines intended only for continuous, automatic feeding applications.

(xii) The clutch/brake control shall incorporate an automatic means to prevent initiation or continued activation of the Single Stroke or Continuous functions unless the press drive motor is energized and in the forward direction.

(xiii) The clutch/brake control shall automatically deactivate in event of failure of the power or pressure supply for the clutch engaging means. Reactivation of the clutch shall require restoration of normal supply and the use of the tripping mechanism(s).

(xiv) The clutch/brake control shall automatically deactivate in event of failure of the counterbalance(s) air supply. Reactivation of the clutch shall require restoration of normal air supply and use of the tripping mechanism(s).

(xv) Selection of bar operation shall be by means capable of being supervised by the employer. A separate pushbutton shall be employed to activate the clutch, and the clutch shall be activated only if the drive motor is deenergized.

(8) *Electrical.* (i) A main power disconnect switch capable of being locked only in the Off position shall be provided with every power press control system.

(ii) The motor start button shall be protected against accidental operation.

(iii) All mechanical power press controls shall incorporate a type of drive motor starter that will disconnect the drive motor from the power source in event of control voltage or power source failure, and require operation of the motor start button to restart the motor when voltage conditions are restored to normal.

(iv) All a.c. control circuits and solenoid valve coils shall be powered by not more than a nominal 240-volt a.c. supply obtained from a transformer with an isolated secondary. Higher voltages that may be necessary for operation of machine or control mechanisms shall be isolated from any control mechanism handled by the operator, but motor starters with integral Start-Stop buttons may utilize line voltage control. All d.c. control circuits shall be powered by not more than a nominal 240-volt d.c. supply isolated from any higher voltages.

(v) All clutch/brake control electrical circuits shall be protected against the possibility of an accidental ground in the control circuit causing false operation of the press.

(vi) Electrical clutch/brake control circuits shall incorporate features to minimize the possibility of an unintended stroke in the event of the failure of a control component to function properly, including relays, limit switches, and static output circuits.

(9) *Slide counterbalance systems.* (i) Spring counterbalance systems when used shall incorporate means to retain system parts in event of breakage.

(ii) Spring counterbalances when used shall have the capability to hold the slide and its attachments at midstroke, without brake applied.

(iii) Air counterbalance cylinders shall incorporate means to retain the piston and rod in case of breakage or loosening.

(iv) Air counterbalance cylinders shall have adequate capability to hold the slide and its attachments at any point in stroke, without brake applied.

(v) Air counterbalance cylinders shall incorporate means to prevent failure of capability (sudden loss of pressure) in event of air supply failure.

(10) *Air controlling equipment.* Air controlling equipment shall be protected against foreign material and water entering the pneumatic system of the press. A means of air lubrication shall be provided when needed.

(11) *Hydraulic equipment.* The maximum anticipated working pressures in any hydraulic system on a mechanical power press shall not exceed the safe working pressure rating of any component used in that system.

(12) *Pressure vessels.* All pressure vessels used in conjunction with power presses shall conform to the American Society of Mechanical Engineers Code for Pressure Vessels, 1968 Edition.

(13) *Control reliability.* When required by paragraph (c) (5) of this section, the control system shall be constructed so that a failure within the system does not prevent the normal stopping action from being applied to the press when required, but does prevent initiation of a successive stroke until the failure is corrected. The failure shall be detectable by a simple test, or indicated by the control system. This requirement does not apply to those elements of the control system which have no effect on the protection against point of operation injuries.

(14) *Brake system monitoring.* When required by paragraph (c) (5) of this section, the brake monitor shall meet the following requirements:

(i) Be so constructed as to automatically prevent the activation of a successive stroke if the stopping time or braking distance deteriorates to a point where the safety distance being utilized does not meet the requirements set forth in paragraph (c) (3) (iii) (e) or (c) (3) (vii) (c) of this section. The brake monitor used with the Type B gate or movable barrier device shall be installed in a manner to detect slide top-stop overrun beyond the normal limit reasonably established by the employer.

(ii) Be installed on a press such that it indicates when the performance of the braking system has deteriorated to the extent described in paragraph (b) (14) (i) of this section; and

(iii) Be constructed and installed in a manner to monitor brake system performance on each stroke.

(c) *Safeguarding the point of operation.*—(1) *General requirements.* (i) It shall be the responsibility of the employer to provide and insure the usage of "point of operation guards" or properly applied and adjusted point of operation devices on every operation performed on a mechanical power press. See Table O–10.

(ii) The requirement of subdivision (i) of this subparagraph shall not apply when the point of operation opening is one-fourth inch or less. See Table O–10.

(2) *Point of operation guards.* (i) Every point of operation guard shall meet the following design, construction, application, and adjustment requirements:

(a) It shall prevent entry of hands or fingers into the point of operation by reaching through, over, under or around the guard;

(b) It shall conform to the maximum permissible openings of Table O–10;

(c) It shall, in itself, create no pinch point between the guard and moving machine parts;

(d) It shall utilize fasteners not readily removable by operator, so as to minimize the possibility of misuse or removal of essential parts;

(e) It shall facilitate its inspection, and

(f) It shall offer maximum visibility of the point of operation consistent with the other requirements.

(ii) A die enclosure guard shall be attached to the die shoe or stripper in a fixed position.

(iii) A fixed barrier guard shall be attached securely to the frame of the press or to the bolster plate.

(iv) An interlocked press barrier guard shall be attached to the press frame or bolster and shall be interlocked with the press clutch control so that the clutch cannot be activated unless the guard itself, or the hinged or movable sections of the guard are in position to conform to the requirements of Table O–10.

(v) The hinged or movable sections of an interlocked press barrier guard shall not be used for manual feeding. The guard shall prevent opening of the interlocked section and reaching into the point of operation prior to die closure or prior to the cessation of slide motion. See paragraph (c) (3) (ii) of this section regarding manual feeding through interlocked press barrier devices.

(vi) The adjustable barrier guard shall be securely attached to the press bed, bolster plate, or die shoe, and shall be adjusted and operated in conformity with Table O–10 and the requirements of this subparagraph. Adjustments shall be made only by authorized personnel whose qualifications include a knowledge of the provisions of Table O–10 and this subparagraph.

(vii) A point of operation enclosure which does not meet the requirements of this subparagraph and Table O–10 shall be used only in conjunction with point of operation devices.

(3) *Point of operation devices.* (i) Point of operation devices shall protect the operator by:

(a) Preventing and/or stopping normal stroking of the press if the operator's hands are inadvertently placed in the point of operation; or

(b) Preventing the operator from inadvertently reaching into the point of operation, or withdrawing his hands if they are inadvertently located in the point of operation, as the dies close; or

(c) Preventing the operator from inadvertently reaching into the point of operation at all times; or

(d) [Reserved]

(e) Requiring application of both of the operator's hands to machine operating controls and locating such controls at such a safety distance from the point of operation that the slide completes the downward travel or stops before the operator can reach into the point of operation with his hands; or

(f) Enclosing the point of operation before a press stroke can be initiated, and maintaining this closed condition until the motion of the slide had ceased; or

(g) Enclosing the point of operation before a press stroke can be initiated, so as to prevent an operator from reaching into the point of operation prior to die closure or prior to cessation of slide motion during the downward stroke.

(ii) A gate or movable barrier device shall protect the operator as follows:

(a) A Type A gate or movable barrier device shall protect the operator in the manner specified in paragraph (c) (3) (i) (f) of this section, and

(b) A Type B gate or movable barrier device shall protect the operator in the manner specified in paragraph (c) (3) (i) (g) of this section.

(iii) A presence sensing point of operation device shall protect the operator as provided in paragraph (c) (3) (i) (a) of this section, and shall be interlocked into the control circuit to prevent or stop slide motion if the operator's hand or other part of his body is within the sensing field of the device during the downstroke of the press slide.

(a) The device may not be used on machines using full revolution clutches.

(b) The device may not be used as a tripping means to initiate slide motion.

(c) The device shall be constructed so that a failure within the system does not prevent the normal stopping action from being applied to the press when required, but does prevent the initiation of a successive stroke until the failure is corrected. The failure shall be indicated by the system.

(d) Muting (bypassing of the protective function) of such device, during the upstroke of the press slide, is permitted for the purpose of parts ejection, circuit checking, and feeding.

(e) The safety distance (D_s) from the sensing field to the point of operation shall be greater than the distance determined by the following formula:

$D_s = 63$ inches/second $\times T_s$

where:

D_s = minimum safety distance (inches);
63 inches/second = hand speed constant; and
T_s = stopping time of the press measured at approximately 90° position of crankshaft rotation (seconds).

(f) Guards shall be used to protect all areas of entry to the point of operation not protected by the presence sensing device.

(iv) The pull-out device shall protect the operator as specified in paragraph (c) (3) (i) (b) of this section, and shall include attachments for each of the operator's hands.

(a) Attachments shall be connected to and operated only by the press slide or upper die.

(b) Attachments shall be adjusted to prevent the operator from reaching into the point of operation or to withdraw the operator's hands from the point of operation before the dies close.

(c) A separate pull-out device shall be provided for each operator if more than one operator is used on a press.

(d) Each pull-out device in use shall be visually inspected and checked for proper adjustment at the start of each operator shift, following a new die setup, and when operators are changed. Necessary maintenance or repair or both shall be performed and completed before the press is operated. Records of inspections and maintenance shall be kept in accordance with paragraph (e) of this section.

(v) The sweep device shall protect the operator as specified in paragraph (c) (3) (i) (b) of this section, by removing his hands safely to a safe position if they are inadvertently located in the point of operation, as the dies close or prior to tripping the clutch. Devices operating in this manner shall have a barrier attached to the sweep arm in such a manner as to prevent the operator from reaching into the point of operation, past the trailing edge of the sweep arm on the downward stroke of the press. This device may not be used for point of operation safeguarding after December 31, 1976.

(a) The sweep device must be activated by the slide or by motion of a foot peda, triprod.

(b) The sweep device must be designed, installed and operated so as to prevent the operator from reaching into the point of operation before the dies close.

(c) The sweep device must be installed so that it will not itself create an impact or shear hazard between the sweep arm and the press tie rods, dies, or any other part of the press or barrier.

(d) Partial enclosure conforming with this paragraph (c) (3) (v), as to the area of entry which they protect, must be provided on both sides of the point of operation to prevent the operator from reaching around or behind the sweep device and into the point of operation after the dies start to close. Partial enclosures shall not themselves create a pinch point or shear hazard.

(vi) A holdout or a restraint device shall protect the operator as specified in subdivision (i) (c) of this subparagraph and shall include attachments for each of the operator's hands. Such attachments shall be securely anchored and adjusted in such a way that the operator is restrained from reaching into the point of operation. A separate set of restraints shall be provided for each operator if more than one operator is required on a press.

(vii) The two hand control device shall protect the operator as specified in paragraph (c) (3) (i) (e) of this section.

(a) When used in press operations requiring more than one operator, separate two hand controls shall be provided for each operator, and shall be designed to require concurrent application of all operators' controls to activate the slide. The removal of a hand from any control button shall cause the slide to stop.

(b) Each two hand control shall meet the construction requirements of paragraph (b) (7) (v) of this section.

(c) The safety distance (D_s) between each two hand control device and the point of operation shall be greater than the distance determined by the following formula:

$D_s = 63$ inches/second $\times T_s$; where:
D_s = minimum safety distance (inches);
63 inches/second = hand speed constant; and
T_s = stopping time of the press measured at approximately 90° position of crankshaft rotation (seconds).

(d) Two hand controls shall be fixed in position so that only a supervisor or safety engineer is capable of relocating the controls.

(viii) The two hand trip device shall protect the operator as specified in paragraph (c) (3) (i) (e) of this section.

(a) When used in press operations requiring more than one operator, separate two hand trips shall be provided for each operator, and shall be designed to require concurrent application of all operators' to activate the slide.

(b) Each two hand trip shall meet the construction requirements of paragraph (b) (6) of this section.

(c) The safety distance (D_m) between the two hand trip and the point of operation shall be greater than the distance determined by the following formula:

$D_m = 63$ inches/second $\times T_m$; where:
D_m = minimum safety distance (inches);
63 inches/second = hand speed constant; and
T_m = the maximum time the press takes for the die closure after it has been tripped (seconds). For full revolution clutch presses with only one engaging point T_m is equal to the time necessary for one and one-half revolutions of the crankshaft. For full revolution clutch presses with more than one engaging point, T_m shall be calculated as follows:

$$T_m = \left\{ \frac{1}{\frac{1}{2} + \frac{\text{Number of engaging points}}{\text{per revolution}}} \right\} \times \begin{array}{l}\text{time necessary to complete}\\ \text{one revolution of the crankshaft}\\ \text{(seconds)}\end{array}$$

(d) Two hand trips shall be fixed in position so that only a supervisor or safety engineer is capable of relocating the controls.

(4) *Hand feeding tools.* Hand feeding tools are intended for placing and removing materials in and from the press. Hand feeding tools are not a point of operation guard or protection device and shall not be used in lieu of the "guards" or devices required in this section.

(5) *Additional requirements for safeguarding.* Where the operator feeds or removes parts by placing one or both hands in the point of operation, and a two hand control, presence sensing device of Type B gate or movable barrier (on a part revolution clutch) is used for safeguarding:

(i) the employer shall use a control system and a brake monitor which comply with paragraphs (b) (13) and (14) of this section. This requirement shall be complied with by November 1, 1975;

(ii) the exception in paragraph (b) (7) (v) (d) of this section for two hand controls manufactured and installed before August 31, 1971 is not applicable under this paragraph (c) (5);

(iii) the control of air clutch machines shall be designed to prevent a significant increase in the normal stopping time due to a failure within the operating valve mechanism, and to inhibit further operation if such failure does occur, where a part revolution clutch is employed. The exception in paragraph (b) (7) (xi) of this section for controls manufactured and installed before August 31, 1971, is not applicable under this paragraph (c) (5).

(d) *Design, construction, setting and feeding of dies.* (1) *General requirements.* Effective February 1, 1975, the employer shall: (i) use dies and operating methods designed to control or eliminate hazards to operating personnel, and (ii) furnish and enforce the use of hand tools for freeing and removing stuck work or scrap pieces from the die, so that no employee need reach into the point of operation for such purposes.

(2) [Reserved]

(3) *Scrap handling.* The employer shall provide means for handling scrap from roll feed or random length stock operations. Scrap cutters used in conjunction with scrap handling systems shall be safeguarded in accordance with paragraph (b) of this section and with § 1910.219.

(4) *Guide post hazard.* The hazard created by a guide post (when it is located in the immediate vicinity of the

operator) when separated from its bushing by more than one-fourth inch shall be considered as a point of operation hazard and be protected in accordance with paragraph (c) of this section.

(5) *Unitized tooling.* If unitized tooling is used, the opening between the top of the punch holder and the face of the slide, or striking pad, shall be safeguarded in accordance with the requirements of paragraph (b) of this section.

(6) *Tonnage, stroke, and weight designation.* All dies shall be:

(i) Stamped with the tonnage and stroke requirements, or have these characteristics recorded if these records are readily available to the die setter;

(ii) Stamped to indicate upper die weight when necessary for air counterbalance pressure adjustment; and

(iii) Stamped to indicate complete die weight when handling equipment may become overloaded.

(7) *Die fastening.* Provision shall be made in both the upper and lower shoes for securely mounting the die to the bolster and slide. Where clamp caps or setscrews are used in conjunction with punch stems, additional means of securing the upper shoe to the slide shall be used.

(8) *Die handling.* Handling equipment attach points shall be provided on all dies requiring mechanical handling.

(9) *Diesetting.* (i) The employer shall establish a diesetting procedure that will insure compliance with paragraph (b) of this section.

(ii) The employer shall provide spring loaded turnover bars, for presses designed to accept such turnover bars.

(iii) The employer shall provide die stops or other means to prevent loss of control of the die while setting or removing dies in presses which are inclined.

(iv) The employer shall provide and enforce the use of safety blocks for use whenever dies are being adjusted or repaired in the press.

(v) The employer shall provide brushes, swabs, lubricating rolls, and automatic or manual pressure guns so that operators and diesetters shall not be required to reach into the point of operation or other hazard areas to lubricate material, punches or dies.

(e) *Inspection, maintenance, and modification of presses.*—(1) *Inspection and maintenance records.* (i) It shall be the responsibility of the employer to establish and follow a program of periodic and regular inspections of his power presses to insure that all their parts, auxiliary equipment, and safeguards are in a safe operating condition and adjustment. The employer shall maintain records of these inspections and the maintenance work performed.

(ii) Each press shall be inspected and tested no less than weekly to determine the condition of the clutch/brake mechanism, antirepeat feature and single stroke mechanism. Necessary maintenance or repair or both shall be performed and completed before the press is operated. The employer shall maintain records of these inspections and the maintenance work performed. These requirements do not apply to those presses which comply with paragraphs (b) (13) and (14) of this section.

(2) *Modification.* It shall be the responsibility of any person modifying a power press to furnish instructions with the modification to establish new or changed guidelines for use and care of the power press so modified.

(3) *Training of maintenance personnel.* It shall be the responsibility of the employer to insure the original and continuing competence of personnel caring for, inspecting, and maintaining power presses.

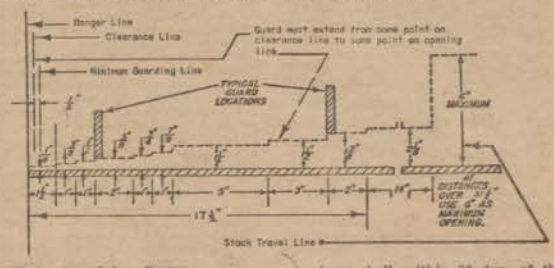
(f) *Operation of power presses.*—(1) *Employment of minors.* The employer shall permit no one under 18 years of age to operate or assist in the operation of machinery covered in this section, except that this paragraph shall not be deemed to prohibit the employment of persons who are 16 or 17 years of age in an apprenticeship training program which meets the requirements contained in §§ 570.59 and 570.50 (b) and (c) of this title.

(2) *Instruction to operators.* The employer shall train and instruct the operator in the safe method of work before starting work on any operation covered by this section. The employer shall insure by adequate supervision that correct operating procedures are being followed.

(3) *Work area.* The employer shall provide clearance between machines so

that movement of one operator will not interfere with the work of another. Ample room for cleaning machines, handling material, work places, and scrap shall also be provided. All surrounding floors shall be kept in good condition and free from obstructions, grease, oil, and water.

(4) *Overloading.* The employer shall operate his presses within the tonnage and attachment weight ratings specified by the manufacturer.



Explanation of above diagram:

This diagram shows the accepted safe openings between the bottom edge of a guard and feed table at various distances from the danger line (point of operation).

The *clearance line* marks the distance required to prevent contact between guard and moving parts.

The *minimum guarding line* is the distance between the infeed side of the guard and the danger line which is one-half inch from the danger line.

The various openings are such that for average size hands an operator's fingers won't reach the point of operation.

After installation of point of operation guards and before a job is released for operation a check should be made to verify that the guard will prevent the operator's hands from reaching the point of operation.

TABLE O-10

Distance of opening from point of operation (inches)	Maximum width of opening (inches)
½ to 1½	¼
1½ to 2½	⅜
2½ to 3½	½
3½ to 5½	⅝
5½ to 6½	¾
6½ to 7½	⅞
7½ to 12½	1¼
12½ to 15½	1½
15½ to 17½	1⅞
17½ to 31½	2½

This table shows the distances that guards shall be positioned from the danger line in accordance with the required openings.

(g) *Reports of injuries to employees operating mechanical power presses.* The employer shall, within 30 days of the occurrence, report to either the Director of the Office of Standards Development, OSHA, U.S. Department of Labor, Washington, D.C. 20210, or the State agency administering a plan approved by the Assistant Secretary of Labor for Occupational Safety and Health, all point of operation injuries to operators or other employees. The following information shall be included in the report:

(i) Employer's name, address and location of the workplace (establishment).

(ii) Employee's name, injury sustained, and the task being performed (operation, set-up, maintenance, or other).

(iii) Type of clutch used on the press (full revolution, part revolution, or direct drive).

(iv) Type of safeguard(s) being used (two hand control, two hand trip, pullouts, sweeps, or other). If the safeguard is not described in this section, give a complete description.

(v) Cause of the accident (repeat of press, safeguard failure, removing stuck part or scrap, no safeguard provided, no safeguard in use, or other).

(vi) Type of feeding (manual with hands in dies or with hands out of dies, semiautomatic, automatic, or other).

(vii) Means used to actuate press stroke (foot trip, foot control, hand trip, hand control, or other).

(viii) Number of operators required for the operation and the number of operators provided with controls and safeguards.

(Secs. 6(b), 8(c), Pub. Law 91-596, 84 Stat. 1593, 1599 (29 U.S.C. 655, 657), Secretary of Labor's Order No. 12-71, 36 FR 8754) (39 FR 32502, June 27, 1974, as amended at 39 FR 41846, Dec. 23, 1974; 40 FR 2962, Jan. 27, 1975)

§ 1910.218 Forging machines.

(a) *General requirements.*—(1) *Use of lead.* The safety requirements of this subparagraph apply to lead casts or other use of lead in the forge shop or die shop.

(i) Thermostatic control of heating elements shall be provided to maintain proper melting temperature and prevent overheating.

(ii) Fixed or permanent lead pot installations shall be exhausted.

(iii) Portable units shall be used only in areas where good, general room ventilation is provided.

(iv) Personal protective equipment (gloves, goggles, aprons, and other items) shall be worn.

(v) A covered container shall be provided to store dross skimmings.

(vi) Equipment shall be kept clean, particularly from accumulations of yellow lead oxide.

(2) *Inspection and maintenance.* It shall be the responsibility of the employer to maintain all forge shop equipment in a condition which will insure continued safe operation. This responsibility includes:

(i) Establishing periodic and regular maintenance safety checks and keeping records of these inspections.

(ii) Scheduling and recording inspection of guards and point of operation protection devices at frequent and regular intervals.

(iii) Training personnel for the proper inspection and maintenance of forging machinery and equipment.

(iv) All overhead parts shall be fastened or protected in such a manner that they will not fly off or fall in event of failure.

(3) *Hammers and presses.* (i) All hammers shall be positioned or installed in such a manner that they remain on or are anchored to foundations sufficient to support them according to applicable engineering standards.

(ii) All presses shall be installed in such a manner that they remain where they are positioned or they are anchored to foundations sufficient to support them according to applicable engineering standards.

TABLE O-11—STRENGTH AND DIMENSIONS FOR WOOD RAM POSTS

Size of timber, inches [1]	Square inches in cross section	Minimum allowable crushing strength parallel to grain, p.s.i. [2]	Maximum safe load within short column range [3]	Safety factor	Maximum recommended weight of forging hammer for timber used	Maximum allowable length of timber, inches
4 x 4	16	5,000	80,000	10	8,000	44
6 x 6	36	5,000	180,000	10	18,000	66
8 x 8	64	5,000	320,000	10	32,000	88
10 x 10	100	5,000	500,000	13	39,000	110
12 x 12	144	5,000	720,000	10	72,000	132

[1] Actual dimension.

[2] Adapted from U.S. Department of Agriculture Technical Bulletin 479. Hardwoods recommended are those whose ultimate crushing strength in compression parallel to grain are 5,000 p.s.i. (pounds per square inch) or greater.

[3] Simplified safe formula for short columns is $L/d = 11$, where L = length of timber in inches and d = least dimension in inches; this ratio should not exceed 11.

(iii) Means shall be provided for disconnecting the power to the machine and for locking out or rendering cycling controls inoperable.

(iv) The ram shall be blocked when dies are being changed or other work is being done on the hammer. Blocks or wedges shall be made of material the strength and construction of which should meet or exceed the specifications and dimensions shown in Table O-11.

(v) Tongs shall be of sufficient length to clear the body of the worker in case of kickback, and shall not have sharp handle ends. The worker should be instructed in the proper body position when using tongs. Tongs should be checked periodically to see that they remain at the proper hardness level for the job. When rings or equivalent devices for locking tongs are used they should be inspected periodically to insure safe condition.

(vi) Oil swabs, or scale removers, or other devices to remove scale shall be provided. These devices shall be long enough to enable a man to reach the full length of the die without placing his hand or arm between the dies.

(vii) Material handling equipment shall be of adequate strength, size, and dimension to handle diesetting operations safely.

(viii) A scale guard of substantial construction shall be provided at the back of every hammer, so arranged as to stop flying scale.

(ix) A scale guard of substantial construction shall be provided at the back of every press, so arranged as to stop flying scale.

(b) *Hammers, general.*—(1) *Keys.* Die keys and shims shall be made from a grade of material that will not unduly crack or splinter, and should not project more than 2 inches in front and 4 inches in back of ram or die.

(2) *Foot operated devices.* All foot operated devices (i.e., treadles, pedals, bars, valves, and switches) shall be substantially and effectively protected from unintended operation.

(c) *Presses.* All manually operated valves and switches shall be clearly identified and readily accessible.

(d) *Power-driven hammers.*—(1) *Safety cylinder head.* Every steam or airhammer shall have a safety cylinder head to act as a cushion if the rod should break or pullout of the ram.

(2) *Shutoff valve.* Steam hammers shall be provided with a quick closing emergency valve in the admission pipeline at a convenient location. This valve shall be closed and locked in the off position while the hammer is being adjusted, repaired, or serviced, or when the dies are being changed.

(3) *Cylinder draining.* Steam hammers shall be provided with a means of cylinder draining, such as a self-draining arrangement or a quick-acting drain cock.

(4) *Pressure pipes.* Steam or air piping shall conform to the specifications of American National Standard ANSI B31.1.0-1967, Power Piping with Addenda issued before April 28, 1971.

(e) *Gravity hammers.*—(1) *Air-lift hammers.* (i) Air-lift hammers shall have a safety cylinder head as required in paragraph (d) (1) of this section.

(ii) Air-lift hammers shall have an air shutoff valve as required in paragraph (d) (2) of this section and should be conveniently located and distinctly marked for ease of identification.

(iii) Air-lift hammers shall be provided with two drain cocks: one on main head cylinder, and one on clamp cylinder.

(iv) Air piping shall conform to the specifications of the ANSI B31.1.0-1967, Power Piping with Addenda issued before April 28, 1971.

(2) *Board drophammers.* (i) A suitable enclosure shall be provided to prevent damaged or detached boards from falling. The board enclosure shall be securely fastened to the hammer.

(ii) All major assemblies and fittings which can loosen and fall shall be properly secured in place.

(f) *Forging presses.*—(1) *Mechanical forging presses.* When dies are being changed or maintenance is being performed on the press, the following shall be accomplished:

(i) The power to the press shall be locked out.

(ii) The flywheel shall be at rest.

(iii) The ram shall be blocked with a material the strength of which shall meet or exceed the specifications or dimensions shown in Table O-11.

(2) *Hydraulic forging presses.* When dies are being changed or maintenance is being performed on the press, the following shall be accomplished:

(i) The hydraulic pumps and power apparatus shall be locked out.

(ii) The ram shall be blocked with a material the strength of which shall meet or exceed the specifications or dimensions shown in Table O-11.

(g) *Trimming presses.*—(1) *Hot trimming presses.* The requirements of paragraph (f) (1) of this section shall also apply to hot trimming presses.

(2) *Cold trimming presses.* Cold trimming presses shall be safeguarded in accordance with § 1910.217(c).

(h) *Upsetters.*—(1) *General requirements.* All upsetters shall be installed so that they remain on their supporting foundations.

(2) *Lockouts.* Upsetters shall be provided with a means for locking out the power at its entry point to the machine and rendering its cycling controls inoperable.

(3) *Manually operated controls.* All manually operated valves and switches shall be clearly identified and readily accessible.

(4) *Tongs.* Tongs shall be of sufficient length to clear the body of the worker in

case of kickback, and shall not have sharp handle ends. The worker should be instructed in the proper body position when using tongs. Tongs should be checked periodically to see that they remain at the proper hardness level for the job. When rings or equivalent devices for locking tongs are used they should be inspected periodically to ensure safe condition.

(5) *Changing dies.* When dies are being changed, maintenance performed, or any work done on the machine, the power to the upsetter shall be locked out, and the flywheel shall be at rest.

(i) *Other forging equipment*—(1) *Boltheading.* The provisions of paragraph (h) of this section shall apply to boltheading.

(2) *Rivet making.* The provisions of paragraph (h) of this section shall apply to rivet making.

(j) *Other forge facility equipment*—(1) *Billet shears.* A positive-type lockout device for disconnecting the power to the shear shall be provided.

(2) *Saws.* Every saw shall be provided with a guard of not less than one-eighth inch sheet metal positioned to stop flying sparks. Suitable means should be provided to trap sparks below the saw. A tank of water placed below the saw is also desirable.

(3) *Conveyors.* Conveyor power transmission equipment shall be guarded in accordance with ANSI B20.1–1957, Safety Code for Conveyors, Cableways, and Related Equipment.

(4) *Shot blast.* The cleaning chamber shall have doors or guards to protect operators.

(5) *Grinding.* Personal protective equipment shall be used in grinding operations, and equipment shall be used and maintained in accordance with ANSI B7.1–1970, Safety Code for the Use, Care, and Protection of Abrasive Wheels, and with § 1910.215.

§ 1910.219 Mechanical power-transmission apparatus.

(a) *General requirements.* (1) This section covers all types and shapes of power-transmission belts, except the following when operating at two hundred and fifty (250) feet per minute or less: (i) Flat belts one (1) inch or less in width, (ii) flat belts two (2) inches or less in width which are free from metal lacings or fasteners, (iii) round belts one-half (½) inch or less in diameter; and (iv) single strand V-belts, the width of which is thirteen thirty-seconds ($^{13}/_{32}$) inch or less.

(2) Vertical and inclined belts (paragraphs (e) (3) and (4) of this section) if not more than two and one-half (2½) inches wide and running at a speed of less than one thousand (1,000) feet per minute, and if free from metal lacings or fastenings may be guarded with a nip-point belt and pulley guard.

(3) For the Textile Industry, because of the presence of excessive deposits of lint, which constitute a serious fire hazard, the sides and face sections only of nip-point belt and pulley guards are required, provided the guard shall extend at least six (6) inches beyond the rim of the pulley on the in-running and off-running sides of the belt and at least two (2) inches away from the rim and face of the pulley in all other directions.

(4) This section covers the principal features with which power transmission safeguards shall comply.

(b) *Prime-mover guards*—(1) *Flywheels.* Flywheels located so that any part is seven (7) feet or less above floor or platform shall be guarded in accordance with the requirements of this subparagraph:

(i) With an enclosure of sheet, perforated, or expanded metal, or woven wire;

(ii) With guard rails placed not less than fifteen (15) inches nor more than twenty (20) inches from rim. When flywheel extends into pit or is within 12 inches of floor, a standard toeboard shall also be provided;

(iii) When the upper rim of flywheel protrudes through a working floor, it shall be entirely enclosed or surrounded by a guardrail and toeboard.

(iv) For flywheels with smooth rims five (5) feet or less in diameter, where the preceding methods cannot be applied, the following may be used: A disk attached to the flywheel in such manner as to cover the spokes of the wheel on the exposed side and present a smooth surface and edge, at the same time providing means for periodic inspection. An open space, not exceeding four (4) inches in width, may be left between the outside edge of the disk and the rim of the wheel if desired, to facilitate turning the wheel over. Where a disk is used, the keys or other dangerous projections not covered by disk shall be cut off or covered. This subdivision does not apply to flywheels with solid web centers.

pulley on the side where insufficient clearance exists.

(ii) Where there are overhanging pulleys on line, jack, or countershafts with no bearing between the pulley and the outer end of the shaft, a guide to prevent the belt from running off the pulley should be provided.

(3) *Broken pulleys.* Pulleys with cracks, or pieces broken out of rims, shall not be used.

(4) *Pulley speeds.* Pulleys intended to operate at rim speed in excess of manufacturers normal recommendations shall be specially designed and carefully balanced for the speed at which they are to operate.

(5) *Composition and wood pulleys.* Composition or laminated wood pulleys shall not be installed where they are subjected to influences detrimental to their structural composition.

(c) *Belt, rope, and chain drives*—(1) *Horizontal belts and ropes.* (i) Where both runs of horizontal belts are seven (7) feet or less from the floor level, the guard shall extend to at least fifteen (15) inches above the belt or to a standard height (see Table O–12), except that where both runs of a horizontal belt are 42 inches or less from the floor, the belt shall be fully enclosed in accordance with paragraphs (m) and (o) of this section.

(ii) In powerplants or power-development rooms, a guardrail may be used in lieu of the guard required by subdivision (i) of this subparagraph.

(2) *Overhead horizontal belts.* (i) Overhead horizontal belts, with lower parts seven (7) feet or less from the floor or platform, shall be guarded on sides and bottom in accordance with paragraph (c) (3) of this section.

(ii) Horizontal overhead belts more than seven (7) feet above floor or platform shall be guarded for their entire length under the following conditions:

(a) If located over passageways or work places and traveling 1,800 feet or more per minute.

(b) If center to center distance between pulleys is ten (10) feet or more.

(c) If belt is eight (8) inches or more in width.

(iii) Where the upper and lower runs of horizontal belts are so located that passage of persons between them would be possible, the passage shall be either:

(a) Completely barred by a guardrail or other barrier in accordance with paragraphs (m) and (o) of this section; or

(b) Where passage is regarded as necessary, there shall be a platform over the lower run guarded on either side by a railing completely filled in with wire mesh or other filler, or by a solid barrier. The upper run shall be so guarded as to prevent contact therewith either by the worker or by objects carried by him. In powerplants only the lower run of the belt need be guarded.

(iv) Overhead chain and link belt drives are governed by the same rules as overhead horizontal belts and shall be guarded in the same manner as belts.

(v) American or Continuous System rope drives so located that the condition of the rope (particularly the splice) cannot be constantly and conveniently observed, shall be equipped with a telltale device (preferably electric-bell type) that will give warning when rope begins to fray.

(3) *Vertical and inclined belts.* (i) Vertical and inclined belts shall be enclosed by a guard conforming to standards in paragraphs (m) and (o) of this section.

(ii) All guards for inclined belts shall be arranged in such a manner that a minimum clearance of seven (7) feet is maintained between belt and floor at any point outside of guard.

(4) *Vertical belts.* Vertical belts running over a lower pulley more than seven (7) feet above floor or platform shall be guarded at the bottom in the same manner as horizontal overhead belts, if conditions are as stated in subparagraphs (2) (ii) (a) and (c) of this paragraph.

(5) *Cone-pulley belts.* (i) The cone belt and pulley shall be equipped with a belt shifter so constructed as to adequately guard the nip point of the belt and pulley. If the frame of the belt shifter does not adequately guard the nip point of the belt and pulley, the nip point shall be further protected by means of a vertical guard placed in front of the pulley and extending at least to the top of the largest step of the cone.

(ii) If the belt is of the endless type or laced with rawhide laces, and a belt shifter is not desired, the belt will be considered guarded if the nip point of the belt and pulley is protected by a nip point guard located in front of the cone extending at least to the top of the largest step of the cone, and formed to show the contour of the cone in order to give the nip point of the belt and pulley the maximum protection

(v) Adjustable guard to be used for starting engine or for running adjustment may be provided at the flywheel of gas or oil engines. A slot opening for jack bar will be permitted.

(vi) Wherever flywheels are above working areas, guards shall be installed having sufficient strength to hold the weight of the flywheel in the event of a shaft or wheel mounting failure.

(2) *Cranks and connecting rods.* Cranks and connecting rods, when exposed to contact, shall be guarded in accordance with paragraphs (m) and (n) of this section, or by a guardrail as described in paragraph (o) (5) of this section.

(3) *Tail rods or extension piston rods.* Tail rods or extension piston rods shall be guarded in accordance with paragraphs (m) and (o) of this section, or by a guardrail on sides and end, with a clearance of not less than fifteen (15) nor more than twenty (20) inches when rod is fully extended.

(4) *Governor balls.* Governor balls six (6) feet or less from the floor or other working level, when exposed to contact, shall be provided with an enclosure extending to the top of the governor balls when at their highest position. The material used in the construction of this enclosure shall conform to paragraphs (m) and (o) of this section.

(e) *Shafting*—(1) *Installation.* (i) Each continuous line of shafting shall be secured in position against excessive endwise movement.

(ii) Inclined and vertical shafts, particularly inclined idler shafts, shall be securely held in position against endwise thrust.

(2) *Guarding horizontal shafting.* (i) All exposed parts of horizontal shafting seven (7) feet or less from floor or working platform, excepting runways used exclusively for oiling, or running adjustments, shall be protected by a stationary casing enclosing shafting completely or by a trough enclosing sides and top or sides and bottom of shafting as location requires.

(ii) Shafting under bench machines shall be enclosed by a stationary casing, or by a trough at sides and top or sides and bottom, as location requires. The sides of the trough shall come within at least six (6) inches of the underside of table, or if shafting is located near floor within six (6) inches of floor. In every case the sides of trough shall extend at least two (2) inches beyond the shafting or protuberance.

(3) *Guarding vertical and inclined shafting.* Vertical and inclined shafting seven (7) feet or less from floor or working platform, excepting maintenance runways, shall be enclosed with a stationary casing in accordance with requirements of paragraphs (m) and (o) of this section.

(4) *Projecting shaft ends.* (i) Projecting shaft ends shall present a smooth edge and end and shall not project more than one-half the diameter of the shaft unless guarded by nonrotating caps or safety sleeves.

(ii) Unused keyways shall be filled up or covered.

(5) *Power-transmission apparatus located in basements.* All mechanical power transmission apparatus located in basements, towers, and rooms used exclusively for power transmission equipment shall be guarded in accordance with this section, except that the requirements for safeguarding belts, pulleys, and shafting need not be compiled with when the following requirements are met:

(i) The basement, tower, or room occupied by transmission equipment is locked against unauthorized entrance.

(ii) The vertical clearance in passageways between the floor and power transmission beams, ceiling, or any other objects, is not less than five feet six inches (5 ft. 6 in.).

(iii) The intensity of illumination conforms to the requirements of ANSI A11.1–1965 (R–1970).

(iv) The footing is dry, firm, and level.

(v) The route followed by the oiler is protected in such manner as to prevent accident.

(d) *Pulleys*—(1) *Guarding.* Pulleys, any parts of which are seven (7) feet or less from the floor or working platform, shall be guarded in accordance with the standards specified in paragraphs (m) and (o) of this section. Pulleys serving as balance wheels (e.g., punch presses) on which the point of contact between belt and pulley is more than six feet six inches (6 ft. 6 in.) from the floor or platform may be guarded with a disk covering the spokes.

(2) *Location of pulleys.* (i) Unless the distance to the nearest fixed pulley, clutch, or hanger exceeds the width of the belt used, a guide shall be provided to prevent the belt from leaving the

(iii) If the cone is located less than 3 feet from the floor or working platform, the cone pulley and belt shall be guarded to a height of 3 feet regardless of whether the belt is endless or laced with rawhide.

(6) *Belt tighteners.* (i) Suspended counterbalanced tighteners and all parts thereof shall be of substantial construction and securely fastened; the bearings shall be securely capped. Means must be provided to prevent tightener from falling, in case the belt breaks.

(ii) Where suspended counterweights are used and not guarded by location, they shall be so encased as to prevent accident.

(f) *Gears, sprockets, and chains*—(1) *Gears.* Gears shall be guarded in accordance with one of the following methods:

(i) By a complete enclosure; or

(ii) By a standard guard as described in paragraph (o) of this section, at least seven (7) feet high extending six (6) inches above the mesh point of the gears; or

(iii) By a band guard covering the face of gear and having flanges extended inward beyond the root of the teeth on the exposed side or sides. Where any portion of the train of gears guarded by a band guard is less than six (6) feet from the floor a disk guard or a complete enclosure to the height of six (6) feet shall be required.

(2) *Hand-operated gears.* Subparagraph (1) of this paragraph does not apply to hand-operated gears used only to adjust machine parts and which do not continue to move after hand power is removed. However, the guarding of these gears is highly recommended.

(3) *Sprockets and chains.* All sprocket wheels and chains shall be enclosed unless they are more than seven (7) feet above the floor or platform. Where the drive extends over other machine or working areas, protection against falling shall be provided. This subparagraph does not apply to manually operated sprockets.

(4) *Openings for oiling.* When frequent oiling must be done, openings with hinged or sliding self-closing covers shall be provided. All points not readily accessible shall have oil feed tubes if lubricant is to be added while machinery is in motion.

(g) *Guarding friction drives.* The driving point of all friction drives when exposed to contact shall be guarded, all [illegible] or smoke friction drives and all web friction drives with holes in the web shall be entirely enclosed, and all projecting belts on friction drives where exposed to contact shall be guarded.

(h) *Keys, setscrews, and other projections.* (1) All projecting keys, setscrews, and other projections in revolving parts shall be removed or made flush or guarded by metal cover. This subparagraph does not apply to keys or setscrews within gear or sprocket casings or other enclosures, nor to keys, setscrews, or oilcups in hubs of pulleys less than twenty (20) inches in diameter where they are within the plane of the rim of the pulley.

(2) It is recommended, however, that no projecting setscrews or oilcups be used in any revolving pulley or part of machinery.

(i) *Collars and couplings*—(1) *Collars.* All revolving collars, including split collars, shall be cylindrical, and screws or bolts used in collars shall not project beyond the largest periphery of the collar.

(2) *Couplings.* Shaft couplings shall be so constructed as to present no hazard from bolts, nuts, setscrews, or revolving surfaces. Bolts, nuts, and setscrews will, however, be permitted where they are covered with safety sleeves or where they are used parallel with the shafting and are countersunk or else do not extend beyond the flange of the coupling.

(j) *Bearings and facilities for oiling.* Self lubricating bearings are recommended and all drip cups and pans shall be securely fastened.

(k) *Guarding of clutches, cutoff couplings, and clutch pulleys*—(1) *Guards.* Clutches, cutoff couplings, or clutch pulleys having projecting parts, where such clutches are located seven (7) feet or less above the floor or working platform, shall be enclosed by a stationary guard constructed in accordance with this section. A "U" type guard is permissible.

(2) *Engine rooms.* In engine rooms a guardrail, preferably with toeboard, may be used instead of the guard required by subparagraph (1) of this paragraph, provided such a room is occupied only by engine room attendants.

(3) *Bearings.* A bearing support immediately adjacent to a friction clutch or cutoff coupling shall have self-lubricating bearings requiring attention at infrequent intervals.

(l) *Belt shifters, clutches, shippers, poles, perches, and fasteners*—(1) *Belt shifters.* (i) Tight and loose pulleys on all new installations made on or after

August 31, 1971, shall be equipped with a permanent belt shifter provided with mechanical means to prevent belt from creeping from loose to tight pulley. It is recommended that old installations be changed to conform to this rule.

(ii) Belt shifter and clutch handles shall be rounded and be located as far as possible from danger of accidental contact, but within easy reach of the operator. Where belt shifters are not directly located over a machine or bench, the handles shall be cut off six feet six inches (6 ft. 6 in.) above floor level.

(iii) All belt and clutch shifters of the same type in each shop should move in the same direction to stop machines, i.e., either all right or all left. This does not apply to friction clutch on countershaft carrying two clutch pulleys with open and crossed belts, respectively. In this case the shifter handle has three positions and the machine is at a standstill when clutch handle is in the neutral or center position.

(2) *Belt shippers and shipper poles.* The use of belt poles as substitutes for mechanical shifters is not recommended. Where necessity compels their use, they shall be of sufficient size to enable workmen to grasp them securely. (A two-inch (2 in.) diameter or 1¼ by 2 inches cross-section is suggested.) Poles shall be smooth and preferably of straight grain hardwood, such as ash or hickory. The edges of rectangular poles should be rounded. Poles should extend from the top of the pulley to within about forty (40) inches of floor or working platform.

(3) *Belt perches.* Where loose pulleys or idlers are not practicable, belt perches in form of brackets, rollers, etc., shall be used to keep idle belts away from the shafts. Perches should be substantial and designed for the safe shifting of belts.

(4) *Belt fasteners.* Belts which of necessity must be shifted by hand and belts within seven (7) feet of the floor or working platform which are not guarded in accordance with this section shall not be fastened with metal in any case, nor with any other fastening which by construction or wear will constitute an accident hazard.

(m) *Standard guards—general requirements.*—(1) *Materials.* (i) Standard conditions shall be secured by the use of the following materials. Expanded metal, perforated or solid sheet metal, wire mesh on a frame of angle iron, or iron pipe securely fastened to floor or to frame of machine.

(ii) All metal should be free from burrs and sharp edges.

(iii) Wire mesh should be of the type in which the wires are securely fastened at every cross point either by welding, soldering, or galvanizing, except in case of diamond or square wire mesh made of No. 14 gage wire, ¾-inch mesh or heavier.

(2) *Methods of manufacture.* (i) Expanded metal, sheet or perforated metal, and wire mesh shall be securely fastened to frame by one of the following methods:

(a) With rivets or bolts spaced not more than five (5) inches center to center. In case of expanded metal or wire mesh, metal strips or clips shall be used to form a washer for rivets or bolts.

(b) by welding to frame every four (4) inches.

(c) By weaving through channel or angle frame, or if No. 14 gage ¾-inch mesh or heavier is used by bending entirely around rod frames.

(d) Where openings in pipe railing are to be filled in with expanded metal, wire mesh or sheet metal, the filler material shall be made into panels with rolled edges or bound with "V" or "U" edging of No. 24 gage or heavier sheet metal fastened to the panels with bolts or rivets spaced not more than five (5) inches center to center. The bound panels shall be fastened to the railing by sheet-metal clips spaced not more than five (5) inches center to center.

(e) Diamond or square mesh made of crimped wire fastened into channels, angle or round-iron frames, may also be used as a filler in guards. Size of mesh shall correspond to Table O–12.

(ii) Where the design of guards requires filler material of greater area than 12 square feet, additional frame members shall be provided to maintain panel area within this limit.

(iii) All joints of framework shall be made equivalent in strength to the material of the frame.

(n) *Disk, shield, and "U" guards.*—(1) *Disk guards.* A disk guard shall consist of a sheet-metal disk not less than No. 22 gage fastened by "U" bolts or rivets to spokes of pulleys, flywheels, or gears. Where possibility of contact with sharp edges of the disk exists, the edge shall be rolled or wired. In all cases the nuts

shall be provided with locknuts which shall be placed on the unexposed side of the wheel.

(2) *Shield guards.* (i) A shield guard shall consist of a frame filled in with wire mesh, expanded, perforated, or solid sheet metal.

(ii) If area of shield does not exceed six (6) square feet the wire mesh or expanded metal may be fastened in a framework of ⅜-inch solid rod, ⅜-inch by ¾-inch by ⅛-inch angle iron or metal construction of equivalent strength. Metal shields may have edges entirely rolled around a ⅜-inch solid iron rod.

(3) *"U" guards.* A "U" guard consisting of a flat surface with edge members

TABLE O–13—TABLE OF STANDARD MATERIALS AND DIMENSIONS

Material	Clearance from moving part at all points	Largest mesh or opening allowable	Minimum gauge (U.S. Standard) or thickness	Minimum height of guard from floor or platform level
	Inches	*Inches*		*Feet*
Woven wire	Under 2	½	No. 19	7
	2–4	½	No. 16	7
	Under 4	½	No. 16	7
	4–15	1	No. 12	7
Expanded metal	Under 4	½	No. 18	7
	4–15	2	No. 13	7
Perforated metal	Under 4	½	No. 28	7
	4–15	2	No. 14	7
Sheet metal	Under 4		No. 22	7
	4–15		No. 20	7
Wood or metal strip crossed	Under 4	½	Wood ¾; Metal No. 14	7
	4–15	2	Wood ¾; Metal No. 18	7
Wood or metal strip not crossed	Under 4	½ width	Wood ¾; Metal No. 18	7
	4–15	1 width	Wood ¾; Metal No. 18	7
Standard rail	Min. 15			7
	Max. 20			

(i) Minimum dimensions of materials for the framework of all guards, except as noted in subdivision (i)(c) shall be angle iron 1 inch by 1 inch by ⅛ inch, metal pipe of ¾-inch inside diameter or metal construction of equivalent strength.

(2) All guards shall be rigidly braced every three (3) feet or fractional part of their height to some fixed part of machinery or building structure. Where guard is exposed to contact with moving equipment additional strength may be necessary.

(3) The framework for all guards fastened to floor or working platform and without other support or bracing shall consist of 1½-inch by 1½-inch by ⅛-inch angle iron, metal pipe of 1½-inch inside diameter, or metal construction of equivalent strength. All rectangular guards shall have at least four upright frame members each of which shall be carried to the floor and be securely fastened thereto. Cylindrical guards shall have at least three supporting members carried to floor.

(c) Guards thirty (30) inches or less in height and with a total surface area not in excess of ten (10) square feet may have a framework of ⅜-inch solid rod, ¾-inch by ¾-inch by ⅛-inch angle, or metal construction of equivalent strength. The filling material shall correspond to the requirements of Table O–12.

(ii) The specifications given in Table O–12 and subdivision (i) of this subparagraph are minimum requirements; where guards are exposed to unusual wear, deterioration or impact, heavier material and construction should be used to protect amply against the specific hazards involved.

(2) *Wood guards.* (i) Wood guards may be used in the woodworking and

chemical industries, in industries where the presence of fumes or where manufacturing conditions would cause the rapid deterioration of metal guards; also in construction work and in locations outdoors where extreme cold or extreme heat make metal guards and railings undesirable. In all other industries, wood guards shall not be used.

(ii) (a) Wood shall be sound, tough, and free from any loose knots.

(b) Guards shall be made of planed lumber not less than one (1) inch rough board measure, and edges and corners rounded off.

(c) Wood guards shall be securely fastened together with wood screws, hardwood dowel pins, bolts, or rivets.

(d) While no definite dimensions are given under this heading for framework or filler materials, wood guards shall be equal in strength and rigidity to metal guards specified in subparagraphs (1) (i) and (ii) of this paragraph and Table O–12.

(e) For construction of standard wood railing, see subpargraph (8) of this paragraph.

(3) *Guards for horizontal overhead belts.* (i) Guards for horizontal overhead belts shall run the entire length of the belt and follow the line of the pulley to the ceiling or be carried to the nearest wall, thus enclosing the belt effectively. Where belts are so located as to make it impracticable to carry the guard to wall or ceiling, construction of guard shall be such as to enclose completely the top and bottom runs of belt and the face of pulleys.

(ii) The guard and all its supporting members shall be securely fastened to wall or ceiling by gimlet-point lag screws or through bolts. In case of masonry construction, expansion bolts shall be used. The use of bolts placed horizontally through floor beams or ceiling rafters is recommended.

(iii) Suitable reinforcement shall be provided for the ceiling rafters or overhead floor beams, where such is necessary, to sustain safely the weight and stress likely to be imposed by the guard. The interior surface of all guards, by which is meant the surface of the guard with which a belt will come in contact, shall be smooth and free from all projections of any character, except where construction demands it; protruding shallow roundhead rivets may be used. Overhead belt guards shall be at least one-quarter wider than belt which they protect, except that this clearance need not in any case exceed six (6) inches on each side. Overhead rope drive and block and roller-chain-drive guards shall be not less than six (6) inches wider than the drive on each side. In overhead silent chain-drive guards where the chain is held from lateral displacement on the sprockets, the side clearances required on drives of twenty (20) inch centers or under shall be not less than one-fourth inch from the nearest moving chain part, and on drives of over twenty (20) inch centers a minimum of one-half inch from the nearest moving chain part.

(iv) Table O–13 gives the sizes of materials to be used and the general construction specifications of guards for belts ten (10) inches or more in width. No material for overhead belt guards should be smaller than that specified in Table O–13 for belts ten (10) to fourteen (14) inches wide, even if the overhead belt is less than ten (10) inches in width. However, No. 20 gage sheet metal may be used as a filler on guards for belts less than ten (10) inches wide. Expanded metal because of the sharp edges, should not be used as a filler in horizontal belt guards.

(v) For clearance between guards and belts, ropes or chains of various center to center dimensions between the shafts, see bottom of Table O–13.

(4) *Guards for horizontal overhead rope and chain drives.* Overhead-rope and chain-drive guard construction shall conform to the rules for overhead-belt guard construction of similar width, except that the filler material shall be of the solid type as shown in Table O–13, unless the fire hazard demands the use of open construction. A side guard member of the same solid filling material should be carried up in a vertical position two (2) inches above the level of the lower run of the rope or chain drive and two (2) inches within the periphery of the pulleys which the guard encloses thus forming a trough. These side filler members should be reinforced on the edges with 1½-inch by ⅛-inch flat steel, riveted to the filling material at not greater than eight (8) inch centers; the reinforcing strip should be fastened or bolted to all guard supporting members with at least one ⅜-inch rivet or bolt at each intersection, and the ends should be secured to the ceiling with lag screws or bolts. The filling material shall be fastened to the framework of the guard and the filler supports by 9/16-inch rivets

TABLE O–13—HORIZONTAL OVERHEAD BELTS, ROPES, AND CHAINS 7 FEET OR MORE ABOVE FLOOR OR PLATFORM

	Width			
	From 10" to 14" inclusive	Over 14" to 24" inclusive	Over 24"	Material
MEMBERS				
Framework	1½" x 1½" x 14".	2" x 2" x 9/16".	2" x 2" x ⅝".	Angle iron.
Filler (belt guards)	1½" x ⅝".	2" x ⅝".	2" x ⅝".	Flat iron.
Filler and vertical side member	No. 20 A. W. G.	No. 18 A. W. G.	No. 16 A. W. G.	Solid sheet metal.
Filler supports	2" x 9/16" flat iron.	2" x 9/16" flat iron.	2½" x 2½" x 14" angle.	Flat and angle.
Guard supports	2" x 9/16".	2" x 9/16".	2½" x ⅝".	Flat iron.
FASTENINGS				
Filler supports to framework	(2) ⅝".	(2) ⅝".	(2) ⅝".	Rivets.
Filler flats to supports (belt guards)	(1) 9/16".	(1) 9/16".	(2) ⅝".	Flush rivets.
Filler to frame and supports (chain guards)	9/16" rivets spaced 8" centers on sides and 4" centers on bottom.			
Guard supports to frame work	(2) ⅝".	(2) 9/16".	(2) ⅝".	Rivets or bolts.
Guard and supports to overhead ceiling	¼" x 3½" lag screws or ⅝" bolts.	⅝" x 4" lag screws or ⅝" bolts.	⅝" x 6" lag screws or ⅝" bolts.	Lag screws or bolts.
DETAILS—SPACING, ETC.				
Width of guards	One-quarter wider than belt, rope, or chain drive.			
Spacing between filler supports	20" C. to C.	16" C. to C.	16" C. to C.	
Spacing between filler flats (belt guards)	2" apart.	2½" apart.	3" apart.	
Spacing between guard supports	10" C. to C.	8" C. to C.	8" C. to C.	
OTHER BELT GUARD FILLING PERMITTED				
Sheet metal fastened as in chain guards	No. 20 A. W. G.	No. 18 A. W. G.	No. 18 A. W. G.	Solid or perforated.
Woven wire, 2" mesh	No. 12 A. W. G.	No. 10 A. W. G.	No. 8 A. W. G.	

CLEARANCE FROM OUTSIDE OF BELT, ROPE, OR CHAIN DRIVE TO GUARD

Distance center to center of shafts	Up to 15' inclusive.	Over 15' to 25' inclusive.	Over 25' to 40' inclusive.	Over 40'.
Clearance from belt, or chain to guard	8".	10".	15".	20".

spaced on 4-inch centers. The width of the multiple drive shall be determined by measuring the distance from the outside of the first to the outside of the last rope or chain in the group accommodated by the pulley.

(5) *Guardrails and toeboards.* (i) Guardrail shall be forty-two (42) inches in height, with midrail between top rail and floor.

(ii) Posts shall be not more than eight (8) feet apart; they are to be permanent and substantial, smooth, and free from protruding nails, bolts, and splinters. If made of pipe, the post shall be one and one-fourth (1¼) inches inside diameter, or larger. If made of metal shapes or bars, their section shall be equal in strength to that of one and one-half (1½) by one and one-half (1½) by three-sixteenths (3/16) inch angle iron. If made of wood, the posts shall be two by four (2 x 4) inches or larger. The upper rail shall be two by four (2 x 4) inches, or two one by four (1 x 4) strips, one at the top and one at the side of posts. The midrail may be one by four (1 x 4) inches or more. The rails (metal shapes, metal bars, or wood), should be on that side of the posts which gives the best protection and support. Where panels are fitted with expanded metal or

wire mesh as noted in Table O–12 the middle rails may be omitted. Where guard is exposed to contact with moving equipment, additional strength may be necessary.

(iii) Toeboards shall be four (4) inches or more in height, of wood, metal, or of metal grill not exceeding one (1) inch mesh. Toeboards at flywheel pits should preferably be placed as close to edge of the pit as possible.

(p) *Care of equipment*—(1) *General.* All power-transmission equipment shall be inspected at intervals not exceeding 60 days and be kept in good working condition at all times.

(2) *Shafting.* (i) Shafting shall be kept in alignment, free from rust and excess oil or grease.

(ii) Where explosives, explosive dusts, flammable vapors or flammable liquids exist, the hazard of static sparks from shafting shall be carefully considered.

(3) *Bearings.* Bearings shall be kept in alignment and properly adjusted.

(4) *Hangers.* Hangers shall be inspected to make certain that all supporting bolts and screws are tight and that supports of hanger boxes are adjusted properly.

(5) *Pulleys.* (i) Pulleys shall be kept in proper alignment to prevent belts from running off.

(ii) One or both pulleys carrying a nonshifting belt should have crowned faces.

(iii) Cast-iron pulleys should be tested frequently with a hammer to disclose cracks in rim or spokes. It should be borne in mind that the sound is usually the pulley.

(iv) Split pulleys should be inspected to ascertain if all bolts holding together the sections of the pulley are tight.

(6) *Care of belts.* [1] Quarter-twist belts when installed without an idler can be used on drives running in one direction only. They will run off a pulley when direction of motion is reversed.]

(ii) Inspection shall be made of belts, lacings, and fasteners and such equipment kept in good repair.

(iii) Where possible, dressing should not be applied when belt or rope is in motion; but, if this is necessary, it should be applied where belts or rope leave pulley, not where they approach. The same precautions apply to lubricating chains. In the case of V-belts, belt dressing is neither necessary nor advisable.

(7) *Lubrication.* The regular oilers shall wear tight-fitting clothing and should use cans with long spouts to keep their hands out of danger. Machinery shall be oiled when not in motion, wherever possible.

§ 1910.220 Effective dates.

(a) The provisions of this Subpart O shall become effective on August 27, 1971, except as provided in the remaining paragraphs of this section.

(b) The following provisions shall become effective on February 15, 1972:

§ 1910.212(a).
§ 1910.213 (a), (b), (c), (d), (e), (f), (g), (h), (i), (j), (k), (l), (m), (n), (o), (p), (q), and (r).
§ 1910.214 (a), (b), (c), (d), (e), (f), (g), (h), (i), (j), (k), (l), (m), (n), (o), (p), (q), (r), (s), (t), (u), and (v).
§ 1910.215 (a) and (b).
§ 1910.216 (a), (b), (c), and (f).
§ 1910.217 (a), (b), (c), and (d).
§ 1910.218 (a), (b), (d), (e), (g), and (j).
§ 1910.219 (b), (c), (d), (e), (f), (g), (h), (i), and (k).

(c) Notwithstanding anything in paragraph (a), (b), or (d) of this section, any provision in any other section of this subpart which contains in itself a specific effective date or time limitation shall become effective on such date or shall apply in accordance with such limitation.

(d) Notwithstanding anything in paragraph (a) or (b) of this section, if any standard in 41 CFR Part 50–204, other than a national consensus standard incorporated by reference in § 50–204.3 (a)(1), is or becomes applicable at any time to any employment and place of employment, by virtue of the Walsh-Healey Public Contracts Act, or the Service Contract Act of 1965, or the National Foundation on Arts and Humanities Act of 1965, any corresponding established Federal standard in this Subpart O which is derived from 41 CFR Part 50–204 shall also become effective, and shall be applicable to such employment and place of employment, on the same date.

§ 1910.221 Sources of standards.

The standards contained in this Subpart O are derived from the following sources:

Section	Source
§ 1910.212 ..	41 CFR 50-204.8.
§ 1910.213 ..	AMOI 01.1–1954 (R1961). Safety Code for Woodworking Machinery.

Section	Source
§ 1910.214 ..	ANSI 01.1–1954–(R 1961). Safety Code for Woodworking Machinery.
§ 1910.215 ..	ANSI B7.1–1970, Safety Code for Abrasive Wheels.
§ 1910.216 ..	ANSI B28.1–1967, Safety Code for Mills Calenders in the Rubber and Plastic Industries.
§ 1910.217 ..	ANSI B11.1–1971, Safety Standard for Construction, Care and Use of Mechanical Power Presses.
§ 1910.218 ..	ANSI B24.1 1971 Safety Standard for Forging.
§ 1910.219 ..	ANSI B15.1–1953–(P 1958) Safety Code for Mechanical Power Transmission Apparatus

§ 1910.222 Standards organizations.

The standards and specifications of the following organizations have been referenced in this Subpart O: Copies of the references materials may be obtained from the issuing organizations

1. American National Standards Institute, Inc.; 1430 Broadway, New York, NY 10018.
2. American Society of Mechanical Engineers, 345 East 47 Street, New York, NY 10017.

Subpart P—Hand and Portable Powered Tools and Other Hand-Held Equipment

§ 1910.241 Definitions.

As used in this subpart:

(a) *Explosive-actuated fastening tool terms*—(1) *Hammer-operated piston tool—low-velocity type.* A tool which, by means of a heavy mass hammer supplemented by a load, moves a piston designed to be captive to drive a stud, pin, or fastener into a work surface, always starting the fastener at rest and in contact with the work surface. It shall be so designed that when used with any load that accurately chambers in it and that is commercially available at the time the tool is submitted for approval, it will not cause such stud, pin, or fastener to have a mean velocity in excess of 300 feet per second when measured 6.5 feet from the muzzle end of the barrel.

(2) *High-velocity tool.* A tool or machine which, when used with a load, propels or discharges a stud, pin, or fastener, at velocities in excess of 300 feet per second when measured 6.5 feet from the muzzle end of the barrel, for the purpose of impinging it upon, affixing it to, or penetrating another object or material.

(3) *Low-velocity piston tool.* A tool that utilizes a piston designed to be captive to drive a stud, pin, or fastener into a work surface. It shall be so designed that when used with any load that accurately chambers in it and that is commercially available at the time the tool is submitted for approval, it will not cause such stud, pin, or fastener to have a mean velocity in excess of 300 feet per second when measured 6.5 feet from the muzzle end of the barrel.

(4) *Stud, pin, or fastener.* A fastening device specifically designed and manufactured for use in explosive-actuated fastening tools.

(5) *To chamber.* To fit properly without the use of excess force, the case being duly supported.

(6) *Explosive powerload, also known as load.* Any substance in any form capable of producing a propellant force.

(7) *Tool.* An explosive-actuated fastening tool, unless otherwise indicated, and all accessories pertaining thereto.

(8) *Protective shield or guard.* A device or guard attached to the muzzle end of the tool, which is designed to confine flying particles.

(b) *Abrasive wheel terms*—(1) *Mounted wheels.* Mounted wheels, usually 2-inch diameter or smaller, and of various shapes, may be either organic or inorganic bonded abrasive wheels. They are secured to plain or threaded steel mandrels.

(2) *Tuck pointing.* Removal, by grinding, of cement, mortar, or other nonmetallic jointing material.

(3) *Tuck pointing wheels.* Tuck pointing wheels, usually Type 1, reinforced organic bonded wheels have diameter, thickness and hole size dimension. They are subject to the same limitations of use and mounting as Type 1 wheels defined in subparagraph (10) of this paragraph.

LIMITATION: Wheels used for tuck pointing should be reinforced, organic bonded. (See § 1910.243(c)(1)(ii)(c).)

(4) *Portable grinding.* A grinding operation where the grinding machine is designed to be hand held and may be easily moved from one location to another.

(5) *Organic bonded wheels.* Organic wheels are wheels which are bonded by

means of an organic material such as resin, rubber, shellac, or other similar bonding agent.

(6) *Safety guard.* A safety guard is an enclosure designed to restrain the pieces of the grinding wheel and furnish all possible protection in the event that the wheel is broken in operation.

(7) *Reinforced wheels.* The term "reinforced" as applied to grinding wheels shall define a class of organic wheels which contain strengthening fabric or filament. The term "reinforced" does not cover wheels using such mechanical additions as steel rings, steel cup backs or wire or tape winding.

(8) *Type 11 flaring cup wheels.* Type 11 flaring cup wheels have double diameter dimensions D and J, and in addition have thickness, hole size, rim and back thickness dimensions. Grinding is always performed on rim face, W dimension. Type 11 wheels are subject to all limitations of use and mounting listed for Type 6 straight sided cup wheels definition in subparagraph (9) of this paragraph.

TYPE 11 FLARING CUP WHEELS

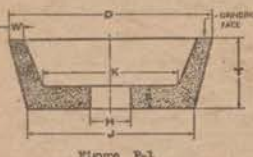


Figure P-1

Type 11 — Flaring-cup Wheel.
Side grinding wheel having a wall flared or tapered outward from the back. Wall thickness at the back is normally greater than at the grinding face (W).

LIMITATION: Minimum back thickness, H dimension, should not be less than one-fourth T dimension. In addition when unthreaded hole wheels are specified the inside flat, K dimension, shall be large enough to accommodate a suitable flange.

(9) *Type 6 straight cup wheels.* Type 6 cup wheels have diameter, thickness, hole size, rim thickness, and back thickness dimensions. Grinding is always performed on rim face, W dimension.

LIMITATION: Minimum back thickness, H dimension, should not be less than one-fourth T dimension. In addition, when unthreaded hole wheels are specified, the inside flat, K dimension, must be large enough to accommodate a suitable flange.

TYPE 6 STRAIGHT CUP WHEELS

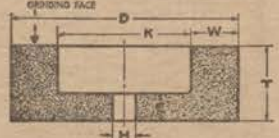


Figure P-2

Type 6 — Straight-cup Wheel
Side grinding wheel having a diameter, thickness and hole with one side straight or flat and the opposite side recessed. This type, however, differs from Type 5 in that the grinding is performed on the wall of the abrasive created by the difference between the diameter of the recess and the outside diameter of the wheel. Therefore, the wall dimension "W" takes precedence over the diameter of the recess as an essential intermediate dimension to describe this shape type.

(10) *Type 1 straight wheels.* Type 1 straight wheels have diameter, thickness, and hole size dimensions and should be used only on the periphery. Type 1 wheels shall be mounted between flanges.

LIMITATION: Hole dimension (H) should not be greater than two-thirds of wheel diameter dimension (D) for precision, cylindrical, centerless, or surface grinding applications. Maximum hole size for all other applications should not exceed one-half wheel diameter.

TYPE 1 STRAIGHT WHEELS

Figure P-3

Type 1 — Straight Wheel
Peripheral grinding wheel having a diameter, thickness and hole.

(c) *Power lawnmower terms*—(1) *Blade tip circle.* The path described by the outermost point of the blade as it is rotated about its shaft axis.

(2) *Guards.* A part or an assembly provided for shielding a hazardous area of a machine.

(3) *Catcher assemblies.* Parts or combinations of parts which provide a means for collecting grass clippings or debris.

(4) *Walk-behind mower.* A mower either pushed or self-propelled and normally guided by the operator walking behind the unit.

(5) *Operator area, walk-behind mowers.* For discharge interference purposes, that area confined within a circle no smaller than 30 inches in diameter, the center of which is located to the rear of the mower on its longitudinal centerline 30 inches behind the nearest blade tip circle.

(6) *Power reel mower.* A lawn-cutting machine utilizing a power source to rotate one or more helically formed blades about a horizontal axis to provide a shearing action with a stationary cutter bar or bed knife.

(7) *Power rotary mower.* A lawn-cutting machine utilizing a power source to rotate one or more cutting blades about a vertical axis.

(8) *Lowest blade position.* The lowest blade position under static conditions.

(9) *Riding mower.* A powered, self-propelled lawn-cutting vehicle on which the operator rides and controls the machine.

(10) *Sulky type mower.* Normally, a walk-behind mower which has been converted to a riding mower by the addition of a sulky.

(11) *Deadman control.* A control designed so that it will automatically interrupt power to a drive when the operator's actuating force is removed.]

(d) *Jack terms*—(1) *Jack.* A jack is an appliance for lifting and lowering or moving horizontally a load by application of a pushing force.

NOTE: Jacks may be of the following types: Lever and ratchet, screw and hydraulic.

(2) *Rating.* The rating of a jack is the maximum working load for which it is designed to lift safely that load throughout its specified amount of travel.

NOTE: To raise the rated load of a jack, the point of application of the load, the applied force, and the length of lever arm should be those designated by the manufacturer for the particular jack considered.

§ 1910.242 Hand and portable powered tools and equipment, general.

(a) *General requirements.* Each employer shall be responsible for the safe condition of tools and equipment used by employees, including tools and equipment which may be furnished by employees.

(b) *Compressed air used for cleaning.* Compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment.

§ 1910.243 Guarding of portable powered tools.

(a) *Portable powered tools.*—(1) *Portable circular saws.* (i) All portable, power-driven circular saws having a blade diameter greater than 2 in shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to covering position.

(ii) Paragraph (a)(1)(i) of this section does not apply to circular saws used in the meat industry for meat cutting purposes.

(2) *Switches and controls.* (i) All hand-held powered circular saws having a blade diameter greater than 2 inches, electric, hydraulic or pneumatic chain saws, and percussion tools without positive accessory holding means shall be equipped with a constant pressure switch or control that will shut off the power when the pressure is released. All hand-held gasoline powered chain saws shall be equipped with a constant pressure throttle control that will shut off the power to the saw chain when the pressure is released.

(ii) All hand-held powered drills, tappers, fastener drivers, horizontal, vertical, and angle grinders with wheels greater than 2 inches in diameter, disc sanders with discs greater than 2 inches in diameter, belt sanders, reciprocating saws, saber, scroll, and jig saws with blade shanks greater than a nominal one-fourth inch, and other similarly operating powered tools shall be equipped with a constant pressure switch or control, and may have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

(iii) (a) All other hand-held powered tools, such as, but not limited to, platen sanders, grinders with wheels 2 inches in diameter or less, disc sanders with discs 2 inches in diameter or less, routers, planers, laminate trimmers, nibblers,

shears, saber, scroll, and jig saws with blade shanks a nominal one-fourth of an inch wide or less, may be equipped with either a positive "on-off" control, or other controls as described by paragraph (a) (2) (i) and (ii) of this section.

(b) Saber, scroll, and jig saws with nonstandard blade holders may use blades with shanks which are nonuniform in width, provided the narrowest portion of the blade shank is an integral part in mounting the blade.

(c) Blade shank width shall be measured at the narrowest portion of the blade shank when saber, scroll, and jig saws have nonstandard blade holders.

(d) "Nominal" in this subparagraph means ±0.05 inch.

(iv) The operating control on hand-held power tools shall be so located as to minimize the possibility of its accidental operation, if such accidental operation would constitute a hazard to employees.

(v) This subparagraph does not apply to concrete vibrators, concrete breakers, powered tampers, jack hammers, rock drills, garden appliances, household and kitchen appliances, personal care appliances, medical or dental equipment, or to fixed machinery.

(3) *Portable belt sanding machines.* Belt sanding machines shall be provided with guards at each nip point where the sanding belt runs onto a pulley. These guards shall effectively prevent the hands or fingers of the operator from coming in contact with the nip points. The unused run of the sanding belt shall be guarded against accidental contact.

(4) *Cracked saws.* All cracked saws shall be removed from service.

(5) *Grounding.* Portable electric powered tools shall meet the electrical requirements of subpart S of this part.

(b) *Pneumatic powered tools and hose.*—(1) *Tool retainer.* A tool retainer shall be installed on each piece of utilization equipment which, without such a retainer, may eject the tool.

(2) *Airhose.* Hose and hose connections used for conducting compressed air to utilization equipment shall be designed for the pressure and service to which they are subjected.

(c) *Portable abrasive wheels.*—(1) *General requirements.* Abrasive wheels shall be used only on machine provided with safety guards as defined in paragraph (c) (1) through (4) of this section.

(i) *Exceptions.* The requirements of this subparagraph (1) shall not apply to the following classes of wheels and conditions:

(a) Wheels used for internal work while within the work being ground;

(b) Mounted wheels used in portable operations 2 inches and smaller in diameter; (see definition § 1910.241(b) (1)); and

(c) Types 16, 17, 18, 18R, and 19 cones, and plugs, and threaded hole pot balls where the work offers protection.

(ii) (a) A safety guard shall cover the spindle end, nut and flange projections. The safety guard shall be mounted so as to maintain proper alignment with the wheel, and the strength of the fastenings shall exceed the strength of the guard.

(b) *Exception.* Safety guards on all operations where the work provides a suitable measure of protection to the operator may be so constructed that the spindle end, nut and outer flange are exposed. Where the nature of the work is such as to entirely cover the side of the wheel, the side covers of the guard may be omitted.

(c) *Exception.* The spindle end, nut, and outer flange may be exposed on portable machines designed for, and used with, type 6, 11, 27, and 28 abrasive wheels, cutting off wheels, and tuck pointing wheels.

(2) *Cup wheels.* Cup wheels (Types 6 and 11) shall be protected by:

(i) Safety guards as specified in subparagraph (1) of this paragraph; or,

(ii) Special "revolving cup guards" which mount behind the wheel and turn with it. They shall be made of steel or other material with adequate strength and shall enclose the wheel sides upward from the back for one-third of the wheel thickness. The mounting features shall conform with all regulations. (See subparagraph (5) of this paragraph.) It is necessary to maintain clearance between the wheel side and the guard. The clearance shall not exceed one-sixteenth inch; or,

(iii) Some other form of guard that will insure as good protection as that which would be provided by the guards specified in subdivision (i) or (ii) of this subparagraph.

(3) *Vertical portable grinders.* Safety guards used on machines known as right angle head or vertical portable grinders shall have a maximum exposure angle of 180°, and the guard shall be so located so as to be between the operator and the wheel during use. Adjustment of guard shall be such that pieces of an accidentally broken wheel will be deflected away from the operator. (See Figure P-4.)

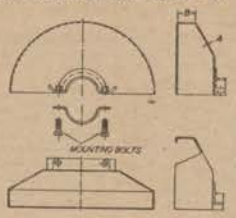


FIGURE NO. P-4

(4) *Other portable grinders.* The maximum angular exposure of the grinding wheel periphery and sides for safety guards used on other portable grinding machines shall not exceed 180° and the top half of the wheel shall be enclosed at all times. (See Figures P-5 and P-6.)

FIGURE NO. P-5

FIGURE NO. P-6

(5) *Mounting and inspection of abrasive wheels.* (i) Immediately before mounting, all wheels shall be closely inspected and sounded by the user (ring test, see Subpart O, § 1910.215(d) (1)) to make sure they have not been damaged in transit, storage, or otherwise. The spindle speed of the machine shall be checked before mounting of the wheel to be certain that it does not exceed the maximum operating speed marked on the wheel.

(ii) Grinding wheels shall fit freely on the spindle and remain free under all grinding conditions. A controlled clearance between the wheel hole and the machine spindle (or wheel sleeves or adaptors) is essential to avoid excessive pressure from mounting and spindle expansion. To accomplish this, the machine spindle shall be made to nominal (standard) size plus zero minus .002 inch, and the wheel hole shall be made suitably oversize to assure safety clearance under the conditions of operating heat and pressure.

(iii) All contact surfaces of wheels, blotters, and flangers shall be flat and free of foreign matter.

(iv) When a bushing is used in the wheel hole it shall not exceed the width of the wheel and shall not contact the flanges.

(v) Requirements for the use of flanges and blotters, see Subpart O, § 1910.215(c).

(6) *Excluded machinery.* Natural sandstone wheels and metal, wooden, cloth, or paper discs, having a layer of abrasive on the surface are not covered by this paragraph.

(d) *Explosive actuated fastening tools.*—(1) *General requirements.* (i) Explosive-actuated fastening tools which are actuated by explosives or any similar means and propel a stud, pin, fastener, or other object for the purpose of affixing it by penetration to any other object shall meet the design requirements in "American National Standard Safety Requirements for Explosive-Actuated Fastening Tools," ANSI A10.3–1970. This requirement does not apply to devices designed for attaching objects to soft construction materials, such as wood, plaster, tar, dry wallboard, and the like, or to stud welding equipment.

(ii) Operators and assistants using tools shall be safeguarded by means of eye protection. Head and face protection shall be used, as required by working conditions, as set forth in Subpart I.

(2) *Inspection, maintenance, and tool handling.*—(i) *High-velocity tools.* Tools of this type shall have the characteristics outlined in (a) through (h) of this subdivision and, at the discretion of the manufacturer, any additional safety features he may wish to incorporate.

(a) The muzzle end of the tool shall have a protective shield or guard at least

3½ inches in diameter, mounted perpendicular to and concentric with the barrel, and designed to confine any flying fragments or particles that might otherwise create a hazard at the time of firing.

(b) Where a standard shield or guard cannot be used, or where it does not cover all apparent avenues through which flying particles might escape, a special shield, guard, fixture, or jig designed and built by the manufacturer of the tool being used, which provides this degree of protection, shall be used as a substitute.

(c) The tool shall be so designed that it cannot be fired unless it is equipped with a standard protective shield or guard, or a special shield, guard, fixture, or jig.

(d) (1) The firing mechanism shall be so designed that the tool cannot fire during loading or preparation to fire, or if the tool should be dropped while loaded.

(2) Firing of the tool shall be dependent upon at least two separate and distinct operations of the operator, with the final firing movement being separate from the operation of bringing the tool into the firing position.

(e) The tool shall be so designed as not to be operable other than against a work surface, and unless the operator is holding the tool against the work surface with a force at least 5 pounds greater than the total weight of the tool.

(f) The tool shall be so designed that it will not operate when equipped with the standard guard indexed to the center position if any bearing surface of the guard is tilted more than 8° from contact with the work surface.

(g) The tool shall be so designed that positive means of varying the power are available or can be made available to the operator as part of the tool, or as an auxiliary, in order to make it possible for the operator to select a power level adequate to perform the desired work without excessive force.

(h) The tool shall be so designed that all breeching parts will be reasonably visible to allow a check for any foreign matter that may be present.

(ii) Tools of the low-velocity-piston type shall have the characteristics outlined in (a) through (e) of this subdivision and, at the discretion of the manufacturer, any additional safety features he may wish to incorporate.

(a) The muzzle end of the tool shall be designed so that suitable protective shields, guards, jigs, or fixtures, designed and built by the manufacturer of the tool being used, can be mounted perpendicular to the barrel. A standard spall shield shall be supplied with each tool.

(b) (1) The tool shall be designed so that it shall not in ordinary usage propel or discharge a stud, pin, or fastener while loading or during preparation to fire, or if the tool should be dropped while loaded.

(2) Firing of the tool shall be dependent upon at least two separate and distinct operations of the operator, with the final firing movement being separate from the operation of bringing the tool into the firing position.

(c) The tool shall be so designed as not to be operable other than against a work surface, and unless the operator is holding the tool against the work surface with a force at least 5 pounds greater than the total weight of the tool.

(d) The tool shall be so designed that positive means of varying the power are available or can be made available to the operator as part of the tool, or as an auxiliary, in order to make it possible for the operator to select a power level adequate to perform the desired work without excessive force.

(e) The tool shall be so designed that all breeching parts will be reasonably visible to allow a check for any foreign matter that may be present.

(iii) Tools of the hammer-operated piston tools—low-velocity type shall have the characteristics outlined in (a) through (e) of this subdivision and, at the discretion of the manufacturer, any additional safety features he may wish to incorporate.

(a) The muzzle end of the tool shall be so designed that suitable protective shields, guards, jigs, or fixtures, designed and built by the manufacturer of the tool being used, can be mounted perpendicular to the barrel. A standard spall shield shall be supplied with each tool.

(b) The tool shall be so designed that it shall not in ordinary usage propel or discharge a stud, pin, or fastener while loading, or during preparation to fire, or if the tool should be dropped while loaded.

(c) Firing of the tool shall be dependent upon at least two separate and distinct operations of the operator, with the final firing movement being separate from the operation of bringing the tool into the firing position.

(d) The tool shall be so designed that positive means of varying the power are available or can be made available to the operator as part of the tool, or as an auxiliary, in order to make it possible for the operator to select a power level adequate to perform the desired work without excessive force.

(e) The tool shall be so designed that all breeching parts will be reasonably visible to allow a check for any foreign matter that may be present.

(3) *Requirements for loads and fasteners.* (i) There shall be a standard means of identifying the power levels of loads used in tools. Such means of identification shall be a uniform color and numbering system, as shown in Table P-1. Colors and printed descriptions shall be strikingly printed on the container to provide a visual indication of the power level of the load.

(ii) Caseless loads shall be coded to identify similar powerload levels by color, number, configuration, or other appropriate method.

TABLE P-1—IDENTIFICATION OF LOADS

Power level	Color identification		Nominal velocity (+45 f.p.s)
	Case color	Load color	
1	Brass	Gray	300
2	Brass	Brown	390
3	Brass	Green	480
4	Brass	Yellow	570
5	Brass	Red	660
6	Brass	Purple	750
7	Nickel	Gray	840
8	Nickel	Brown	930
9	Nickel	Green	1,020
10	Nickel	Yellow	1,110
11	Nickel	Red	1,200
12	Nickel	Purple	1,290

NOTE: The nominal velocity applies to ¼-inch diameter 300-grain ballistic slug fired in a test device and has no reference to actual fastener velocity developed in any specific size or type of tool.

(iii) No load (cased or caseless) shall be used if it will accurately chamber in any existing approved commercially available low-velocity piston tool or hammer operated piston tool—low-velocity type and will cause a fastener to have a mean velocity in excess of 300 feet per second when measured 6.5 feet from the muzzle end of the barrel. No individual test firing of a series shall exceed 300 feet per second by more than 8 percent.

(iv) Fasteners used in tools shall be only those specifically manufactured for use in such tools.

(4) *Operating requirements.* (i) Before using a tool, the operator shall inspect it to determine to his satisfaction that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions.

(ii) When a tool develops a defect during use, the operator shall immediately cease to use it, until it is properly repaired.

(iii) Tools shall not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any workmen, and hands should be kept clear of the open barrel end.

(iv) No tools shall be loaded unless being prepared for immediate use, nor shall an unattended tool be left loaded.

(v) In case of a misfire, the operator shall hold the tool in the operating position for at least 30 seconds. He shall then try to operate the tool a second time. He shall wait another 30 seconds, holding the tool in the operating position; then he shall proceed to remove the explosive load in strict accordance with the manufacturer's instructions. Misfired cartridges should be placed carefully in a metal container filled with water, and returned to the supervisor for disposal.

(vi) A tool shall never be left unattended in a place where it would be available to unauthorized persons.

(vii) Fasteners shall not be driven into very hard or brittle materials including, but not limited to, cast iron, glazed tile, surface-hardened steel, glass block, live rock, face brick, or hollow tile.

(viii) Driving into materials easily penetrated shall be avoided unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying-missile hazard on the other side.

(ix) (a) Fasteners shall not be driven directly into materials such as brick or concrete closer than 3 inches from the unsupported edge or corner, or into steel surfaces closer than one-half inch from the unsupported edge or corner, unless a special guard, fixture, or jig is used. (Exception: Low-velocity tools may drive no closer than 2 inches from an edge in concrete or one-fourth inch in steel.)

(b) When fastening other materials, such as a 2- by 4-inch wood section to a concrete surface, it is permissible to drive a fastener of no greater than ⅜-inch shank diameter not closer than 2 inches from the unsupported edge or corner of the work surface.

(x) Fasteners shall not be driven through existing holes unless a positive guide is used to secure accurate alignment.

(xi) No fastener shall be driven into a spalled area caused by an unsatisfactory fastening.

(xii) Tools shall not be used in an explosive or flammable atmosphere.

(xiii) All tools shall be used with the correct shield, guard, or attachment recommended by the manufacturer.

(xiv) Any tool found not in proper working order shall be immediately removed from service. The tool shall be inspected at regular intervals and shall be repaired in accordance with the manufacturer's specifications.

(c) *Power lawnmowers*—(1) *General requirements.* (i) Power lawnmowers of the walk-behind, riding-rotary, and reel power lawnmowers designed for sale to the general public shall meet the design specifications in "American National Standard Safety Specifications for Power Lawnmowers" ANSI B71.1–X1968. These specifications do not apply to sulky-type mowers, flail mowers, sicklebar mowers, or mowers designed for commercial use.

(ii) All power-driven chains, belts, and gears shall be so positioned or otherwise guarded to prevent the operator's accidental contact therewith, during normal starting, mounting, and operation of the machine.

(iii) A shutoff device shall be provided to stop operation of the motor or engine. This device shall require manual and intentional reactivation to restart the motor or engine.

(iv) All positions of the operating controls shall be clearly identified.

(v) The words, "Caution. Be sure the operating control(s) is in neutral before starting the engine," or similar wording shall be clearly visible at an engine starting control point on self-propelled mowers.

(2) *Walk-behind and riding rotary mowers.* (i) The mower blade shall be enclosed except on the bottom and the enclosure shall extend to or below the lowest cutting point of the blade in the lowest blade position.

(ii) Guards which must be removed to install a catcher assembly shall comply with the following:

(a) Warning instructions shall be affixed to the mower near the opening stating that the mower shall not be used without either the catcher assembly or the guard in place.

(b) The catcher assembly or the guard shall be shipped and sold as part of the mower.

(c) The instruction manual shall state that the mower shall not be used without either the catcher assembly or the guard in place.

(d) The catcher assembly, when properly and completely installed, shall not create a condition which violates the limits given for the guarded opening.

(iii) Openings in the blade enclosure, intended for the discharge of grass, shall be limited to a maximum vertical angle of the opening of 30°. Measurements shall be taken from the lowest blade position.

(iv) The total effective opening area of the grass discharge opening(s) shall not exceed 1,000 square degrees on units having a width of cut less than 27½ inches, or 2,000 square degrees on units having a width of cut 27½ inches or over.

(v) The word "Caution," or stronger wording, shall be placed on the mower at or near each discharge opening.

(vi) [Reserved]

(vii) Blade(s) shall stop rotating from the manufacturer's specified maximum speed within 15 seconds after declutching, or shutting off power.

(viii) In a multipiece blade, the means of fastening the cutting members to the body of the blade or disc shall be so designed that they will not become worn to a hazardous condition before the cutting members themselves are worn beyond use.

(ix) The maximum tip speed of any blade shall be 19,000 feet per minute.

(3) *Walk-behind rotary mowers.* (i) The horizontal angle of the opening(s) in the blade enclosure, intended for the discharge of grass, shall not contact the operator area.

(ii) There shall be one of the following at all openings in the blade enclosure intended for the discharge of grass:

(a) A minimum unobstructed horizontal distance of 3 inches from the end of the discharge chute to the blade tip circle.

(b) A rigid bar fastened across the discharge opening, secured to prevent removal without the use of tools. The bottom of the bar shall be no higher than the bottom edge of the blade enclosure.

(iii) The highest point(s) of the front of the blade enclosure, except discharge openings, shall be such that any line extending a maximum of 15° downward from the horizontal toward the blade shaft axis (axes) shall not intersect the horizontal plane within the blade tip circle. The highest point(s) on the blade enclosure front, except discharge-openings, shall not exceed 1½ inches above the lowest cutting point of the blade in the lowest blade position. Mowers with a swingover handle are to be considered as having no front in the blade enclosure and therefore shall comply with subparagraph (2)(i) of this paragraph.

(iv) The mower handle shall be fastened to the mower so as to prevent loss of control by unintentional uncoupling while in operation.

(v) A positive upstop or latch shall be provided for the mower handle in the normal operating position(s). The upstop shall not be subject to unintentional disengagement during normal operation of the mower. The upstop or latch shall not allow the center or the handle grips to come closer than 17 inches horizontally behind the closest path of the mower blade(s) unless manually disengaged.

(vi) A swing-over handle, which complies with the above requirements, will be permitted.

(vii) Wheel drive disengaging controls, except deadman controls, shall move opposite to the direction of the vehicle motion in order to disengage the drive. Deadman controls shall comply with § 1910.241(c)(11) and may operate in any direction to disengage the drive.

(4) *Riding rotary mowers.* (i) The highest point(s) of all openings in the blade enclosure, front shall be limited by a vertical angle of opening of 15° and a maximum distance of 1¾ inches above the lowest cutting point of the blade in the lowest blade position.

(ii) Opening(s) shall be placed so that grass or debris will not discharge directly toward any part of an operator seated in a normal operator position.

(iii) There shall be one of the following at all openings in the blade enclosure intended for the discharge of grass:

(a) A minimum unobstructed horizontal distance of 6 inches from the end of the discharge chute to the blade tip circle.

(b) A rigid bar fastened across the discharge opening, secured to prevent removal without the use of tools. The bottom of the bar shall be no higher than the bottom edge of the blade enclosure.

(iv) Mowers shall be provided with stops to prevent jackknifing or locking of the steering mechanism.

(v) Vehicle stopping means shall be provided.

(vi) Hand-operated wheel drive disengaging controls shall move opposite to the direction of vehicle motion in order to disengage the drive. Foot-operated wheel drive disengaging controls shall be depressed to disengage the drive. Deadman controls, both hand and foot operated, shall comply with § 1910.241(c)(11) and may operate in any direction to disengage the drive.

§ 1910.244 Other portable tools and equipment.

(a) *Jacks*—(1) *Loading and marking.* (i) The operator shall make sure that the jack used has a rating sufficient to lift and sustain the load.

(ii) The rated load shall be legibly and permanently marked in a prominent location on the jack by casting, stamping, or other suitable means.

(2) *Operation and maintenance.* (i) In the absence of a firm foundation, the base of the jack shall be blocked. If there is a possibility of slippage of the cap, a block shall be placed in between the cap and the load.

(ii) The operator shall watch the stop indicator, which shall be kept clean, in order to determine the limit of travel. The indicated limit shall not be overrun.

(iii) After the load has been raised, it shall be cribbed, blocked, or otherwise secured at once.

(iv) Hydraulic jacks exposed to freezing temperatures shall be supplied with an adequate antifreeze liquid.

(v) All jacks shall be properly lubricated at regular intervals. The lubricating instructions of the manufacturer should be followed, and only lubricants recommended by him should be used.

(vi) Each jack shall be thoroughly inspected at times which depend upon the service conditions. Inspections shall be not less frequent than the following:

(a) For constant or intermittent use at one locality, once every 6 months.

(b) For jacks sent out of shop for special work, when sent out and when returned.

(c) For a jack subjected to abnormal load or shock, immediately before and immediately thereafter.

(vii) Repair or replacement parts shall be examined for possible defects.

(viii) Jacks which are out of order shall be tagged accordingly, and shall not be used until repairs are made.

(b) *Abrasive blast cleaning nozzles.* The blast cleaning nozzles shall be equipped with an operating valve which must be held open manually. A support shall be provided on which the nozzle may be mounted when it is not in use.

§ 1910.245 Effective dates.

(a) The provisions of this Subpart P shall become effective on August 27, 1971, except as provided in the remaining paragraphs of this section.

(b) The following provisions shall become effective on February 15, 1972:

§ 1910.248 (a)(1), (a)(2), (a)(9), (b)(1), (c)(1), (c)(2), (c)(3), (d)(1), (d)(2), and (e).

(c) Notwithstanding anything in paragraph (a), (b), or (d) of this section, any provision in any other section of this subpart which contains in itself a specific effective date or time limitation shall become effective on such date or shall apply in accordance with such limitation.

(d) Notwithstanding anything in paragraph (a) of this section, if any standard in 41 CFR Part 50–204, other than a national consensus standard incorporated by reference in § 50–204.2 (a)(1), is or becomes applicable at any time to any employment and place of employment, by virtue of the Walsh-Healey Public Contracts Act, or the Service Contract Act of 1965, or the National Foundation on Arts and Humanities Act of 1965, any corresponding established Federal standard in this Subpart P which is derived from 41 CFR Part 50–204 shall also become effective, and shall be applicable to such employment and place of employment, on the same date.

§ 1910.246 Sources of standards.

Sec.	Source
1910.241(a)	ANSI A10.3 (1970), Safety Requirements for Explosive Actuated Fastening Tools.
1910.241(b)	ANSI B7.1–1970, Safety Code for the Use, Care, and Protection of Abrasive Wheels.
1910.241(c)	ANSI B71.1–1968, Safety Specifications for Power Lawn Mowers.
1910.241(d)	ANSI B30.1–1943, Safety Code for Jacks.
1910.242	41 CFR 50–204.4 and 50–204.8.
1910.243(a)	ANSI O1.1–1954 (R1961), Safety Code for Woodworking Machines.
1910.243(b)	ANSI B19.1–1938, Compressed Air Machinery and Equipment.
1910.243(c)	ANSI B7.1–1970, Safety Code for the Use, Care, and Protection of Abrasive Wheels.
1910.243(d)	ANSI A10.3–1970, Explosive Actuated Fastening Tools.
1910.243(e)	ANSI B71–1968, Safety Specifications for Power Lawn Mowers.
1910.244(a)	ANSI B30.1–1943, (R1952), Safety Code for Jacks.
1910.244(b)	ANSI Z9.4–1968, Ventilation and Safe Practices of Abrasive Blasting Operations.

§ 1910.247 Standards organizations.

Specific standards of the following organization have been referenced in this subpart. Copies of the referenced materials may be obtained from the issuing organization.

American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

Subpart Q—Welding, Cutting, and Brazing

§ 1910.251 Definitions.

As used in this subpart:

(a) "Welder" and "welding operator" mean any operator of electric or gas welding and cutting equipment.

(b) "Approved" means listed or approved by a nationally recognized testing laboratory, such as Factory Mutual Engineering Corp., or Underwriters' Laboratories, Inc.

(c) All other welding terms are used in accordance with American Welding Society—Terms and Definitions—A3.0–1969.

§ 1910.252 Welding, cutting, and brazing.

(a) *Installation and operation of oxygen-fuel gas systems for welding and cutting*—(1) *General requirements.* (i) *Flammable mixture.* Mixtures of fuel gases and air or oxygen may be explosive and shall be guarded against. No device or attachment facilitating or permitting mixtures of air or oxygen with flammable gases prior to consumption, except at the burner or in a standard torch, shall be allowed unless approved for the purpose.

(ii) *Maximum pressure.* Under no condition shall acetylene be generated, piped (except in approved cylinder manifolds) or utilized at a pressure in excess of 15 p.s.i. gage pressure or 30 p.s.i. absolute pressure. (The 30 p.s.i. absolute pressure limit is intended to prevent unsafe use of acetylene in pressurized chambers such as caissons, underground excavations or tunnel construction.) This requirement is not intended to apply to storage of acetylene dissolved in a suitable solvent in cylinders manufactured and maintained according to U.S. Department of Transportation requirements, or to acetylene for chemical use. The use of liquid acetylene shall be prohibited.

(iii) *Apparatus.* Only approved apparatus such as torches, regulators or pressure-reducing valves, acetylene generators, and manifolds shall be used.

(iv) *Personnel.* Workmen in charge of the oxygen or fuel-gas supply equipment, including generators, and oxygen or fuel-gas distribution piping systems shall be instructed and judged competent by their employers for this important work before being left in charge. Rules and instructions covering the operation and maintenance of oxygen or fuel-gas supply equipment including generators, and oxygen or fuel-gas distribution piping systems shall be readily available.

(2) *Cylinders and containers*—(i) *Approved and marking.* (a) All portable cylinders used for the storage and shipment of compressed gases shall be constructed and maintained in accordance with the regulations of the U.S. Department of Transportation, 49 CFR Parts 171–179.

(b) Compressed gas cylinders shall be legibly marked, for the purpose of identifying the gas content, with either the chemical or the trade name of the gas. Such marking shall be by means of stenciling, stamping, or labeling, and shall not be readily removable. Whenever practical, the marking shall be located on the shoulder of the cylinder. This method conforms to the American National Standard Method for Marking Portable Compressed Gas Containers to Identify the Material Contained, ANSI Z48.1–1954.

(c) Compressed gas cylinders shall be equipped with connections complying with the American National Standard Compressed Gas Cylinder Valve Outlet and Inlet Connections, ANSI B57.1–1965.

(d) All cylinders with a water weight capacity of over 30 pounds shall be equipped with means of connecting a valve protection cap or with a collar or recess to protect the valve.

(ii) *Storage of cylinders—general.* (a) Cylinders shall be kept away from radiators and other sources of heat.

(b) Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20 feet from highly combustible materials such as oil or excelsior. Cylinders should be stored in definitely assigned places away from elevators, stairs, or gangways. Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject to tampering by unauthorized persons. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.

(c) Empty cylinders shall have their valves closed.

(d) Valve protection caps, where cylinder is designed to accept a cap, shall always be in place, hand-tight, except when cylinders are in use or connected for use.

(iii) *Fuel-gas cylinder storage.* Inside a building, cylinders, except those in actual use or attached ready for use, shall be limited to a total gas capacity of 2,000 cubic feet or 300 pounds of liquefied petroleum gas.

(a) For storage in excess of 2,000 cubic feet total gas capacity of cylinders or 300 pounds of liquefied petroleum gas, a separate room or compartment conforming to the requirements specified in subparagraphs (6)(vi)(a) (8) and (9) of this paragraph shall be provided, or cylinders shall be kept outside or in a special building. Special buildings, rooms or compartments shall have no open flame for heating or lighting and shall be well ventilated. They may also be used for storage of calcium carbide in quantities not to exceed 600 pounds, when contained in metal containers complying with subparagraphs (7)(i)(a) and (b) of this paragraph. Signs should be conspicuously posted in such rooms reading, "Danger—No Smoking, Matches or Open Lights," or other equivalent wording.

(b) Acetylene cylinders shall be stored valve end up.

(iv) *Oxygen storage.* (a) Oxygen cylinders shall not be stored near highly combustible material, especially oil and grease; or near reserve stocks of carbide and acetylene or other fuel-gas cylinders, or near any other substance likely to cause or accelerate fire; or in an acetylene generator compartment.

(b) Oxygen cylinders stored in outside generator houses shall be separated from the generator or carbide storage rooms by a noncombustible partition having a fire-resistance rating of at least 1 hour. This partition shall be without openings and shall be gastight.

(c) Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

(d) Where a liquid oxygen system is to be used to supply gaseous oxygen for welding or cutting and the system has a storage capacity of more than 13,000 cubic feet of oxygen (measured at 14.7 p.s.i.a. and 70° F.), connected in service or ready for service, or more than 25,000 cubic feet of oxygen (measured at 14.7 p.s.i.a. and 70° F), including unconnected reserves on hand at the site, it shall comply with the provisions of the Standard for Bulk Oxygen Systems at Consumer Sites, NFPA No. 566-1965.

(v) *Operating procedures.* (a) Cylinders, cylinder valves, couplings, regulators, hose, and apparatus shall be kept free from oily or greasy substances. Oxygen cylinders or apparatus shall not be handled with oily hands or gloves. A jet of oxygen must never be permitted to strike an oily surface, greasy clothes, or enter a fuel oil or other storage tank.

(b) (*1*) When transporting cylinders by a crane or derrick, a cradle, boat, or suitable platform shall be used. Slings or electric magnets shall not be used for this purpose. Valve-protection caps, where cylinder is designed to accept a cap, shall always be in place.

(*2*) Cylinders shall not be dropped or struck or permitted to strike each other violently.

(*3*) Valve-protection caps shall not be used for lifting cylinders from one vertical position to another. Bars shall not be used under valves or valve-protection caps to pry cylinders loose when frozen to the ground or otherwise fixed; the use of warm (not boiling) water is recommended. Valve-protection caps are designed to protect cylinder valves from damage.

(*4*) Unless cylinders are secured on a special truck, regulators shall be removed and valve-protection caps, when provided for, shall be put in place before cylinders are moved.

(*5*) Cylinders not having fixed hand wheels shall have keys, handles, or nonadjustable wrenches on valve stems while these cylinders are in service. In multiple cylinder installations only one key or handle is required for each manifold.

(*6*) Cylinder valves shall be closed before moving cylinders.

(*7*) Cylinder valves shall be closed when work is finished.

(*8*) Valves of empty cylinders shall be closed.

(*9*) Cylinders shall be kept far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them, or fire-resistant shields shall be provided.

(*10*) Cylinders shall not be placed where they might become part of an electric circuit. Contacts with third rails, trolley wires, etc., shall be avoided. Cylinders shall be kept away from radiators, piping systems, layout tables, etc., that may be used for grounding electric circuits such as for arc welding machines. Any practice such as the tapping of an electrode against a cylinder to strike an arc shall be prohibited.

(*11*) Cylinders shall never be used as rollers or supports, whether full or empty.

(*12*) The numbers and markings stamped into cylinders shall not be tampered with.

(*13*) No person, other than the gas supplier, shall attempt to mix gases in a cylinder. No one, except the owner of the cylinder or person authorized by him, shall refill a cylinder.

(*14*) No one shall tamper with safety devices in cylinders or valves.

(*15*) Cylinders shall not be dropped or otherwise roughly handled.

(*16*) Unless connected to a manifold, oxygen from a cylinder shall not be used without first attaching an oxygen regulator to the cylinder valve. Before connecting the regulator to the cylinder valve, the valve shall be opened slightly for an instant and then closed. Always stand to one side of the outlet when opening the cylinder valve.

(*17*) A hammer or wrench shall not be used to open cylinder valves. If valves cannot be opened by hand, the supplier shall be notified.

(*18*) (*i*) Cylinder valves shall not be tampered with nor should any attempt be made to repair them. If trouble is experienced, the supplier should be sent a report promptly indicating the character of the trouble and the cylinder's serial number. Supplier's instructions as to its disposition shall be followed.

(*ii*) Complete removal of the stem from a diaphragm-type cylinder valve shall be avoided.

(c) (*1*) Fuel-gas cylinders shall be placed with valve end up whenever they are in use. Liquefied gases shall be stored and shipped with the valve end up.

(*2*) Cylinders shall be handled carefully. Rough handling, knocks, or falls are liable to damage the cylinder, valve or safety devices and cause leakage.

(*3*) Before connecting a regulator to a cylinder valve, the valve shall be opened slightly and closed immediately. The valve shall be opened while standing to one side of the outlet; never in front of it. Never crack a fuel-gas cylinder valve near other welding work or near sparks, flame, or other possible sources of ignition.

(*4*) Before a regulator is removed from a cylinder valve, the cylinder valve shall be closed and the gas released from the regulator.

(*5*) Nothing shall be placed on top of an acetylene cylinder when in use which may damage the safety device or interfere with the quick closing of the valve.

(*6*) If cylinders are found to have leaky valves or fittings which cannot be stopped by closing of the valve, the cylinders shall be taken outdoors away from sources of ignition and slowly emptied.

(*7*) A warning should be placed near cylinders having leaking fuse plugs or other leaking safety devices not to approach them with a lighted cigarette or other source of ignition. Such cylinders should be plainly tagged; the supplier should be promptly notified and his instructions followed as to their return.

(*8*) Safety devices shall not be tampered with.

(*9*) Fuel-gas shall never be used from cylinders through torches or other devices equipped with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

(*10*) The cylinder valve shall always be opened slowly.

(*11*) An acetylene cylinder valve shall not be opened more than one and one-half turns of the spindle, and preferably no more than three-fourths of a turn.

(*12*) Where a special wrench is required it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel-gas flow can be quickly turned off in case of emergency. In the case of manifolded or coupled cylinders at least one such wrench shall always be available for immediate use.

(*3*) *Manifolding of cylinders*—(*i*) *Fuel-gas manifolds.* (*a*) Manifolds shall be approved either separately for each component part or as an assembled unit.

(*b*) Except as provided in subdivision (*c*) of this subdivision fuel-gas cylinders connected to one manifold inside a building shall be limited to a total capacity not exceeding 300 pounds of liquefied petroleum gas or 3,000 cubic feet of other fuel-gas. More than one such manifold with connected cylinders may be located in the same room provided the manifolds are at least 50 feet apart or separated by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

(*c*) Fuel-gas cylinders connected to one manifold having an aggregate capacity exceeding 300 pounds of liquefied petroleum gas or 3,000 cubic feet of other fuel-gas shall be located outdoors, or in a separate building or room constructed in accordance with subparagraphs (*6*) (*vi*) (*a*) (*8*) and (*9*) of this paragraph.

(*d*) Separate manifold buildings or rooms may also be used for the storage of drums of calcium carbide and cylinders containing fuel gases as provided in subparagraph (*2*) (*iii*) of this paragraph. Such buildings or rooms shall have no open flames for heating or lighting and shall be well-ventilated.

(*e*) High-pressure fuel-gas manifolds shall be provided with approved pressure regulating devices.

(*ii*) *High-pressure oxygen manifolds (for use with cylinders having a Department of Transportation service pressure above 200 p.s.i.g.).* (*a*) Manifolds shall be approved either separately for each component part or as an assembled unit.

(*b*) Oxygen manifolds shall not be located in an acetylene generator room. Oxygen manifolds shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

(*c*) Except as provided in subdivision (*d*) of this subdivision oxygen cylinders connected to one manifold shall be limited to a total gas capacity of 6,000 cubic feet. More than one such manifold with connected cylinders may be

located in the same room provided the manifolds are at least 50 feet apart or separated by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

(*d*) An oxygen manifold, to which cylinders having an aggregate capacity of more than 6,000 cubic feet of oxygen are connected, should be located outdoors or in a separate noncombustible building. Such a manifold, if located inside a building having other occupancy, shall be located in a separate room of noncombustible construction having a fire-resistance rating of at least one-half hour or in an area with no combustible material within 20 feet of the manifold.

(*e*) An oxygen manifold or oxygen bulk supply system which has storage capacity of more than 13,000 cubic feet of oxygen (measured at 14.7 p.s.i.a. and 70° F.), connected in service or ready for service, or more than 25,000 cubic feet of oxygen (measured at 14.7 p.s.i.a. and 70° F.), including unconnected reserves on hand at the site, shall comply with the provisions of the Standard for Bulk Oxygen Systems at Consumer Sites, NFPA No. 566-1965.

(*f*) High-pressure oxygen manifolds shall be provided with approved pressure-regulating devices.

(*iii*) *Low-pressure oxygen manifolds (for use with cylinders having a Department of Transportation service pressure not exceeding 200 p.s.i.g.).* (*a*) Manifolds shall be of substantial construction suitable for use with oxygen at a pressure of 250 p.s.i.g. They shall have a minimum bursting pressure of 1,000 p.s.i.g. and shall be protected by a safety relief device which will relieve at a maximum pressure of 500 p.s.i.g. DOT-4L200 cylinders have safety devices which relieve at a maximum pressure of 250 p.s.i.g. (or 235 p.s.i.g. if vacuum insulation is used).

(*b*) Hose and hose connections subject to cylinder pressure shall comply with subparagraph (*5*) (*v*) of this paragraph. Hose shall have a minimum bursting pressure of 1,000 p.s.i.g.

(*c*) The assembled manifold including leads shall be tested and proven gastight at a pressure of 300 p.s.i.g. The fluid used for testing oxygen manifolds shall be oil-free and not combustible.

(*d*) The location of manifolds shall comply with subdivisions (*ii*) (*b*), (*c*), (*d*), and (*e*) of this subdivision.

(*e*) **The following sign shall be conspicuously posted at each manifold:**

Low-Pressure Manifold
Do Not Connect High-Pressure Cylinders
Maximum Pressure—250 P.S.I.G.

(*iv*) *Portable outlet headers.* (*a*) Portable outlet headers shall not be used indoors except for temporary service where the conditions preclude a direct supply from outlets located on the service piping system.

(*b*) Each outlet on the service piping from which oxygen or fuel-gas is withdrawn to supply a portable outlet header shall be equipped with a readily accessible shutoff valve.

(*c*) Hose and hose connections used for connecting the portable outlet header to the service piping shall comply with subparagraph (*5*) (*v*) of this paragraph.

(*d*) Master shutoff valves for both oxygen and fuel-gas shall be provided at the entry end of the portable outlet header.

(*e*) Portable outlet headers for fuel-gas service shall be provided with an approved hydraulic back-pressure valve installed at the inlet and preceding the service outlets, unless an approved pressure-reducing regulator, an approved back-flow check valve, or an approved hydraulic back-pressure valve is installed at each outlet. Outlets provided on headers for oxygen service may be fitted for use with pressure-reducing regulators or for direct hose connection.

(*f*) Each service outlet on portable outlet headers shall be provided with a valve assembly that includes a detachable outlet seal cap, chained or otherwise attached to the body of the valve.

(*g*) Materials and fabrication procedures for portable outlet headers shall comply with subparagraphs (*4*) (*i*), (*ii*), and (*v*) of this paragraph.

(*h*) Portable outlet headers shall be provided with frames which will support the equipment securely in the correct operating position and protect them from damage during handling and operation.

(*v*) *Manifold operating procedures.* (*a*) Cylinder manifolds shall be installed under the supervision of someone familiar with the proper practices with reference to their construction and use.

(*b*) All component parts used in the methods of manifolding described in subdivision (*i*) of this subdivision shall be approved as to materials, design and construction either separately or as an assembled unit.

(*c*) All manifolds and parts used in methods of manifolding shall be used only for the gas or gases for which they are approved.

(*d*) When acetylene cylinders are coupled, approved flash arresters shall be installed between each cylinder and the coupler block. For outdoor use only, and when the number of cylinders coupled does not exceed three, one flash arrester installed between the coupler block and regulator is acceptable.

(*e*) Each fuel-gas cylinder lead should be provided with a backflow check valve.

(*f*) The aggregate capacity of fuel-gas cylinders connected to a portable manifold inside a building shall not exceed 3,000 cubic feet of gas.

(*g*) Acetylene and liquefied fuel-gas cylinders shall be manifolded in a vertical position.

(*h*) The pressure in the gas cylinders connected to and discharged simultaneously through a common manifold shall be approximately equal.

(*4*) *Service piping systems*—(*i*) *Materials and design.* (*a*) (*1*) Piping and fittings shall comply with Section 2, Industrial Gas and Air Piping Systems, of the American National Standard Code for Pressure Piping ANSI B31.1, 1967, insofar as it does not conflict with subdivisions (*i*) and (*ii*) of this subdivision:

(*i*) Pipe shall be at least Schedule 40 and fittings shall be at least standard weight in sizes up to and including 6-inch nominal.

(*ii*) Copper tubing shall be Types K or L in accordance with the Standard Specification for Seamless Copper Water Tube, ASTM B88-66a.

(*2*) Piping shall be steel, wrought iron, brass or copper pipe, or seamless copper, brass or stainless steel tubing, except as provided in (*b*) and (*c*) of this subdivision.

(*b*) (*1*) Oxygen piping and fittings at pressures in excess of 700 p.s.i.g., shall be stainless steel or copper alloys.

(*2*) Hose connections and hose complying with subparagraph (*5*) (*v*) of this paragraph may be used to connect the outlet of a manifold pressure regulator to piping providing the working pressure of the piping is 250 p.s.i.g. or less and the length of the hose does not exceed 5 feet. Hose shall have a minimum bursting pressure of 1,000 p.s.i.g.

(*3*) When oxygen is supplied to a service piping system from a low-pressure oxygen manifold without an intervening pressure regulating device, the piping system shall have a minimum design pressure of 250 p.s.i.g. A pressure regulating device shall be used at each station outlet when the connected equipment is for use at pressures less than 250 p.s.i.g.

(*c*) (*1*) Piping for acetylene or acetylenic compounds shall be steel or wrought iron.

(*2*) Unalloyed copper shall not be used for acetylene or acetylenic compounds except in listed equipment.

(*ii*) *Piping joints.* (*a*) Joints in steel or wrought iron piping shall be welded, threaded or flanged. Fittings, such as ells, tees, couplings, and unions, may be rolled, forged or cast steel, malleable iron or nodular iron. Gray or white cast iron fittings are prohibited.

(*b*) Joints in brass or copper pipe shall be welded, brazed, threaded, or flanged. If of the socket type, they shall be brazed with silver-brazing alloy or similar high melting point (not less than 800° F.) filler metal.

(*c*) Joints in seamless copper, brass, or stainless steel tubing shall be approved gas tubing fittings or the joints shall be brazed. If of the socket type, they shall be brazed with silver-brazing alloy or similar high melting point (not less than 800° F.) filler metal.

(*iii*) *Installation.* (*a*) Distribution lines shall be installed and maintained in a safe operating condition.

(*b*) Piping located inside or outside of buildings may be placed above or below ground. All piping shall be run as directly as practicable, protected against physical damage, proper allowance being made for expansion and contraction, jarring and vibration. Pipe laid underground in earth shall be located below the frost line and protected against corrosion. After assembly, piping shall be thoroughly blown out with air, nitrogen, or carbon dioxide to remove foreign materials. For oxygen piping, only oil-free air, oil-free nitrogen, or oil-free carbon dioxide shall be used.

(*c*) Only piping which has been welded or brazed shall be installed in tunnels, trenches or ducts. Shutoff valves shall be located outside such conduits. Oxygen piping may be placed in the same tunnel, trench or duct with fuel-gas pipelines, provided there is good natural or forced ventilation.

(*d*) Low points in piping carrying moist gas shall be drained into drip pots constructed so as to permit pumping or

draining out the condensate at necessary intervals. Drain valves shall be installed for this purpose having outlets normally closed with screw caps or plugs. No open end valves or petcocks shall be used, except that in drips located out of doors, underground, and not readily accessible, valves may be used at such points if they are equipped with means to secure them in the closed position. Pipes leading to the surface of the ground shall be cased or jacketed where necessary to prevent loosening or breaking.

(e) Gas cocks or valves shall be provided for all buildings at points where they will be readily accessible for shutting off the gas supply to these buildings in any emergency. Underground valve boxes or manholes should be avoided wherever possible. There shall also be provided a shutoff valve in the discharge line from the generator, gas holder, manifold or other source of supply.

(f) Shutoff valves shall not be installed in safety relief lines in such a manner that the safety relief device can be rendered ineffective.

(g) Fittings and lengths of pipe shall be examined internally before assembly and, if necessary freed from scale or dirt. Oxygen piping and fittings shall be washed out with a suitable solution which will effectively remove grease and dirt but will not react with oxygen. Hot water solutions of caustic soda or trisodium phosphate are effective cleaning agents for this purpose.

(h) Piping shall be thoroughly blown out after assembly to remove foreign materials. For oxygen piping, oil-free air, oil-free nitrogen, or oil-free carbon dioxide shall be used. For other piping, air or inert gas may be used.

(i) When flammable gas lines or other parts of equipment are being purged of air or gas, open lights or other sources of ignition shall not be permitted near uncapped openings.

(j) No welding or cutting shall be performed on an acetylene or oxygen pipeline, including the attachment of hangers or supports, until the line has been purged. Only oil-free air, oil-free nitrogen, or oil-free carbon dioxide shall be used to purge oxygen lines.

(iv) *Painting and signs.* (a) Underground pipe and tubing and outdoor ferrous pipe and tubing shall be covered or painted with a suitable material for protection against corrosion.

(b) Aboveground piping systems shall be marked in accordance with the American National Standard Scheme for the Identification of Piping Systems, ANSI A13.1–1956.

(c) Station outlets shall be marked to indicate the name of the gas.

(v) *Testing.* (a) Piping systems shall be tested and proved gastight at 1½ times the maximum operating pressure, and shall be thoroughly purged of air before being placed in service. The material used for testing oxygen lines shall be oil free and noncombustible. Flames shall not be used to detect leaks.

(b) When flammable gas lines or other parts of equipment are being purged of air or gas, sources of ignition shall not be permitted near uncapped openings.

(5) *Protective equipment, hose, and regulators.*—(i) *General.* Equipment shall be installed and used only in the service for which it is approved and as recommended by the manufacturer.

(ii) *Pressure relief devices.* Service piping systems shall be protected by pressure relief devices set to function at not more than the design pressure of the systems and discharging upwards to a safe location.

(iii) *Piping protective equipment.* (a) The fuel-gas and oxygen piping systems, including portable outlet headers shall incorporate the protective equipment shown in Figures Q–1, Q–2, and Q–3.

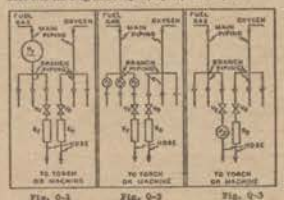


Fig. Q-1 Fig. Q-2 Fig. Q-3

When only a portion of a fuel-gas system is to be used with oxygen, only that portion need comply with subparagraph (5)(iii)(a) of this paragraph.

(b) Approved protective equipment (designated P_F in Figs. Q–1, Q–2, and Q–3) shall be installed in fuel-gas piping to prevent:

(1) Backflow of oxygen into the fuel-gas supply system;

(2) Passage of a flash back into the fuel-gas supply system; and

(3) Excessive back pressure of oxygen in the fuel-gas supply system. The three functions of the protective equipment may be combined in one device or may be provided by separate devices.

(i) The protective equipment shall be located in the main supply line, as in Figure Q–1 or at the head of each branch line, as in Figure Q–2 or at each location where fuel-gas is withdrawn, as in Figure Q–3. Where branch lines are of 2-inch pipe size or larger or of substantial length, protective equipment (designated as P_F) shall be located as shown in either Q–2 and Q–3.

(ii) Backflow protection shall be provided by an approved device that will prevent oxygen from flowing into the fuel-gas system or fuel from flowing into the oxygen system (see Sr, Figs. Q–1 and Q–3).

(iii) Flash-back protection shall be provided by an approved device that will prevent flame from passing into the fuel-gas system.

(iv) Back-pressure protection shall be provided by an approved pressure-relief device set at a pressure not greater than the pressure rating of the backflow or the flashback protection device, whichever is lower. The pressure-relief device shall be located on the downstream side of the backflow and flashback protection devices. The vent from the pressure-relief device shall be at least as large as the relief device inlet and shall be installed without low points that may collect moisture. If low points are unavoidable, drip pots with drains closed with screw plugs or caps shall be installed at the low points. The vent terminus shall not endanger personnel or property through gas discharge; shall be located away from ignition sources; and shall terminate in a hood or bend.

(c) If pipeline protective equipment incorporates a liquid, the liquid level shall be maintained, and a suitable antifreeze may be used to prevent freezing.

(d) Fuel gas for use with equipment not requiring oxygen shall be withdrawn upstream of the piping protective devices.

(iv) *Station outlet protective equipment.* (a) A check valve, pressure regulator, hydraulic seal, or combination of these devices shall be provided at each station outlet, including those on portable headers, to prevent backflow, as shown in Figures Q–1, Q–2, and Q–3 and designated as S_F and S_O.

(b) When approved pipeline protective equipment (designated P_F) is located at the station outlet as in Figure Q–3, no additional check valve, pressure regulator, or hydraulic seal is required.

(c) A shutoff valve (designated V_F and V_O) shall be installed at each station outlet and shall be located on the upstream side of other station outlet equipment.

(d) If the station outlet is equipped with a detachable regulator, the outlet shall terminate in a union connection that complies with the Regulator Connection Standards, 1958, Compressed Gas Association.

(e) If the station outlet is connected directly to a hose, the outlet shall terminate in a union connection complying with the Standard Hose Connection Specifications, 1957, Compressed Gas Association.

(f) Station outlets may terminate in pipe threads to which permanent connections are to be made, such as to a machine.

(g) Station outlets shall be equipped with a detachable outlet seal cap secured in place. This cap shall be used to seal the outlet except when a hose, a regulator, or piping is attached.

(h) Where station outlets are equipped with approved backflow and flashback protective devices, as many as four torches may be supplied from one station outlet through rigid piping, provided each outlet from such piping is equipped with a shutoff valve and provided the fuel-gas capacity of any one torch does not exceed 15 cubic feet per hour.

This subdivision does not apply to machines.

(v) *Hose and hose connections.* (a) Hose for oxy-fuel gas service shall comply with the Specification for Rubber Welding Hose, 1958, Compressed Gas Association and Rubber Manufacturers Association.

(b) The generally recognized colors are red for acetylene and other fuel-gas hose, green for oxygen hose, and black for inert-gas and air hose.

(c) When parallel lengths of oxygen and acetylene hose are taped together for convenience and to prevent tangling, not more than 4 inches out of 12 inches shall be covered by tape.

(d) Hose connections shall comply with the Standard Hose Connection Specifications, 1957, Compressed Gas Association.

(e) Hose connections shall be clamped or otherwise securely fastened in a manner that will withstand, without leakage, twice the pressure to which they are normally subjected in service, but in no case less than a pressure of 300 p.s.i. Oil-free air or an oil-free inert gas shall be used for the test.

(f) Hose showing leaks, burns, worn places, or other defects rendering it unfit for service shall be repaired or replaced.

(vi) *Pressure-reducing regulators.* (a) Pressure-reducing regulators shall be used only for the gas and pressures for which they are intended. The regulator inlet connections shall comply with Regulator Connection Standards, 1958, Compressed Gas Association.

(b) When regulators or parts of regulators, including gages, need repair, the work shall be performed by skilled mechanics who have been properly instructed.

(c) Gages on oxygen regulators shall be marked "USE NO OIL."

(d) Union nuts and connections on regulators shall be inspected before use to detect faulty seats which may cause leakage of gas when the regulators are attached to the cylinder valves. Damaged nuts or connections shall be destroyed.

(6) *Acetylene generators.*—(i) *Approval and marking.* (a) Generators shall be of approved construction and shall be plainly marked with the maximum rate of acetylene in cubic feet per hour for which they are designed; the weight and size of carbide necessary for a single charge; the manufacturer's name and address; and the name or number of the type of generator.

(b) Carbide shall be of the size marked on the generator nameplate.

(ii) *Rating and pressure limitations.* (a) The total hourly output of a generator shall not exceed the rate for which it is approved and marked. Unless specifically approved for higher ratings, carbide-feed generators shall be rated at 1 cubic foot per hour per pound of carbide required for a single complete charge.

(b) Relief valves shall be regularly operated to insure proper functioning. Relief valves for generating chambers shall be set to open at a pressure not in excess of 15 p.s.i.g. Relief valves for hydraulic back pressure valves shall be set to open at a pressure not in excess of 30 p.s.i.g.

(c) Nonautomatic generators shall not be used for generating acetylene at pressures exceeding 1 p.s.i.g., and all water overflows shall be visible.

(iii) *Location.* The space around the generator shall be ample for free, unobstructed operation and maintenance and shall permit ready adjustment and charging.

(iv) *Stationary acetylene generators (automatic and nonautomatic).* (a) (1) The foundation shall be so arranged that the generator will be level and so that no excessive strain will be placed on the generator or its connections. Acetylene generators shall be grounded.

(2) Generators shall be placed where water will not freeze. The use of common salt (sodium chloride) or other corrosive chemicals for protection against freezing is not permitted. (For heating systems see subdivision (6)(vi)(c) of this subparagraph.)

(3) Except when generators are prepared in accordance with subdivision (vii)(e) of this subparagraph, sources of ignition shall be prohibited in outside generator houses or inside generator rooms.

(4) Water shall not be supplied through a continuous connection to the generator except when the generator is provided with an adequate open overflow or automatic water shutoff which will effectively prevent overfilling of the generator. Where a noncontinuous connection is used, the supply line shall terminate at a point not less than 2 inches above the regularly provided opening for filling so that the water can be observed as it enters the generator.

(5) Unless otherwise specifically approved, generators shall not be fitted with continuous drain connections leading to sewers, but shall discharge through an open connection into a suitably vented outdoor receptacle or residue pit which may have such connections. An open connection for the sludge drawoff is desirable to enable the generator operator to observe leakage of generating water from the drain valve or sludge cock.

(b) (1) Each generator shall be provided with a vent pipe of Schedule 40 galvanized iron or steel, except that outside of buildings, vent pipes larger than 4 inches in diameter may be not less than 14 gage galvanized tubing or sheet steel.

(2) The escape or relief pipe shall be rigidly installed without traps and so that any condensation will drain back to the generator.

(3) The escape or relief pipe shall be carried full size to a suitable point outside the building. It shall terminate in a hood or bend located at least 12 feet above the ground, preferably above the roof, and as far away as practicable from windows or other openings into buildings and as far away as practicable from sources of ignition such as flues or chimneys and tracks used by locomotives. Generating chamber relief pipes shall not be inter-connected but shall be separately led to the outside air. The hood or bend shall be so constructed that it will not be obstructed by rain, snow, ice, insects, or birds. The outlet shall be at least 3 feet from combustible construction.

(c) (1) Gas holders shall be constructed on the gasometer principle, the bell being suitably guided. The gas bell shall move freely without tendency to bind and shall have a clearance of at least 2 inches from the shell.

(2) The gas holder may be located in the generator room, in a separate room or out of doors. In order to prevent collapse of the gas bell or infiltration of air due to a vacuum caused by the compressor or booster pump or cooling of the gas, a compressor or booster cutoff shall be provided at a point 12 inches or more above the landing point of the bell. When the gas holder is located indoors, the room shall be ventilated in accordance with subdivision (vi)(b) of this subparagraph and heated and lighted in accordance with subdivisions (vi)(c) and (d) of this subparagraph.

(3) When the gas holder is not located within a heated building, gas holder seals shall be protected against freezing.

(4) Means shall be provided to stop the generator-feeding mechanism before the gas holder reaches the upper limit of its travel.

(5) When the gas holder is connected to only one generator, the gas capacity of the holder shall be not less than one-third of the hourly rating of the generator.

(6) If acetylene is used from the gas holder without increase in pressure at some points but with increase in pressure by a compressor or booster pump at other points, approved piping protective devices shall be installed in each supply line. The low-pressure protective device shall be located between the gas holder and the shop piping, and the medium-pressure protective device shall be located between the compressor or booster pump and the shop piping (see Figure Q–4). Approved protective equipment (designated P_F) is used to prevent: Backflow of oxygen into the fuel-gas supply system; passage of a flashback into the fuel-gas supply system; and excessive back pressure of oxygen in the fuel-gas supply system. The three functions of the protective equipment may be combined in one device or may be provided by separate devices.

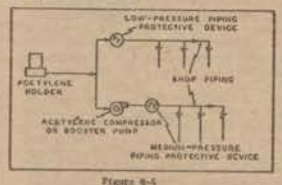


Figure Q-4

(d) (1) The compressor or booster system shall be of an approved type.

(2) Wiring and electrical equipment in compressor or booster pump rooms or enclosures shall conform to the provisions of section 1910.324 for Class I, Division 2 locations.

(3) Compressors and booster pump equipment shall be located in well-ventilated areas away from open flames, electrical or mechanical sparks, or other ignition sources.

(4) Compressor or booster pumps shall be provided with pressure relief valves which will relieve pressure exceeding 15 p.s.i.g. to a safe outdoor location as provided in subdivision (b) of this subdivision, or by returning the gas to the inlet side or to the gas supply source.

(5) Compressor or booster pump discharge outlets shall be provided with approved protective equipment. (See subparagraph (5) of this paragraph.)

(v) *Portable acetylene generators.* (a) (1) All portable generators shall be of a type approved for portable use.

(2) Portable generators shall not be used within 10 feet of combustible material other than the floor.

(3) Portable generators shall not be used in rooms of total volume less than 35 times the total gas-generating capacity per charge of all generators in the room. Generators shall not be used in rooms having a ceiling height of less than 10 feet. (To obtain the gas-generating capacity in cubic feet per charge,

multiply the pounds of carbide per charge by 4.5.)

(d) Portable generators shall be protected against freezing. The use of salt or other corrosive chemical to prevent freezing is prohibited.

(b) (1) Portable generators shall be cleaned and recharged and the air mixture blown off outside buildings.

(2) When charged with carbide, portable generators shall not be moved by crane or derrick.

(3) When not in use, portable generators shall not be stored in rooms in which open flames are used unless the generators contain no carbide and have been thoroughly purged of acetylene. Storage rooms shall be well ventilated.

(4) When portable acetylene generators are to be transported and operated on vehicles, they shall be securely anchored to the vehicles. If transported by truck, the motor shall be turned off during charging, cleaning, and generating periods.

(5) Portable generators shall be located at a safe distance from the welding position so that they will not be exposed to sparks, slag, or misdirection of the torch flame or overheating from hot materials or processes.

(vi) *Outside generator houses and inside generator rooms for stationary acetylene generators.* (a) (1) No opening in any outside generator house shall be located within 5 feet of any opening in another building.

(2) Walls, floors, and roofs of outside generator houses shall be of noncombustible construction.

(3) When a part of the generator house is to be used for the storage or manifolding of oxygen cylinders, the space to be so occupied shall be separated from the generator or carbide storage section by partition walls continuous from floor to roof or ceiling, of the type of construction stated in subdivision (3) of this subdivision. Such separation walls shall be without openings and shall be joined to the floor, other walls and ceiling or roof in a manner to effect a permanent gas-tight joint.

(4) Exit doors shall be located so as to be readily accessible in case of emergency.

(5) Explosion venting for outside generator houses and inside generator rooms shall be provided in exterior walls or roofs. The venting areas shall be equal to not less than 1 square foot per 50 cubic feet of room volume and may consist of any one or any combination of the following: Walls of light, noncombustible material preferably single-thickness, single-strength glass; lightly fastened hatch covers; lightly fastened swinging doors in exterior walls opening outward; lightly fastened walls or roof designed to relieve at a maximum pressure of 25 pounds per square foot.

(6) The installation of acetylene generators within buildings shall be restricted to buildings not exceeding one story in height; *Provided, however,* that this will not be construed as prohibiting such installations on the roof or top floor of a building exceeding such height.

(7) Generators installed inside buildings shall be enclosed in a separate room of ample size.

(8) The walls, partitions, floors, and ceilings of inside generator rooms shall be of noncombustible construction having a fire-resistance rating of at least 1 hour. The walls or partitions shall be continuous from floor to ceiling and shall be securely anchored. At least one wall of the room shall be an exterior wall.

(9) Openings from an inside generator room to other parts of the building shall be protected by a swinging type, self-closing fire door for a Class B opening and having a rating of at least 1 hour. Windows in partitions shall be wired glass and approved metal frames with fixed sash. Installation shall be in accordance with the Standard for the Installation of Fire Doors and Windows, NFPA 80–1970.

(b) Inside generator rooms or outside generator houses shall be well ventilated with vents located at floor and ceiling levels.

(c) Heating shall be by steam, hot water, enclosed electrically heated elements or other indirect means. Heating by flames or fires shall be prohibited in outside generator houses or inside generator rooms, or in any enclosure communicating with them.

(d) (1) Generator houses or rooms shall have natural light during daylight hours. Where artificial lighting is necessary it shall be restricted to electric lamps installed in a fixed position. Unless specifically approved for use in atmospheres containing acetylene, such lamps shall be provided with enclosures of glass or other noncombustible material so designed and constructed as to prevent gas vapors from reaching the lamp or socket and to resist breakage. Rigid conduit with threaded connections shall be used.

(2) Lamps installed outside of wired-glass panels set in gas-tight frames in the exterior walls or roof of the generator house or room are acceptable.

(e) Electric switches, telephones, and all other electrical apparatus which may cause a spark, unless specifically approved for use inside acetylene generator rooms, shall be located outside the generator house or in a room or space separated from the generator room by a gas-tight partition, except that where the generator system is designed so that no carbide fill opening or other part of the generator is open to the generator house or room during the operation of the generator, and so that residue is carried in closed piping from the residue discharge valve to a point outside the generator house or room, electrical equipment in the generator house or room shall conform to the provisions of Subpart S of this part for Class I, Division 2 locations.

(vii) *Maintenance and operation.* (a) Unauthorized persons shall not be permitted in outside generator houses or inside generator rooms.

(f) Operating instructions shall be posted in a conspicuous place near the generator or kept in a suitable place available for ready reference.

(2) When recharging generators the order of operations specified in the instructions supplied by the manufacturer shall be followed.

(3) In the case of batch-type generators, when the charge of carbide is exhausted and before additional carbide is added, the generating chamber shall always be flushed out with water, renewing the water supply in accordance with the instruction card furnished by the manufacturer.

(4) The water-carbide residue mixture drained from the generator shall not be discharged into sewer pipes or stored in areas near open flames. Clear water from residue settling pits may be discharged into sewer pipes.

(b) The carbide added each time the generator is recharged shall be sufficient to refill the space provided for carbide without ramming the charge. Steel or other ferrous tools shall not be used in distributing the charge.

(c) Generator water chambers shall be kept filled to proper level at all times except while draining during the recharging operation.

(d) Whenever repairs are to be made or the generator is to be charged or carbide is to be removed, the water chamber shall be filled to the proper level.

(e) Previous to making repairs involving welding, soldering, or other hot work or other operations which produce a source of ignition, the carbide charge and feed mechanism shall be completely removed. All acetylene shall be expelled by completely flooding the generator shell with water and the generator shall be disconnected from the piping system. The generator shall be kept filled with water, if possible, or positioned to hold as much water as possible.

(f) Hot repairs shall not be made in a room where there are other generators unless all the generators and piping have been purged of acetylene. Hot repairs should preferably be made out of doors.

(7) *Calcium carbide storage*—(i) *Packaging.* (a) Calcium carbide shall be contained in metal packages of sufficient strength to prevent rupture. The packages shall be provided with a screw top or equivalent. These packages shall be constructed water- and air-tight. Solder shall not be used in such a manner that the package would fail if exposed to fire.

(b) Packages containing calcium carbide shall be conspicuously marked "Calcium Carbide—Dangerous If Not Kept Dry" or with equivalent warning.

(c) Caution: Metal tools, even the so-called spark resistant type may cause ignition of an acetylene and air mixture when opening carbide containers.

(d) Sprinkler systems shall not be installed in carbide storage rooms.

(ii) *Storage indoors.* (a) Calcium carbide in quantities not to exceed 600 pounds may be stored indoors in dry, waterproof, and well-ventilated locations.

(1) Calcium carbide not exceeding 600 pounds may be stored indoors in the same room with fuel-gas cylinders.

(2) Packages of calcium carbide, except for one of each size, shall be kept sealed. The seals shall not be broken when there is carbide in excess of 1 pound in any other unsealed package of the same size of carbide in the room.

(b) Calcium carbide exceeding 600 pounds but not exceeding 5,000 pounds shall be stored:

(1) In accordance with subdivision (c) of this subdivision.

(2) In an inside generator room or outside generator house; or

(3) In a separate room in a one-story building which may contain other occupancies, but without cellar or basement beneath the carbide storage section. Such rooms shall be constructed in accordance with subdivision (vi) (a) (8) and (9) of this subdivision and ventilated in accordance with subdivision (vi) (b) of this subdivision. These rooms shall be used for no other purpose.

(c) Calcium carbide in excess of 5,000 pounds shall be stored in one-story buildings without cellar or basement and used for no other purpose, or in outside generator houses. The location of such storage buildings shall be away from congested mercantile and manufacturing districts. If the storage building is of noncombustible construction, it may adjoin other one-story buildings if separated therefrom by unpierced firewalls; if it is detached less than 10 feet from such building or buildings, there shall be no opening in any of the mutually exposing sides of such buildings within 10 feet. If the storage building is of combustible construction, it shall be at least 20 feet from any other one- or two-story building, and at least 30 feet from any other building exceeding two stories.

(iii) *Storage outdoors.* (a) Calcium carbide in unopened metal containers may be stored outdoors.

(b) Carbide containers to be stored outdoors shall be examined to make sure that they are in good condition. Periodic reexaminations shall be made for rusting or other damage to a container that might affect its water or air tightness.

(c) The bottom tier of each row shall be placed on wooden planking or equivalent, so that the containers will not come in contact with the ground or ground water.

(d) Storage areas shall be at least 10 feet from lines of adjoining property that may be built upon.

(e) Containers of carbide which have been in storage the longest shall be used first.

(8) *Public exhibitions and demonstrations*—(i) *Installation requirements.* Installation and operation of welding, cutting, and related equipment shall be done by, or under the supervision of, a competent operator to insure the personal protection of viewers and demonstrators as well as the protection from fire, of materials in and around the site and the building itself.

(ii) *Procedures.* (a) Cylinders containing compressed gases for use at the site shall not be charged in excess of one-half their maximum permissible content. (Cylinders of nonliquefied gases and acetylene shall be charged to not more than one-half their maximum permissible charged pressure in p.s.i.g. Cylinders of liquefied gases shall be charged to not more than one-half the maximum permissible capacity in pounds.)

(b) Cylinders located at the site shall be connected for use except that enough additional cylinders may be stored at the site to furnish approximately 1 day's consumption of each gas used. Other cylinders shall be stored in an approved storage area preferably outdoors, but this storage area shall not be located near a building exit.

(c) Cylinders in excess of 40 pounds total weight being transported to or from the site shall be carried on a hand or motorized truck.

(d) The site shall be constructed, equipped, and operated in such a manner that the demonstration will be carried out so as to minimize the possibility of injury to viewers.

(e) Sites involving the use of compressed gases shall be located so as not to interfere with the egress of people during an emergency.

(f) The fire department shall be notified in advance of such use of the site.

(g) (1) Each site shall be provided with a portable fire extinguisher of appropriate size and type and with a pail of water.

(2) The public and combustible materials at the site shall be protected from flames, sparks, and molten metal.

(h) Hoses shall be located and protected so that they will not be physically damaged.

(i) (1) Cylinder valves shall be closed when equipment is unattended.

(2) Where caps are provided for valve protection, such caps shall be in place except when the cylinders are in service or connected ready for service.

(3) Cylinders shall be located or secured so that they cannot be knocked over.

(b) *Application, installation, and operation of arc welding and cutting equipment*—(1) *General*—(i) *Equipment selection.* Welding equipment shall be chosen for safe application to the work to be done as specified in subparagraph (2) of this paragraph.

(ii) *Installation.* Welding equipment shall be installed safely as specified by subparagraph (3) of this paragraph.

(iii) *Instruction.* Workmen designated to operate arc welding equipment shall have been properly instructed and qualified to operate such equipment as specified in subparagraph (4) of this paragraph.

(2) *Application of arc welding equipment*—(i) *General.* Assurance of consideration of safety in design is obtainable by choosing apparatus complying with the Requirements for Electric Arc-Welding Apparatus, NEMA EW–1–1963, National Electrical Manufacturers Association or the Safety Standard for Transformer-Type Arc-Welding Machines, ANSI C33.2—1956, Underwriters' Laboratories.

(ii) *Environmental conditions.* (a) Standard machines for arc welding service shall be designed and constructed to carry their rated load with rated temperature rises where the temperature of the cooling air does not exceed 40° C. (104° F.) and where the altitude does not exceed 3,300 feet, and shall be suitable for operation in atmospheres containing gases, dust, and light rays produced by the welding arc.

(b) Unusual service conditions may exist, and in such circumstances machines shall be especially designed to safely meet the requirements of the service. Chief among these conditions are:

(1) Exposure to unusually corrosive fumes.

(2) Exposure to steam or excessive humidity.

(3) Exposure to excessive oil vapor.

(4) Exposure to flammable gases.

(5) Exposure to abnormal vibration or shock.

(6) Exposure to excessive dust.

(7) Exposure to weather.

(8) Exposure to unusual seacoast or shipboard conditions.

(iii) *Voltage.* Open circuit (No load) voltages of arc welding and cutting machines should be as low as possible consistent with satisfactory welding or cutting being done. The following limits shall not be exceeded:

(a) Alternating-current machines

(1) Manual arc welding and cutting—80 volts.

(2) Automatic (machine or mechanized) arc welding and cutting—100 volts.

(b) Direct-current machines

(1) Manual arc welding and cutting—100 volts.

(2) Automatic (machine or mechanized) arc welding and cutting—100 volts.

(c) When special welding and cutting processes require values of open circuit voltages higher than the above, means shall be provided to prevent the operator from making accidental contact with the high voltage by adequate insulation or other means.

(d) For a.c. welding under wet conditions or warm surroundings where perspiration is a factor, the use of reliable automatic controls for reducing no load voltage is recommended to reduce the shock hazard.

(iv) *Design.* (a) A controller integrally mounted in an electric motor driven welder shall have capacity for carrying rated motor current, shall be capable of making and interrupting stalled rotor current of the motor, and may serve as the running overcurrent device if provided with the number of overcurrent units as specified by Subpart S of this part. Starters with magnetic undervoltage release should be used with machines installed more than one to a circuit to prevent circuit overload caused by simultaneously starting of several motors upon return of voltage.

(b) On all types of arc welding machines, control apparatus shall be enclosed except for the operating wheels, levers, or handles. Control handles and wheels should be large enough to be easily grasped by a gloved hand.

(c) Input power terminals, tap change devices and live metal parts connected to input circuits shall be completely enclosed and accessible only by means of tools.

(d) Terminals for welding leads should be protected from accidental electrical contact by personnel or by metal objects i.e., vehicles, crane hooks, etc. Protection may be obtained by use of: dead-front receptacles for plug connections; recessed openings with nonremovable hinged covers; heavy insulating sleeving or taping or other equivalent electrical and mechanical protection. If a welding lead terminal which is intended to be used exclusively for connection to the work is connected to the grounded enclosure, it must be done by a conductor at least two AWG sizes smaller than the grounding conductor and the terminal shall be marked to indicate that it is grounded.

(e) No connections for portable control devices such as push buttons to be

carried by the operator shall be connected to an a.c. circuit of higher than 120 volts. Exposed metal parts of portable control devices operating on circuits above 50 volts shall be grounded by a grounding conductor in the control cable.

(f) Auto transformers or a.c. reactors shall not be used to draw welding current directly from any a.c. power source having a voltage exceeding 80 volts.

(3) *Installation of arc welding equipment.*—(i) *General.* Installation including power supply shall be in accordance with the requirements of Subpart S of this part.

(ii) *Grounding.* (a) The frame or case of the welding machine (except engine-driven machines shall be grounded under the conditions and according to the methods prescribed in Subpart S of this part.

(b) Conduits containing electrical conductors shall not be used for completing a work-lead circuit. Pipelines shall not be used as a permanent part of a work-lead circuit, but may be used during construction, extension or repair providing current is not carried through threaded joints, flanged bolted joints, or caulked joints and that special precautions are used to avoid sparking at connection of the work-lead cable.

(c) Chains, wire ropes, cranes, hoists, and elevators shall not be used to carry welding current.

(d) Where a structure, conveyor, or fixture is regularly employed as a welding current return circuit, joints shall be bonded or provided with adequate current collecting devices and appropriate periodic inspection should be conducted to ascertain that no condition of electrolysis or shock, or fire hazard exists by virtue of such use.

(e) All ground connections shall be checked to determine that they are mechanically strong and electrically adequate for the required current.

(iii) *Supply connections and conductors.* (a) A disconnecting switch or controller shall be provided at or near each welding machine which is not equipped with such a switch or controller mounted as an integral part of the machine. The switch shall be in accordance with Subpart S of this part. Overcurrent protection shall be provided as specified in Subpart S of this part. A disconnect switch with overload protection or equivalent disconnect and protection means, permitted by Subpart S of this part, shall be provided for each outlet intended for connection to a portable welding machine.

(b) For individual welding machines, the rated current-carrying capacity of the supply conductors shall be not less than the rated primary current of the welding machines.

(c) For groups of welding machines, the rated current-carrying capacity of conductors may be less than the sum of the rated primary currents of the welding machines supplied. The conductor rating shall be determined in each case according to the machine loading based on the use to be made of each welding machine and the allowance permissible in the event that all the welding machines supplied by the conductors will not be in use at the same time.

(d) In operations involving several welders on one structure, d.c. welding process requirements may require the use of both polarities; or supply circuit limitations for a.c. welding may require distribution of machines among the phases of the supply circuit. In such cases no load voltages between electrode holders will be 2 times normal in d.c. or 1, 1.41, 1.73, or 2 times normal on a.c. machines. Similar voltage differences will exist if both a.c. and d.c. welding are done on the same structure.

(f) All d.c. machines shall be connected with the same polarity.

(2) All a.c. machines shall be connected to the same phase of the supply circuit and with the same instantaneous polarity.

(4) *Operation and maintenance.*—(i) *General.* Workmen assigned to operate or maintain arc welding equipment shall be acquainted with the requirements of subparagraphs (b), (d), (e), and (f) of this section; if doing gas-shielded arc welding, also Recommended Safe Practices for Gas-Shielded Arc Welding, A6.1–1966, American Welding Society.

(ii) *Machine hook up.* Before starting operations all connections to the machine shall be checked to make certain they are properly made. The work lead shall be firmly attached to the work; magnetic work clamps shall be freed from adherent metal particles of spatter on contact surfaces. Coiled welding cable shall be spread out before use to avoid serious overheating and damage to insulation.

(iii) *Grounding.* Grounding of the welding machine frame shall be checked. Special attention shall be given to safety ground connections of portable machines.

(iv) *Leaks.* There shall be no leaks of cooling water, shielding gas or engine fuel.

(v) *Switches.* It shall be determined that proper switching equipment for shutting down the machine is provided.

(vi) *Manufacturers' instructions.* Printed rules and instructions covering operation of equipment supplied by the manufacturers shall be strictly followed.

(vii) *Electrode holders.* Electrode holders when not in use shall be so placed that they cannot make electrical contact with persons, conducting objects, fuel or compressed gas tanks.

(viii) *Electric shock.* Cables with splices within 10 feet of the holder shall not be used. The welder should not coil or loop welding electrode cable around parts of his body.

(ix) *Maintenance.* (a) The operator should report any equipment defect or safety hazard to his supervisor and the use of the equipment shall be discontinued until its safety has been assured. Repairs shall be made only by qualified personnel.

(b) Machines which have become wet shall be thoroughly dried and tested before being used.

(c) Work and electrode lead cables should be frequently inspected for wear and damage. Cables with damaged insulation or exposed bare conductors shall be replaced. Joining lengths of work and electrode cables shall be done by the use of connecting means specifically intended for the purpose. The connecting means shall have insulation adequate for the service conditions.

(c) *Installation and operation of resistance welding equipment.*—(1) *General.*—(i) *Installation.* All equipment shall be installed by a qualified electrician in conformance with Subpart S of this part. There shall be a safety-type disconnecting switch or a circuit breaker or circuit interrupter to open each power circuit to the machine, conveniently located at or near the machine, so that the power can be shut off when the machine or its controls are to be serviced.

(ii) *Thermal protection.* Ignitron tubes used in resistance welding equipment shall be equipped with a thermal protection switch.

(iii) *Personnel.* Workmen designated to operate resistance welding equipment shall have been properly instructed and judged competent to operate such equipment.

(iv) *Guarding.* Controls of all automatic or air and hydraulic clamps shall be arranged or guarded to prevent the operator from accidentally activating them.

(2) *Spot and seam welding machines (nonportable).*—(i) *Voltage.* All external weld initiating control circuits shall operate on low voltage, not over 120 volts, for the safety of the operators.

(ii) *Capacitor welding.* Stored energy or capacitor discharge type of resistance welding equipment and control panels involving high voltage (over 550 volts) shall be suitably insulated and protected by complete enclosures, all doors of which shall be provided with suitable interlocks and contacts wired into the control circuit (similar to elevator interlocks). Such interlocks or contacts shall be so designed as to effectively interrupt power and short circuit all capacitors when the door or panel is open. A manually operated switch or suitable positive device shall be installed, in addition to the mechanical interlocks or contacts, as an added safety measure assuring absolute discharge of all capacitors.

(iii) *Interlocks.* All doors and access panels of all resistance welding machines and control panels shall be kept locked and interlocked to prevent access, by unauthorized persons, to live portions of the equipment.

(iv) *Guarding.* All press welding machine operations, where there is a possibility of the operator's fingers being under the point of operation, shall be effectively guarded by the use of a device such as an electronic eye safety circuit, two hand controls or protection similar to that prescribed for punch press operation, § 1910.217. All chains, gears, operating bus linkage, and bells shall be protected by adequate guards, in accordance with § 1910.219.

(v) *Shields.* The hazard of flying sparks shall be, wherever practical, eliminated by installing a shield guard of safety glass or suitable fire-resistant plastic at the point of operation. Additional shields or curtains shall be installed as necessary to protect passing persons from flying sparks. (See paragraph (c)(2)(i)(c) of this section.)

(vi) *Foot switches.* All foot switches shall be guarded to prevent accidental operation of the machine.

(vii) *Stop buttons.* Two or more safety emergency stop buttons shall be provided on all special multispot welding ma-

chines, including 2-post and 4-post weld presses.

(viii) *Safety pins.* On large machines, four safety pins with plugs and receptacles (one in each corner) shall be provided so that when safety pins are removed and inserted in the ram or platen, the press becomes inoperative.

(ix) *Grounding.* Where technically practical, the secondary of all welding transformers used in multispot, projection and seam welding machines shall be grounded. This may be done by permanently grounding one side of the welding secondary current circuit. Where not technically practical, a center tapped grounding reactor connected across the secondary or the use of a safety disconnect switch in conjunction with the welding control are acceptable alternates. Safety disconnect shall be arranged to open both sides of the line when welding current is not present.

(3) *Portable welding machines.*—(i) *Counterbalance.* All portable welding guns shall have suitable counterbalanced devices for supporting the guns, including cables, unless the design of the gun or fixture makes counterbalancing impractical or unnecessary.

(ii) *Safety chains.* All portable welding guns, transformers and related equipment that is suspended from overhead structures, eye beams, trolleys, etc. shall be equipped with safety chains or cables. Safety chains or cables shall be capable of supporting the total shock load in the event of failure of any component of the supporting system.

(iii) *Clevis.* When trolleys are used to support portable welding equipment, with suitable forged steel clevis for the attachment of safety chains. Each clevis shall be capable of supporting the total shock load of the suspended equipment in the event of trolley failure.

(iv) *Switch guards.* All initiating switches, including retraction and dual schedule switches, located on the portable welding gun shall be equipped with suitable guards capable of preventing accidental initiation through contact with fixturing, operator's clothing, etc. Initiating switch voltage shall not exceed 24 volts.

(v) *Moving holder.* The movable holder, where it enters the gun frame, shall have sufficient clearance to prevent the shearing of fingers carelessly placed on the operating movable holder.

(vi) *Grounding.* The secondary end case of all portable welding transformers shall be grounded. Secondary grounding may be by center tapped secondary or by a center tapped grounding reactor connected across the secondary.

(4) *Flash welding equipment.*—(i) *Ventilation and flash guard.* Flash welding machines shall be equipped with a hood to control flying flash. In cases of high production, where materials may contain a film of oil and where toxic elements and metal fumes are given off, ventilation shall be provided in accordance with paragraph (f) of this section.

(ii) *Fire curtains.* For the protection of the operators of nearby equipment, fire-resistant curtains or suitable shields shall be set up around the machine and in such a manner that the operators movements are not hampered.

(5) *Hazards and precautions.* A job hazard analysis shall be made, by qualified personnel, of the operations to be performed on each welding machine to determine the safeguards and personal protective equipment that shall be used for each job.

(6) *Maintenance.* Periodic inspection shall be made by qualified maintenance personnel, and records of the same maintained. The operator shall be instructed to report any equipment defects to his supervisor and the use of the equipment shall be discontinued until safety repairs have been completed.

(d) *Fire prevention and protection.*—(1) *Basic precautions.* For elaboration of these basic precautions and of the special precautions of subparagraph (2) of this paragraph as well as a delineation of the fire protection and prevention responsibilities of welders and cutters, their supervisors (including outside contractors) and those in management on whose property cutting and welding is to be performed, see, Standard for Fire Prevention in Use of Cutting and Welding Processes, NFPA Standard 51B, 1962. The basic precautions for fire prevention in welding or cutting work are:

(i) *Fire hazards.* If the object to be welded or cut cannot readily be moved, all movable fire hazards in the vicinity shall be taken to a safe place.

(ii) *Guards.* If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, and to protect the immovable fire hazards.

(iii) *Restrictions.* If the requirements stated in subdivision (i) and (ii) of this subdivision cannot be followed then welding and cutting shall not be performed.

(2) *Special precautions.* When the nature of the work to be performed falls within the scope of subdivision (ii) of this subdivision certain additional precautions may be necessary:

(i) *Combustible material.* Wherever there are floor openings or cracks in the flooring that cannot be closed, precautions shall be taken so that no readily combustible materials on the floor below will be exposed to sparks which might drop through the floor. The same precautions shall be observed with regard to cracks or holes in walls, open doorways and open or broken windows.

(ii) *Fire extinguishers.* Suitable fire extinguishing equipment shall be maintained in a state of readiness for instant use. Such equipment may consist of pails of water, buckets of sand, hose or portable extinguishers depending upon the nature and quantity of the combustible material exposed.

(iii) *Fire watch.* (a) Fire watchers shall be required whenever welding or cutting is performed in locations where other than a minor fire might develop, or any of the following conditions exist:

(1) Appreciable combustible material in building construction or contents, closer than 35 feet to the point of operation.

(2) Appreciable combustibles are more than 35 feet away but are easily ignited by sparks.

(3) Wall or floor openings within a 35-foot radius expose combustible material in adjacent areas including concealed spaces in walls or floors.

(4) Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.

(b) Fire watchers shall have fire extinguishing equipment readily available and be trained in its use. They shall be familiar with facilities for sounding an alarm in the event of a fire. They shall watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm. A fire watch shall be maintained for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

(iv) *Authorization.* Before cutting or welding is permitted, the area shall be inspected by the individual responsible for authorizing cutting and welding operations. He shall designate precautions to be followed in granting authorization to proceed preferably in the form of a written permit.

(v) *Floors.* Where combustible materials such as paper clippings, wood shavings, or textile fibers are on the floor, the floor shall be swept clean for a radius of 35 feet. Combustible floors shall be kept wet, covered with damp sand, or protected by fire-resistant shields. Where operating arc welding or cutting equipment floors have been wet down, personnel shall be protected from possible shock.

(vi) *Prohibited areas.* Cutting or welding shall not be permitted in the following situations:

(a) In areas not authorized by management.

(b) In sprinklered buildings while such protection is impaired.

(c) In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside uncleaned or improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dusts.

(d) In areas near the storage of large quantities of exposed, readily ignitible materials such as bulk sulfur, baled paper, or cotton.

(vii) *Relocation of combustibles.* Where practicable, all combustibles shall be relocated at least 35 feet from the work site. Where relocation is impracticable, combustibles shall be protected with flameproofed covers or otherwise shielded with metal or asbestos guards or curtains. Edges of covers at the floor should be tight to prevent sparks from going under them. This precaution is also important at overlaps where several covers are used to protect a large pile.

(viii) *Ducts.* Ducts and conveyor systems that might carry sparks to distant combustibles shall be suitably protected or shut down.

(ix) *Combustible walls.* Where cutting or welding is done near walls, partitions, ceiling or roof of combustible construction, fire-resistant shields or guards shall be provided to prevent ignition.

(x) *Noncombustible walls.* If welding is to be done on a metal wall, partition, ceiling or roof, precautions shall be taken

to prevent ignition of combustibles on the other side, due to conduction or radiation, preferably by relocating combustibles. Where combustibles are not relocated, a fire watch on the opposite side from the work shall be provided.

(xi) *Combustible cover.* Welding shall not be attempted on a metal partition, wall, ceiling or roof having a combustible covering nor on walls or partitions of combustible sandwich-type panel construction.

(xii) *Pipes.* Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.

(xiii) *Management.* Management shall recognize its responsibility for the safe usage of cutting and welding equipment on its property and:

(a) Based on fire potentials of plant facilities, establish areas for cutting and welding, and establish procedures for cutting and welding in other areas.

(b) Designate an individual responsible for authorizing cutting and welding operations in areas not specifically designed for such processes.

(c) Insist that cutters or welders and their supervisors are suitably trained in the safe operation of their equipment and the safe use of the process.

(d) Advise all contractors about flammable materials or hazardous conditions of which they may not be aware.

(xiv) *Supervisor.* The Supervisor:

(a) Shall be responsible for the safe handling of the cutting or welding equipment and the safe use of the cutting or welding process.

(b) Shall determine the combustible materials and hazardous areas present or likely to be present in the work location.

(c) Shall protect combustibles from ignition by the following:

(1) Have the work moved to a location free from dangerous combustibles.

(2) If the work cannot be moved, have the combustibles moved to a safe distance from the work or have the combustibles properly shielded against ignition.

(3) See that cutting and welding are so scheduled that plant operations that might expose combustibles to ignition are not started during cutting or welding.

(d) Shall secure authorization for the cutting or welding operations from the designated management representative.

(e) Shall determine that the cutter or welder secures his approval that conditions are safe before going ahead.

(f) Shall determine that fire protection and extinguishing equipment are properly located at the site.

(g) Where fire watches are required, he shall see that they are available at the site.

(xv) *Fire prevention precautions.* Cutting or welding shall be permitted only in areas that are or have been made fire safe. Within the confines of an operating plant or building, cutting and welding should preferably be done in a specific area designed for such work, such as a maintenance shop or a detached outside location. Such areas should be of noncombustible or fire-resistive construction, essentially free of combustible and flammable contents, and suitably segregated from adjacent areas. When work cannot be moved practically, as in most construction work, the area shall be made safe by removing combustibles or protecting combustibles from ignition sources.

(3) *Welding or cutting containers.*—(i) *Used containers.* No welding, cutting, or other hot work shall be performed on used drums, barrels, tanks or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present or any substances such as greases, tars, acids, or other materials which when subjected to heat, might produce flammable or toxic vapors. Any pipe lines or connections to the drum or vessel shall be disconnected or blanked.

(ii) *Venting and purging.* All hollow spaces, cavities or containers shall be vented to permit the escape of air or gases before preheating, cutting or welding. Purging with inert gas is recommended.

(4) *Confined spaces.*—(i) *Accidental contact.* When arc welding is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur and the machine be disconnected from the power source.

(ii) *Torch valve.* In order to eliminate the possibility of gas escaping through leaks or improperly closed valves, when gas welding or cutting, the torch valves shall be closed and the gas supply to the torch positively shutoff at some point outside the confined area whenever the torch is not to be used for a substantial period of time, such as during lunch hour or overnight. Where practicable, the torch and hose shall also be removed from the confined space.

(e) *Protection of personnel.*—(1) *General.*—(i) *Railing.* A welder or helper working on platforms, scaffolds, or runways shall be protected against falling. This may be accomplished by the use of railings, safety belts, life lines, or some other equally effective safeguards.

(ii) *Welding cable.* Welders shall place welding cable and other equipment so that it is clear of passageways, ladders, and stairways.

(2) *Eye protection.*—(i) *Selection.* (a) Helmets or hand shields shall be used during all arc welding or arc cutting operations, excluding submerged arc welding. Goggles should also be worn during arc welding or cutting operations to provide protection from injurious rays from adjacent work, and from flying objects. The goggles may have either clear or colored glass, depending upon the amount of exposure to adjacent welding operations. Helpers or attendants shall be provided with proper eye protection.

(b) Goggles or other suitable eye protection shall be used during all gas welding or oxygen cutting operations. Spectacles without side shields, with suitable filter lenses are permitted for use during gas welding operations on light work, for torch brazing or for inspection.

(c) All operators and attendants of resistance welding or resistance brazing equipment shall use transparent face shields or goggles, depending on the particular job, to protect their faces or eyes, as required.

(d) Eye protection in the form of suitable goggles shall be provided where needed for brazing operations not covered in (a), (b), and (c) of this subdivision.

(ii) *Specifications for protectors.* (a) Helmets and hand shields shall be made of a material which is an insulator for heat and electricity. Helmets, shields and goggles shall be not readily flammable and shall be capable of withstanding sterilization.

(b) Helmets and hand shields shall be arranged to protect the face, neck and ears from direct radiant energy from the arc.

(c) Helmets shall be provided with filter plates and cover plates designed for easy removal.

(d) All parts shall be constructed of a material which will not readily corrode or discolor the skin.

(e) Goggles shall be ventilated to prevent fogging of the lenses as much as practicable.

(f) Cover lenses or plates should be provided to protect each helmet, hand shield or goggle filter lens or plate.

(g) All glass for lenses shall be tempered, substantially free from striae, air bubbles, waves and other flaws. Except when a lens is ground to provide proper optical correction for defective vision, the front and rear surfaces of lenses and windows shall be smooth and parallel.

(h) Lenses shall bear some permanent distinctive marking by which the source and shade may be readily identified.

(i) The following is a guide for the selection of the proper shade numbers. These recommendations may be varied to suit the individual's needs.

Welding operation	Shade No.
Shielded metal-arc welding—1/16-, 5/32-, 1/4-, 5/16-inch electrodes	10
Gas-shielded arc welding (nonferrous)—1/16-, 5/32-, 1/4-, 5/16-inch electrodes	11
Gas-shielded arc welding (ferrous)—1/16-, 5/32-, 1/4-, 5/16-inch electrodes	12
Shielded metal-arc welding: 1/16-, 5/32-, 1/4-inch electrodes	12
5/16-, 3/8-inch electrodes	14
Atomic hydrogen welding	10–14
Carbon arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 inch to 6 inches	4 or 5
Heavy cutting, 6 inches and over	5 or 6
Gas welding (light) up to 1/8 inch	4 or 5
Gas welding (medium) 1/8 inch to 1/2 inch	5 or 6
Gas welding (heavy) 1/2 inch and over	6 or 8

NOTE: In gas welding or oxygen cutting where the torch produces a high yellow light, it is desirable to use a filter or lens that absorbs the yellow or sodium line in the visible light of the operation.

(j) All filter lenses and plates shall meet the test for transmission of radiant energy prescribed in ANSI Z87.1–1968—American National Standard Practice for Occupational and Educational Eye and Face Protection.

(iii) *Protection from arc welding rays.* Where the work permits, the welder should be enclosed in an individual booth painted with a finish of low reflectivity such as zinc oxide (an important face-

tor for absorbing ultraviolet radiations) and lamp black, or shall be enclosed with noncombustible screens similarly painted. Booths and screens shall permit circulation of air at floor level. Workers or other persons adjacent to the welding areas shall be protected from the rays by noncombustible or flameproof screens or shields or shall be required to wear appropriate goggles.

(3) *Protective clothing.*—(i) *General requirements.* Employees exposed to the hazards created by welding, cutting, or brazing operations shall be protected by personal protective equipment in accordance with the requirements of § 1910.132. Appropriate protective clothing required for any welding operation will vary with the size, nature and location of the work to be performed.

(ii) *Specified protective clothing.* Protective means which may be employed are as follows:

(a) Except when engaged in light work, all welders should wear flameproof gauntlet gloves.

(b) Flameproof aprons made of leather, asbestos, or other suitable material may also be desirable as protection against radiated heat and sparks.

(c) Woolen clothing is preferable to cotton because it is not so readily ignited and helps protect the welder from changes in temperature. Cotton clothing, if used, should be chemically treated to reduce its combustibility. All outer clothing such as jumpers or overalls should be reasonably free from oil or grease.

(d) Sparks may lodge in rolled-up sleeves or pockets of clothing, or cuffs of overalls or trousers. It is therefore recommended that sleeves and collars be kept buttoned and pockets be eliminated from the front of overalls and aprons. Trousers or overalls should not be turned up on the outside.

(e) For heavy work, fire-resistant leggings, high boots, or other equivalent means should be used.

(f) In production work a sheet metal screen in front of the worker's legs can provide further protection against sparks and molten metal in cutting operations.

(g) Capes or shoulder covers made of leather or other suitable materials should be worn during overhead welding or cutting operations. Leather skull caps may be worn under helmets to prevent head burns.

(h) For overhead welding and cutting, or welding and cutting in extremely confined spaces, ear protection is sometimes desirable.

(i) Where there is exposure to sharp or heavy falling objects, or a hazard of bumping in confined spaces, hard hats or head protectors should be used.

(4) *Work in confined spaces.*—(i) *General.* As used herein confined space is intended to mean a relatively small or restricted space such as a tank, boiler, pressure vessel, or small compartment of a ship.

(ii) *Ventilation.* Ventilation is a prerequisite to work in confined spaces. For ventilation requirements see paragraph (f) of this section.

(iii) *Securing cylinders and machinery.* When welding or cutting is being performed in any confined spaces the gas cylinders and welding machines shall be left on the outside. Before operations are started, heavy portable equipment mounted on wheels shall be securely blocked to prevent accidental movement.

(iv) *Lifelines.* Where a welder must enter a confined space through a manhole or other small opening, means shall be provided for quickly removing him in case of emergency. When safety lifts and lifelines are used for this purpose, they shall be so attached to the welder's body that his body cannot be jammed in a small exit opening. An attendant with a preplanned rescue procedure shall be stationed outside to observe the welder at all times and be capable of putting rescue operations into effect.

(v) *Electrode removal.* When arc welding is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur and the machine disconnected from the power source.

(vi) *Gas cylinder shutoff.* In order to eliminate the possibility of gas escaping through leaks or improperly closed valves, when gas welding or cutting, the torch valves shall be closed and the fuel-gas and oxygen supply to the torch positively shut off at some point outside the confined area whenever the torch is not to be used for a substantial period of time, such as during lunch hour or overnight. Where practicable the torch and hose shall also be removed from the confined space.

(vii) *Warning sign.* After welding operations are completed, the welder shall mark the hot metal or provide some other means of warning other workers.

(f) *Health protection and ventilation.*—1) *General.*—(i) *Contamination.* The requirements in this paragraph have been established on the basis of the following three factors in arc and gas welding which govern the amount of contamination to which welders may be exposed:

(a) Dimensions of space in which welding is to be done (with special regard to height of ceiling).

(b) Number of welders.

(c) Possible evolution of hazardous fumes, gases, or dust according to the metals involved.

(ii) *Ventilation.* It is recognized that in individual instances other factors may be involved in which case ventilation or respiratory protective devices should be provided as needed to meet the equivalent requirements of this section. Such factors would include:

(a) Atmospheric conditions.

(b) Heat generated.

(c) Presence of volatile solvents.

(iii) *Screens.* When welding must be performed in a space entirely screened on all sides, the screens shall be so arranged that no serious restriction of ventilation exists. It is desirable to have the screens so mounted that they are about 2 feet above the floor unless the work is performed at so low a level that the screen must be extended nearer to the floor to protect nearby workers from the glare of welding.

(iv) *Maximum allowable concentration.* Local exhaust or general ventilating systems shall be provided and arranged to keep the amount of toxic fumes, gases, or dusts below the maximum allowable concentration as specified in § 1910.1000.

(v) *Precautionary labels.* A number of potentially hazardous materials are employed in fluxes, coatings, coverings, and filler metals used in welding and cutting or are released to the atmosphere during welding and cutting. These include but are not limited to the materials itemized in paragraphs (f) (5) through (12) of this section. The suppliers of welding materials shall determine the hazard, if any, associated with the use of their materials in welding, cutting, etc.

(a) All filler metals and fusible granular materials shall carry the following notice, as a minimum, on tags, boxes, or other containers:

CAUTION

Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. Use adequate ventilation. See ANSI Z49.1–1967 Safety in Welding and Cutting published by the American Welding Society.

(b) Brazing (welding) filler metals containing cadmium in significant amounts shall carry the following notice on tags, boxes, or other containers:

WARNING

CONTAINS CADMIUM—POISONOUS FUMES MAY BE FORMED ON HEATING

Do not breathe fumes. Use only with adequate ventilation such as fume collectors, exhaust ventilators, or air-supplied respirators. See ANSI Z49.1–1967.

If chest pain, cough, or fever develops after use, call physician immediately.

Keep children away when using.

(c) Brazing and gas welding fluxes containing fluorine compounds shall have a cautionary wording to indicate that they contain fluorine compounds. One such cautionary wording recommended by the American Welding Society for brazing and gas welding fluxes reads as follows:

CAUTION

CONTAINS FLUORIDES

This flux when heated gives off fumes that may irritate eyes, nose and throat.

1. Avoid fumes—use only in well-ventilated spaces.
2. Avoid contact of flux with eyes or skin.
3. Do not take internally.

(2) *Ventilation for general welding and cutting.*—(i) *General.* Mechanical ventilation shall be provided when welding or cutting is done on metals not covered in subparagraphs (5) through (12) of this paragraph. (For specific materials, see the ventilation requirements of subparagraphs (5) through (12) of this paragraph.)

(a) In a space of less than 10,000 cubic feet per welder.

(b) In a room having a ceiling height of less than 16 feet.

(c) In confined spaces or where the welding space contains partitions, balconies, or other structural barriers to the extent that they significantly obstruct cross ventilation.

(ii) *Minimum rate.* Such ventilation shall be at the minimum rate of 2,000 cubic feet per minute per welder, except where local exhaust hoods and booths as per subparagraph (3) of this paragraph, or airline respirators approved by the U.S. Bureau of Mines for such purposes are provided. Natural ventilation is considered sufficient for welding or cutting

operations where the restrictions in subdivision (i) of this subdivision are not present.

(3) *Local exhaust hoods and booths.* Mechanical local exhaust ventilation may be by means of either of the following:

(i) *Hoods.* Freely movable hoods intended to be placed by the welder as near as practicable to the work being welded and provided with a rate of airflow sufficient to maintain a velocity in the direction of the hood of 100 linear feet per minute in the zone of welding when the hood is at its most remote distance from the point of welding. The rates of ventilation required to accomplish this control velocity using a 3-inch wide flanged suction opening are shown in the following table:

Welding zone	Minimum air flow [1] (cubic feet) minutes	Duct diameter, inches [2]
4 to 6 inches from arc or torch	150	
6 to 8 inches from arc or torch	275	3½
8 to 10 inches from arc or torch	425	4½
10 to 12 inches from arc or torch	600	5½

[1] When welding with cadmium-bearing materials or when cutting such materials increased rates of ventilation may be required.
[2] Nearest half-inch duct diameter based on 4,000 feet per minute velocity in pipe.

(ii) *Fixed enclosure.* A fixed enclosure with a top and not less than two sides which surround the welding or cutting operations and with a rate of airflow sufficient to maintain a velocity away from the welder of not less than 100 linear feet per minute.

(4) *Ventilation in confined spaces—*(i) *Air replacement.* All welding and cutting operations carried on in confined spaces shall be adequately ventilated to prevent the accumulation of toxic materials or possible oxygen deficiency. This applies not only to the welder but also to helpers and other personnel in the immediate vicinity. All air replacing that withdrawn shall be clean and respirable.

(ii) *Airline respirators.* In such circumstances where it is impossible to provide such ventilation, airline respirators or hose masks approved by the U.S. Bureau of Mines for this purpose shall be used.

(iii) *Self-contained units.* In areas immediately hazardous to life, hose masks with blowers or self-contained breathing equipment shall be used. The breathing equipment shall be approved by the U.S Bureau of Mines.

(iv) *Outside helper.* Where welding operations are carried on in confined spaces and where welders and helpers are provided with hose masks, hose masks with blowers or self-contained breathing equipment approved by the U.S. Bureau of Mines, a worker shall be stationed on the outside of such confined spaces to insure the safety of those working within.

(v) *Oxygen for ventilation.* Oxygen shall never be used for ventilation.

(5) *Fluorine compounds—*(i) *General.* In confined spaces, welding or cutting involving fluxes, coverings, or other materials which contain fluorine compounds shall be done in accordance with subparagraph (4) of this paragraph. A fluorine compound is one that contains fluorine, as an element in chemical combination, not as a free gas.

(ii) *Maximum allowable concentration.* The need for local exhaust ventilation or airline respirators for welding or cutting in other than confined spaces will depend upon the individual circumstances. However, experience has shown such protection to be desirable for fixed-location production welding and for all production welding on stainless steels. Where air samples taken at the welding location indicate that the fluorides liberated are below the maximum allowable concentration, such protection is not necessary.

(6) *Zinc—*(i) *Confined spaces.* In confined spaces welding or cutting involving zinc-bearing base or filler metals or metals coated with zinc-bearing materials shall be done in accordance with subparagraph (4) of this paragraph.

(ii) *Indoors.* Indoors, welding or cutting involving zinc-bearing base or filler metals coated with zinc-bearing materials shall be done in accordance with subparagraph (3) of this paragraph.

(7) *Lead—*(i) *Confined spaces.* In confined spaces, welding involving lead-base metals (erroneously called lead-burning) shall be done in accordance with subparagraph (4) of this paragraph.

(ii) *Indoors.* Indoors, welding involving lead-base metals shall be done in accordance with subparagraph (3) of this paragraph.

(iii) *Local ventilation.* In confined spaces or indoors, welding or cutting involving metals containing lead, other than as an impurity, or involving metals coated with lead-bearing materials, including paint shall be done using local exhaust ventilation or airline respirators. Outdoors such operations shall be done using respiratory protective equipment approved by the U.S. Bureau of Mines for such purposes. In all cases, workers in the immediate vicinity of the cutting operation shall be protected as necessary by local exhaust ventilation or airline respirators.

(8) *Beryllium.* Welding or cutting indoors, outdoors, or in confined spaces involving beryllium-containing base or filler metals shall be done using local exhaust ventilation and airline respirators unless atmospheric tests under the most adverse conditions have established that the workers' exposure is within the acceptable concentrations defined by § 1910.1000. In all cases, workers in the immediate vicinity of the welding or cutting operations shall be protected as necessary by local exhaust ventilation or airline respirators.

(9) *Cadmium.—*(i) *General.* Welding or cutting indoors or in confined spaces involving cadmium-bearing or cadmium-coated base metals shall be done using local exhaust ventilation or airline respirators unless atmospheric tests under the most adverse conditions have established that the workers' exposure is within the acceptable concentrations defined by § 1910.1000. Outdoors such operations shall be done using respiratory protective equipment such as fume respirators approved by the U.S. Bureau of Mines for such purposes.

(ii) *Confined space.* Welding (brazing) involving cadmium-bearing filler metals shall be done using ventilation as prescribed in paragraph (3) or (4) of this paragraph if the work is to be done in a confined space.

(10) *Mercury.* Welding or cutting indoors or in a confined space involving metals coated with mercury-bearing materials including paint, shall be done using local exhaust ventilation or airline respirators unless atmospheric tests under the most adverse conditions have established that the workers' exposure is within the acceptable concentrations defined by § 1910.1000. Outdoors such operations shall be done using respiratory protective equipment approved by the U.S. Bureau of Mines for such purposes.

(11) *Cleaning compounds—*(i) *Manufacturer's instructions.* In the use of cleaning materials, because of their possible toxicity or flammability, appropriate precautions such as manufacturers instructions shall be followed.

(ii) *Degreasing. Degreasing* and other cleaning operations involving chlorinated hydrocarbons shall be so located that no vapors from these operations will reach or be drawn into the atmosphere surrounding any welding operation. In addition, trichlorcethylene and perchlorethylene should be kept out of atmospheres penetrated by the ultraviolet radiation of gas-shielded welding operations.

(12) *Cutting of stainless steels.* Oxygen cutting, using either a chemical flux or iron powder or gas-shielded arc cutting of stainless steel, shall be done using mechanical ventilation adequate to remove the fumes generated.

(13) *First-aid equipment.* First-aid equipment shall be available at all times. On every shift of welding operations there should be present employees trained to render first aid. All injuries shall be reported as soon as possible for medical attention. First aid shall be rendered until medical attention can be provided.

(g) *Industrial applications — (1) Transmission pipeline—*(i) *General.* The requirements of paragraphs (b), (e), and (f) of this section shall be observed.

(ii) *Field shop operations.* Where field shop operations are involved for fabrication of fittings, river crossings, road crossings, and pumping and compressor stations the requirements of paragraphs (a), (b), (d), (e), and (f) of this section shall be observed.

(iii) *Electric shock.* When arc welding is performed in wet conditions, or under conditions of high humidity, special protection against electric shock shall be supplied.

(iv) *Pressure testing.* In pressure testing of pipelines, the workers and the public shall be protected against injury by the blowing out of closures or other pressure restraining devices. Also, protection shall be provided against expulsion of loose dirt that may have become trapped in the pipe.

(v) *Construction standards.* The welded construction of transmission pipelines shall be conducted in accordance with the Standard for Welding Pipe Lines and Related Facilities, API Std. 1104–1968.

(vi) *Flammable substance lines.* The connection, by welding, of branches to pipelines carrying flammable substances shall be performed in accordance with Welding or Hot Tapping on Equipment Containing Flammables, API Std. PSD No. 2201–1963.

(vii) *X-ray inspection.* The use of X-rays and radioactive isotopes for the inspection of welded pipeline joints shall be carried out in conformance with the American National Standard Safety Standard for Non-Medical X-ray and Sealed Gamma-Ray Sources, ANSI Z54.1–1963.

(2) *Mechanical piping systems—*(i) *General.* The requirements of paragraphs (a), (b), (d), (e), and (f) of this section shall be observed.

(ii) *X-ray inspection.* The use of X-rays and radioactive isotopes for the inspection of welded piping joints shall be in conformance with the American National Standard Safety Standard for Non-Medical X-ray and Sealed Gamma-Ray Sources, ANSI Z54.1–1963.

[39 FR 23502, June 27, 1974, as amended at 40 FR 23078, May 28, 1975]

§ 1910.253 Sources of standards.

Sec.	Source
1910.251	ANSI Z49.1–1967, Safety in Welding and Cutting.
1910.252	(a) NFPA—51–1969, Welding and Cutting Oxygen Fuel Gas Systems.
	(b) ANSI Z-49.1 1967, Safety in Welding and Cutting.
	(c) NFPA 51B 1962, Cutting and Welding Processes.
	(d) 41 CFR 50–204.7.

§ 1910.254 Standards organizations.

Specific standards of the following organizations have been referenced in this subpart. Copies of the referenced standards may be obtained from the issuing organizations. The names and addresses of the issuing organizations are as follows:

(a) American National Standards Institute (ANSI), 1430 Broadway, New York, NY 10018.

(b) National Fire Protection Association, 470 Atlantic Avenue, Boston, Massachusetts 02210.

(c) Compressed Gas Association, Inc., 500 Fifth Avenue, New York, NY 10036.

(d) American Petroleum Institute, 1801 K Street NW., Washington, DC 20006.

(e) American Welding Society, 345 East 47th Street, New York, NY 10017.

(f) Rubber Manufacturers Association, 444 Madison Avenue, New York, NY 10022.

[39 FR 23502, June 27, 1974, as amended at 40 FR 18426, April 28, 1975]

Subpart R—Special Industries

§ 1910.261 Pulp, paper, and paperboard mills.

(a) *General requirements—*(1) *Application.* This section applies to establishments where pulp, paper, and paperboard are manufactured and converted. This section does not apply to logging and the transportation of logs to pulp, paper, and paperboard mills.

(2) *Standards incorporated by reference.* Standards covering issues of occupational safety and health which have general application without regard to any specific industry are incorporated by reference in paragraphs (b) through (m) of this section and in subparagraphs (3) and (4) of this paragraph and made applicable under this section. Such standards shall be construed according to the rules set forth in § 1910.5.

(3) *General incorporation of standards.* Establishments subject to this section shall comply with the following standards of the American National Standards Institute:

(i) Practice for Industrial Lighting, A11.1—1965 (R–1970).

(ii) Safety Requirements for Floor and Wall Openings, Railings, and Toe Boards, A12.1—1967.

(iii) Scheme for the Identification of Piping Systems, A13.1—1956.

(iv) Safety Code for Portable Wood Ladders, A14.1—1968.

(v) Safety Code for Portable Metal Ladders A14.2—1956.

(vi) Safety Code for Fixed Ladders, A14.3—1956.

(vii) Safety Code for Elevators, Dumbwaiters, and Moving Walks, A17.1—1965, including Supplements A17.1a—1967, A17.1b—1968, A17.1c—1969, and A17.1d—1970.

(viii) Practice for the Inspection of Elevators (Inspector's Manual), A17.2—1960, including Supplements A17.2a—1965 and A17.2b—1967.

(ix) Safety Code for Mechanical Power-Transmission Apparatus, B15.1—1953 (Reaffirmed 1958).

(x) Safety Code for Conveyors, Cableways, and Related Equipment, B20.1—1957.

(xi) Safety Code for Cranes, Derricks, and Hoists, B30.2—1943 (Reaffirmed 1952 and partially revised by B30.2.0—1967 and B30.5—1968).

(xii) Overhead and Gantry Cranes, B30.2.0—1967 (Partial Revision of B30.2—1943).

(xiii) Crawler, Locomotive, and Truck Cranes, B30.5—1968 (Partial Revision of B30.2—1943).

(xiv) Power Piping, B31.1.0—1967 and addenda B31.10a—1969, Fuel Gas Piping, B31.2—1968.

(xv) Safety Code for Powered Industrial Trucks, B56.1—1969.

(xvi) Identification of Gas-Mask Canisters, K13.1—1967.

(xvii) Safety Code for Woodworking Machinery, O1.1—1954 (Reaffirmed 1961).

(xviii) Requirements for Sanitation in Places of Employment, Z4.1—1968.

(xix) Safety Code for Ventilation and Operation of Open-Surface Tanks, Z9.1—1951.

(xx) Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2—1960.

(xxi) Prevention of Sulfur Fires and Explosions, Z12.12—1968.

(xxii) Method of Measurement of Real-Ear Attenuation of Ear Protectors at Threshold, Z24.22—1957.

(xxiii) Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying, Z33.1—1961.

(xxiv) Specifications for Accident Prevention Signs, Z35.1—1968.

(xxv) Practice for Occupational and Educational Eye and Face Protection, Z87.1—1968 (Partial Revision of Z2.1—1959).

(xxvi) Practices for Respiratory Protection, Z88.2—1969.

(xxvii) Safety Requirements for Industrial Head Protection, Z89.1—1969.

(4) *Other standards.* The following standards shall be considered standards under this section:

(i) ASME Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels, including addenda 1969.

(ii) Building Exits Code for Life Safety from Fire, NFPA 101—1970.

(iii) Safety in the Handling and Use of Explosives, IME Pamphlet No. 17, July 1960, Institute of Makers of Explosives.

(b) *Safe practices—*(1) *Guards.* All driving mechanisms, power-transmission apparatus, and prime movers shall be constructed, guarded, and used in conformity with American National Standard B15.1—1953 (Reaffirmed 1958).

(2) *Personal protective clothing and equipment.* Foot protection, shin-guards, hard hats, noise attenuation devices, or other personal protective clothing and equipment shall be worn when the extent of the hazard is such as to warrant their use. Such equipment shall be worn whenever specifically required by other paragraphs of this section. All equipment shall be maintained in accordance with applicable American National Standards. Respirators, goggles, and protective masks, rubber gloves, rubber boots, and other such equipment shall be cleaned and disinfected before being used by another employee. Eye, head, respiratory, and ear protection, where specified, shall conform to American National Standards Z34.22—1957, Z87.1—1968, Z88.2—1969, and Z89.1—1969.

(3) *Floors and platforms.* Floors, platforms, and work surfaces shall be maintained in accordance with American National Standard A12.1—1967.

(4) *Lockouts.* Devices such as padlocks shall be provided for locking out the source of power at the main disconnect switch. Before any maintenance, inspection, cleaning, adjusting, or servicing of equipment (electrical, mechanical, or other) that requires entrance into or close contact with the machinery or equipment, the main power disconnect switch or valve, or both, controlling its source of power or flow of material, shall be locked out or blocked off with padlock, blank flange, or similar device.

(5) *Vessel entering.* Lifelines and safety harness shall be worn by anyone entering closed vessels, tanks, chip bins, and similar equipment, and a person shall be stationed outside in a position to handle the line and to summon assistance in case of emergency. The air in the vessels shall be tested for oxygen deficiency and the presence of both toxic and explosive gases and vapors, before entry into closed vessels, tanks, etc., is permitted. Self-contained air- or oxygen-supply masks shall be readily available in case of emergency. Work shall not be done on equipment under conditions where an injury would result if a valve were unexpectedly opened or closed unless the valve has been locked in a safe position.

(6) *Industrial power trucks.* All industrial power truck operations shall conform to American National Standard B56.1–1969. All forklift trucks shall be provided with overhead guards. All guards shall be designed in compliance with American National Standard B56.1—1969. Design requirements shall provide protection for the liquid petroleum tank.

(7) *Emergency lighting.* Emergency lighting shall be provided wherever it is necessary for employees to remain at their machines or stations to shut down equipment in case of power failure. Emergency lighting shall be provided at stairways and passageways or aisleways used by employees for emergency exit

in case of power failure. Emergency lighting shall be provided in all plant first aid and medical facilities.

(e) *Handling and storage of pulpwood and pulp chips.*—(1) *Handling pulpwood with forklift trucks.* Where large forklift trucks, or lift trucks with slam-jaws, are used in the yard, the operator's enclosed cab shall be provided with an escape hatch, whenever the hydraulic arm blocks escape through the side doors.

(2) *Handling pulpwood with cranes or stackers.* (i) Where locomotive cranes are used for loading or unloading pulpwood, the pulpwood shall be piled so as to allow a clearance of not less than 24 inches between the pile and the end of the cab of any locomotive crane in use, when the cab is turned in any working position.

(ii) The minimum distance of the pulpwood pile from the centerline of a standard-gage track shall be maintained at not less than 8½ feet.

(iii) Logs shall be piled in an orderly and stable manner, with no projection into walkways or roadways.

(iv) Railroad cars shall not be spotted on tracks adjacent to the locomotive cranes unless a 24-inch clearance is maintained, as required in subdivision (i) of this subparagraph.

(v) The handling and storage of other materials shall conform to subdivisions (i) and (ii) of this subparagraph with respect to clearance.

(vi) Equipment and practices shall conform to American National Standards B30.2—1943 (Reaffirmed 1952) and B30.2.0—1967.

(vii) Personal protective equipment for such uses as foot, head, and eye protection shall be required for workers on a job basis.

(viii) No person shall be permitted to walk beneath a suspended load, bucket, or hook.

(3) *Handling pulpwood from ships.* (i) Ladders and gangplanks with railings to boat docks shall meet the requirements of American National Standards A12.1—1967. A14.1—1968, A14.2—1956, and A14.3—1956, and shall be securely fastened in place.

(ii) The hatch tender shall be required to signal the hoisting engineer to move the load only after the men working in the hold are in the clear.

(iii) The air in the ship's hold, tanks, or closed vessels shall be tested for oxygen deficiency and for both toxic and explosive gases and vapors.

(4) *Handling pulpwood from flatcars and all other railway cars.* (i) Railroad flatcars for the conveyance of pulpwood loaded parallel to the length of the car shall be equipped with safety-stake pockets.

(ii) Where pulpwood is loaded crosswise on a flatcar sufficient stakes of sizes not smaller than 4 by 4 inches shall be used to prevent the load from shifting.

(iii) When it is necessary to cut stakes, those on the unloading side should be partially cut through first, and then the binder wires cut on the opposite side. Wire cutters equipped with long extension handles shall be used. No person shall be permitted along the dumping side of the car after the stakes have been cut.

(iv) When steel straps without stakes are used, the steel straps shall be cut from a safe area to prevent employees from being struck by the falling logs.

(v) Flatcars and all other cars shall be chocked during unloading. Where equipment is not provided with hand brakes, rail clamping chocks shall be used.

(vi) A derail shall be used to prevent movement of other rail equipment into cars where persons are working.

(5) *Handling pulpwood from trucks.* (i) Cutting of stakes and binder wires shall be done in accordance with subparagraph 4(iii) of this paragraph.

(ii) Where binder chain and steel stakes are used, the binder chains shall be released and the stakes tripped from the opposite side of the load spillage.

(iii) Where binder chains and crane slings are used, the crane slings shall be attached and taut before the binder chains are released. The hooker shall see that the helper is clear before signaling for the movement of the load.

(6) *Handling pulp chips from railway cars.* (i) All cars shall be securely fastened in place and all employees in the clear before dumping is started.

(ii) Personal protective equipment for such uses as foot, head, and eye protection shall be provided, and employees shall wear the equipment when working in the woodyard. Ear protection shall be provided when the noise level may be harmful.

(7) *Handling pulp chips from trucks and trailers.* (i) All trucks and trailers shall be securely fastened in place and all employees in the clear before dumping is started.

(ii) Personal protective equipment shall be in accordance with subparagraph (6) (ii) of this paragraph.

(8) *Cranes.* (i) Crane boom and load capacities as specified by the manufacturer shall be posted in the cab of the crane in accordance with American National Standards B30.2—1943 (reaffirmed 1968) and B30.2.0—1967.

(ii) A safety device such as a heavy chain or cable at least equal in strength to the lifting cables shall be fastened to the boom and to the frame of the boom crane (if it is other than locomotive) at the base. Alternatively, a telescoping safety device shall be fastened to the boom and to the cab frame, so as to prevent the boom from snapping back over the cab in the event of lifting cable breakage.

(iii) A crane shall not be operated where any part thereof may come within 10 feet of overhead powerlines (or other overhead obstructions) unless the powerlines have been disengaged. The boom shall be painted bright yellow from and including the head sheave to a point 6 feet down the boom towards the cab.

(iv) Standard signals for the operation of cranes shall be established for all movements of the crane, in accordance with American National Standards B30.2—1943 (reaffirmed 1968) and B30.2.0—1967.

(v) Only one member of the crew shall be authorized to give signals to the crane operator.

(vi) All cranes shall be equipped with a suitable warning device such as a horn or whistle.

(vii) A sheave guard shall be provided beneath the head sheave of the boom.

(9) *Traffic warning signs or signals.* (i) A flagman shall direct the movement of cranes or locomotives being moved across railroad tracks or roads, and at any points where the vision of the operator is restricted. The flagman must always remain in sight of the operator when the crane or locomotive is in motion. The blue flag policy shall be used to mark stationary cars day and night. This policy shall include marking the track in advance of the spotted cars (flag for daytime, light for darkness).

(ii) After cars are spotted for loading or unloading, warning flags or signs shall be placed in the center of the track at least 50 feet away from the cars and a derail set to protect workmen in the car.

(10) *Illumination.* Artificial illumination shall be provided when loading or unloading is performed after dark, in accordance with American National Standard A11.1—1965 (R—1970).

(11) *Bridge or dock plates.* The construction and use of bridge or dock plates shall conform to requirements of American National Standard B56.1—1969.

(12) *Barking devices.* When barking drums are employed in the yard, the requirements of paragraph (e) (12) of this section shall apply.

(13) *Hand tools.* Handles of wood hooks shall be locked to the shank to prevent them from rotating.

(14) *Removal of pulpwood.* (i) The ends of a woodpile shall be properly sloped and cross-tiered into the pile. Upright poles shall not be used at the ends of woodpiles. To knock down wood from the woodpile, mechanical equipment shall be used to permit employees to keep in the clear of loosened wood.

(ii) If dynamite is used to loosen the pile, only authorized personnel shall be permitted to handle and discharge the explosive. An electric detonator is preferable for firing; if a fuse is used, it shall be an approved safety fuse with a burning rate of not less than 120 seconds per yard and a minimum length of 3 feet, in accordance with Safety in the Handling and Use of Explosives, IME Pamphlet No. 17, July 1960.

(15) *Belt conveyors.* (i) The sides of the conveyor shall be constructed so that the wood will not fall off.

(ii) Where conveyors cross passageways or roadways, a horizontal platform shall be provided under the conveyor extending out from the sides of the conveyor a distance equal to 1½ times the length of the wood handled. The platform shall extend the width of the road plus 2 feet on each side and shall be kept free of wood and rubbish. The edges of the platform shall be provided with toeboards or other protection to prevent wood from falling, in accordance with American National Standard A12.1—1967.

(iii) All conveyors for pulpwood shall have the inrunning nips between chain and sprockets guarded; also, turning drums shall be guarded.

(iv) Every belt conveyor shall have an emergency stop cable extending the length of the conveyor so that it may be

stopped from any location along the line, or conveniently located stop buttons within 10 feet of each work station, in accordance with American National Standard B20.1—1957.

(16) *Signs.* Where conveyors cross walkways or roadways in the yards, signs reading "Danger—Overhead Conveyor" or an equivalent warning shall be erected, in accordance with American National Standard Z35.1—1968.

(d) *Handling and storage of raw materials other than pulpwood or pulp chips.*—(1) *Personal protective equipment.* (i) Whenever possible, all dust, fumes, and gases incident to handling materials shall be controlled at the source, in accordance with American National Standard Z9.2—1960. Where control at the source is not possible, respirators with goggles or protective masks shall be provided, and employees shall wear them when handling alum, clay, soda ash, lime, bleach powder, sulfur, chlorine, and similar materials, and when opening rag bales.

(ii) When handling liquid acid or alkali, workmen shall be provided with approved eye and face protection and protective clothing, in accordance with American National Standard Z87.1—1968.

(2) *Clearance.* (i) When materials are being piled inside a building and upon platforms, an aisle clearance at least 3 feet greater than the widest truck in use shall be provided.

(ii) Baled paper and rags stored inside a building shall not be piled closer than 18 inches to walls, partitions, or sprinkler heads.

(3) *Piling and unpiling pulp.* (i) Piles of wet lap pulp (unless palletized) shall be stepped back one-half the width of the sheet for each 8 feet of pile height. Sheets of pulp shall be interlapped to make the pile secure. Pulp shall not be piled over pipelines to jeopardize pipes, or so as to cause overloading of floors, or to within 18 inches below sprinkler heads.

(ii) Piles of pulp shall not be undermined when being unpiled.

(iii) Floor capacities shall be clearly marked on all floors.

(4) *Chocking rolls.* (i) Where pulp or paper rolls are of uniform size, cribbing should be constructed to keep rolls from moving.

(ii) Where rolls are pyramided two or more high, chocks shall be installed between each roll on the floor and at every row. The face of each chock should be formed on a radius to conform to the average roll size in use. Where pulp and paper rolls are stored on smooth floors in processing areas, rubber chocks with wooden core shall be used.

(iii) When rolls are decked two or more high, the bottom rolls shall be chocked on each side to prevent shifting in either direction.

(iv) A supply of portable roll chocks should be available to be used where there are gaps in the bottom row of rolls. These should be as light as possible while still providing maximum blocking effect.

(e) *Preparing pulpwood.*—(1) *Gang and slasher saws.* A guard shall be provided in front of all gang and slasher saws to protect workers from wood thrown by saws. A guard shall be placed over tail sprockets.

(2) *Slasher tables.* Saws shall be stopped and power switches shall be locked out and tagged whenever it is necessary for any person to be on the slasher table.

(3) *Slasher drive belts, pulleys, and shafts.* All belts, pulleys, and shafts shall be guarded in accordance with American National Standard B15.1—1953 (Reaffirmed 1958).

(4) *Runway to the jack ladder.* The runway from the pond or unloading dock to the table shall be protected with standard handrails and toeboards. Inclined portions shall have cleats or equivalent nonslip surfacing, in accordance with American National Standard A12.1—1967. Protective equipment shall be provided for persons working over water.

(5) *Guards below table.* Where not protected by the frame of the machine, the underside of the slasher saws shall be enclosed with guards.

(6) *Conveyors.* The requirements of paragraph (c)(15)(iv) of this section shall apply.

(7) *Circular saws (not slasher saws).* Saws shall be provided with standard guards, in accordance with American National Standard 01.1—1954 (Reaffirmed 1961).

(8) *Barker feed.* Each barker shall be equipped with a feed and turnover device which will make it unnecessary for the operator to hold a bolt or log by hand during the barking operation. Eye, ear, and head protection shall be provided for the operator, in accordance with paragraph (b) (2) of this section.

(9) *Guards.* A guard shall be installed around barkers to confine flying particles, in accordance with American National Standard B15.1—1953 (Reaffirmed 1958).

(10) *Stops.* All control devices shall be locked out and tagged when knives are being changed.

(11) *Speed governor.* Water wheels, when directly connected to barker disks or grinders, shall be provided with speed governors, if operated with gate wide open.

(12) *Continuous barking drums.* (i) When platforms or floors allow access to the sides of the drums, a standard railing shall be constructed around the drums. When two or more drums are arranged side by side, proper walkways with standard handrails shall be provided between each set, in accordance with paragraph (b) (3) of this section.

(ii) Sprockets and chains, gears, and trunnions shall have standard guards, in accordance with paragraph (b) (1) of this section.

(iii) Whenever it becomes necessary for a workman to go within a drum, the driving mechanism shall be locked and tagged, at the main disconnect switch, in accordance with paragraph (b) (4) of this section.

(13) *Intermittent barking drums.* In addition to motor switch, clutch, belt shifter, or other power disconnecting device, intermittent barking drums shall be equipped with a device which may be locked to prevent the drum from moving while it is being emptied or filled.

(14) *Hydraulic barkers.* Hydraulic barkers shall be enclosed with strong baffles at the inlet and the outlet. The operator shall be protected by at least five-ply laminated glass.

(15) *Splitter block.* The block upon or against which the wood is rested shall have a corrugated surface or other means provided that the wood will not slip. Wood to be split, and also the splitting block, shall be free of ice, snow, or chips. The operator shall be provided with eye and foot protection. A clear and unobstructed view shall be maintained between equipment and workers around the block and the workers' help area.

(16) *Power control.* Power for the operation of the splitter shall be controlled by a clutch or equivalent device.

(17) *Knot cleaners.* The operators of knot cleaners of the woodpecker type shall wear eye protection equipment. Knot cleaners of the woodpecker type should be enclosed to protect passersby from flying chips.

(18) *Chipper spout.* The feed system to the chipper spout shall be arranged in such a way that the operator does not stand in a direct line with the chipper spout. All chipper spouts shall be enclosed to a height of at least 42 inches from the floor or operator's platform. If practical, a mirror should be installed to enable the chipper feeder to see the chute. When other protection is not sufficient, the operator shall wear a safety belt line. The safety belt line shall be fastened in such a manner as to make it impossible for the operator to fall into the throat of the chipper. Ear protection equipment shall be worn by the operator and others in the immediate area if there is any possibility that the noise level may be harmful (see § 1910.-95).

(19) *Carriers for knives.* Carriers shall be provided and used for transportation of knives.

(f) *Rag and old paper preparation.*—(1) *Ripping and trimming tools.* (i) Hand knives and scissors shall have blunt points, shall be fastened to the table with chain or thong, and shall not be carried on the person but placed safely in racks or sheaths when not in use.

(ii) Hand knives and sharpening steels shall be provided with guards at the junction of the handle and the blade.

(2) *Shredders, cutters, and dusters.* (i) Rotating heads or cylinders shall be completely enclosed except for an opening at the feed side sufficient to permit only the entry of stock. The enclosure shall extend over the top of the feed rolls. It shall be constructed either of solid material or with mesh or openings not exceeding one-half inch and substantial enough to contain flying particles and prevent accidental contact with moving parts. The enclosure shall be bolted or locked into place.

(ii) A smooth-pivoted idler roll resting on the stock or feed table shall be provided in front of feed rolls except when arrangements prevent the operator from standing closer than 36 inches to any part of the feed rolls.

(iii) Any manually fed cutter, shredder, or duster shall be provided with an idler roll as per subdivision (ii) of this subparagraph or the operator shall use special hand-feeding tools.

(iv) Hoods of cutters, shredders, and dusters shall have exhaust ventilation, in accordance with American National Standard Z9.2—1960.

(3) *Blowers.* (i) Blowers used for transporting rags shall be provided with feed hoppers having outer edges located not less than 48 inches from the fan.

(ii) The arrangement of the blower discharge outlets and work areas shall be such as to prevent material from falling on workers.

(4) *Conveyors.* Conveyors and conveyor drive belts and pulleys shall be fully enclosed or, if open and within 7 feet of the floor, shall be constructed and guarded in accordance with paragraph (c)(15) of this section and American National Standards B15.1—1953 (Reaffirmed 1958) and B20.1—1957.

(5) *Dust.* Measures for the control of dust shall be provided, in accordance with American National Standards Z33.1—1961, Z87.1—1968, and Z88.2—1969.

(6) *Rag cookers.* (i) When cleaning, inspection, or other work requires that persons enter rag cookers, all steam and water valves, or other control devices, shall be locked and tagged in the closed or "off" position. Blank flanging of pipelines is acceptable in place of closed and locked valves.

(ii) When cleaning, inspection, or other work requires that persons must enter the cooker, one person shall be stationed outside in a position to observe and assist in case of emergency, in accordance with paragraph (b)(5) of this section.

(iii) Supplied air respirators should be worn by persons when spreading material inside cookers.

(iv) Rag cookers shall be provided with safety valves in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels—1968, with Addenda.

(g) *Chemical processes of making pulp.*—(1) *Sulfur burners.* (i) Sulfur-burner houses shall be safely and adequately ventilated, and every precaution shall be taken to guard against dust explosion hazards and fires, in accordance with American National Standards Z9.2—1960 and Z12.12—1968.

(ii) Nonsparking tools and equipment shall be used in handling dry sulfur.

(iii) Sulfur storage bins shall be kept free of sulfur dust accumulation, and buildings should be designed with explosion relief, in accordance with American National Standard Z9.2—1960.

(iv) Electrical equipment shall be of the explosion-proof type, in accordance with the requirements of §§ 1910.322 through 1910.326.

(v) Sulfur-melting equipment shall not be located in the burner room.

(2) *Protection for employees (acid plants).* (i) Gas masks, fitted with canisters containing absorbents for the particular acids, gases, or mists involved, shall be provided for employees of the acid department.

(ii) Supplied air respirators shall be strategically located for emergency and rescue use.

(iii) During inspection, repairs, or maintenance of acid towers, the workman shall be provided with eye protection, a supplied air respirator, a safety belt, and an attached lifeline. The line shall be extended to an attendant stationed outside the tower opening.

(3) *Acid tower structure.* Outside elevators shall be inspected daily during winter months when ice materially affects safety. Elevators, runways, stairs, etc., for the acid tower shall be inspected monthly for defects that may occur because of exposure to acid or corrosive gases.

(4) *Tanks (acid).* (i) Tanks shall be free of acid and shall be washed out with water, and fresh air shall be blown into them before allowing men to enter. Men entering the tanks shall be provided with supplied air respirators, lifebelts, and attached lifelines.

(ii) A man shall be stationed outside to summon assistance if necessary. All intake valves to a tank shall be blanked off or disconnected.

(5) *Clothing.* Where lime slaking takes place, employees shall be provided with rubber boots, rubber gloves, protective aprons, and eye protection. A deluge shower and eye fountain shall be provided to flush the skin and eyes to counteract lime or acid burns.

(6) *Lead burning.* When lead burning is being done within tanks, fresh air shall be forced into the tanks so that fresh air will reach the face of the worker first and the direction of the current will never be from the source of the fumes toward the face of the workers. Supplied air respirators (constant-flow type) shall be provided.

(7) *Hoops for acid storage tanks.* Hoops of tanks shall be made of rods rather than flat strips and shall be safely maintained by scheduled inspections.

(8) *Chip and sawdust bins.* Steam or compressed-air lances, or other facilities, shall be used for breaking down the arches caused by jamming in chip lofts. No worker shall be permitted to enter a bin unless provided with a safety belt, with line attached, and an attendant stationed at the bin to summon assistance.

(9) *Exits (digester building).* At least one unobstructed exit at each end of the room shall be provided on each floor of a digester building.

(10) *Gas masks (digester building).* Gas masks shall be available. These masks shall furnish adequate protection against sulfurous acid and chlorine gases, and shall be inspected and tested at frequent intervals, not to exceed 1 month, in accordance with American National Standards Z87.1—1968, and Z88.2—1969.

(11) *Elevators.* (i) Elevators shall be constructed in accordance with American National Standard A17.1–1965.

(ii) Elevators shall be equipped with gas masks for the maximum number of passengers.

(iii) Elevators shall be equipped with an alarm system to advise of failure.

(12) *Blowoff valves and piping.* (i) The blowoff valve of a digester shall be arranged so as to be operated from another room, remote from safety valves.

(ii) Through bolts instead of cap bolts shall be used on all digester pipings.

(iii) Heavy duty pipe, valves, and fittings shall be used between the digester and blow pit. These valves, fittings, and pipes shall be inspected at least semiannually to determine the degree of deterioration and should be replaced when necessary.

(iv) Digester blow valves shall be pinned or locked in closed position throughout the entire cooking period.

(13) *Blow pits and blow tanks.* (i) Blow-pit openings shall be preferably on the side of the pit instead of on top. When located on top, openings shall be as small as possible and shall be provided with railings, in accordance with American National Standard A12.1—1967.

(ii) A specially constructed ladder shall be used for access to blow pits, to be constructed so that the door of the blow pit cannot be closed when the ladder is in place; other means shall be provided to prevent the closing of the pit door when anyone is in the pit.

(iii) A signaling device shall be installed in the digester and blow-pit rooms and chip bins to be operated as a warning before and while digesters are being blown.

(iv) Blow-pit hoops shall be maintained in a safe condition.

(14) *Blowing digester.* (i) Blowoff valves shall be opened slowly.

(ii) After the digester has started to be blown, the blowoff valve shall be left open, and the hand plate shall not be removed until the digester cook signals the blow-pit man that the blow is completed. Whenever it becomes necessary to remove the hand plate to clear stock, operators shall wear eye protection equipment and protective clothing to guard against burns from hot stock.

(iii) Means shall be provided whereby the digester cook shall signal the man in the chip bin before starting to load the digester.

(iv) When a digester is to be blown, or is blowing, red warning lights should be lighted, and these warning lights should be located in such a manner as to alert all personnel to leave whose duties do not require them to be in the vicinity of the digester during this operation.

(15) *Inspecting and repairing digester.* (i) Valves controlling lines leading into a digester shall be locked out and tagged. The keys to the locks shall be in the possession of a person or persons doing the inspecting or making repairs.

(ii) Fresh air shall be blown into the digester constantly while workmen are inside. Supplied air respirators shall be available in the event the fresh air supply fails or is inadequate.

(iii) No inspector shall enter a digester unless a lifeline is securely fastened to his body by means of a safety belt and at least one other experienced employee is stationed outside the digester to handle the line and to summon assistance. All ladders and lifelines shall be inspected before each use.

(iv) The concentration of lead dust in the air shall not exceed the limits specified in § 1910.1000.

(v) All employees entering digesters for inspection or repair work shall be provided with protective headgear. Eye protection and dust masks shall be provided to workmen while the old brick lining is being removed, in accordance with American National Standards, Z87.1—1968, Z88.2—1969, and Z89.1—1969.

(vi) Sanitary facilities shall be provided as specified in American National Standard Z4.1—1968.

(16) *Pressure tanks-accumulators (acid).* (i) Safety regulations governing inspection and repairing of pressure tanks-accumulators (acid) shall be the same as those specified in subparagraph (15) of this paragraph.

(ii) The pressure tanks-accumulators shall be inspected twice annually. (See the ASME Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels—1968, with Addenda.)

(17) *Pressure vessels (safety devices).* (i) A safety valve shall be installed in a separate line from each pressure vessel; no hand valve shall be installed between this safety valve and the pressure vessel. Safety valves shall be checked between each cook to be sure they have not become plugged or corroded to the point of being inoperative. (See the ASME Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels—1968, with Addenda.)

(ii) All safety devices shall conform to Paragraph U-2 in the ASME Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels—1968, with Addenda.

(18) *Miscellaneous.* Insofar as the processes of the sulfate and soda operations are similar to those of the sulfite processes, the standard of subparagraphs (1) through (17) of this paragraph shall apply.

(i) Quick operating showers, bubblers, etc., shall be available for emergency use in case of caustic soda burns.

(ii) Rotary tenders, smelter operators, and those cleaning smelt spouts shall be provided with eye protection equipment (fitted with lenses that filter out the harmful rays emanating from the light source) when actively engaged in their duties, in accordance with American National Standard Z87.1—1968.

(iii) Heavy-duty pipe, valves, and fittings shall be used between digester and blow pit. These shall be inspected at least semiannually to determine the degree of deterioration and repaired or replaced when necessary, in accordance with American National Standards B31.1—1955, B31.1a—1963, B31.1.0—1967, and B31.2—1968.

(iv) Smelt-dissolving tanks shall be covered and the cover kept closed, except when samples are being taken.

(v) Smelt tanks shall be provided with vent stacks and explosion doors, in accordance with American National Standard Z9.1—1951.

(19) *Blow lines.* (i) Each digester should have two independent "gas-off" lines and a reducing valve in the high-pressure steam line with a safety valve between the digester and the reducing valve. Two gas-off lines are recommended so that if one plugs with pulp, the other may be used, and the hazard of unplugging with the digester under pressure overcome. With the installation of a reducing valve and a safety valve, it is improbable that pressure will exceed the maximum allowable working pressure of the digester.

(ii) Where the blow-off lines from several digesters lead into one pipe, the handles of all cocks should be set uniformly, or some equivalent arrangement should be provided so that a man can see at a glance whether all cocks are set right or not. If valves instead of cocks are provided, a type with a rising spindle should be used.

(iii) When blow lines from more than one digester lead into one pipe, the cock or valve of the blow line from the tank being inspected or repaired shall be locked or tagged out, or the line shall be disconnected and blocked off.

(20) *Furnace room.* Exhaust ventilation shall be provided where niter cake is fed into a rotary furnace and shall be so designed and maintained as to keep the concentration of hydrogen sulfide gas below the parts per million listed in § 1910.1000.

(21) *Inspection and repair of tanks.* All piping leading to tanks shall be blanked off or valved and locked or tagged. Any lines to sewers shall be blanked off to protect workers from air contaminants.

(22) *Welding.* Welding on blow tanks, accumulator tanks, or any other vessels where turpentine vapor or other combustible vapor could gather shall be done only after the vessel has been completely purged of fumes. Fresh air shall be supplied workers inside of vessels.

(23) *Turpentine systems and storage tanks.* Nonsparking tools and ground hose shall be used when pumping out the tank. The tank shall be surrounded by a berm or moat.

(h) *Bleaching.*—(1) *Bleaching engines.* Bleaching engines, except the Bellmer type, shall be completely covered on the top, with the exception of one small opening large enough to allow filling but too small to admit a man. This opening

should be covered by a door and guarded with standard guardrail and toeboards. Platforms leading from one engine to another shall have standard guardrails, in accordance with American National Standard A12.1—1967.

(2) *Bleach mixing rooms.* (i) The room in which the bleach powder is mixed shall be provided with adequate exhaust ventilation, located at the floor level, in accordance with American National Standard Z9.1—1951.

(ii) Chlorine gas shall be carried away from the work place and breathing area by an exhaust system. The gas shall be rendered neutral or harmless before being discharged into the atmosphere. The requirements of American National Standard Z9.2—1960 shall apply to this subdivision.

(iii) Gas masks shall be provided for emergency use, in accordance with American National Standards K13.1—1967 and Z88.2—1969.

(iv) For emergency and rescue work, independent self-contained oxygen masks or supplied air equipment shall be provided (See American National Standards Z88.2—1969.)

(3) *Liquid chlorine.* (i) Tanks of liquid chlorine shall be stored in an adequately ventilated unoccupied room, where their possible leakage cannot affect workers.

(ii) Gas masks capable of absorbing chlorine shall be supplied, conveniently placed, and regularly inspected, and workers who may be exposed to chlorine gas shall be instructed in their use.

(iii) For emergency and rescue work, independent self-contained oxygen-type masks or supplied air equipment shall be provided.

(iv) At least two exits, remote from each other, shall be provided for all rooms in which chlorine is stored.

(v) Spur tracks upon which tank cars containing chlorine and caustic are spotted and connected to pipelines shall be protected by means of a derail in front of the cars. Blue flag policy should be invoked, in accordance with paragraph (c)(9) of this section.

(vi) All chlorine, caustic, and acid lines shall be marked for positive identification, in accordance with American National Standard A13.1—1967.

(4) *Bagged or drummed chemicals.* Bagged or drummed chemicals require efficient handling to prevent damage and spillage. Certain oxidizing chemicals used in bleaching pulp and also in some sanitizing work require added precautions for safety in storage and handling. In storage, these chemicals must be isolated from combustible materials and other chemicals with which they will react, such as acids. They must also be kept dry, clean and uncontaminated.

(i) *Mechanical pulp process.*—(1) *Pulp grinders.* (i) Water wheels directly connected to pulp grinders shall be provided with speed governors limiting the peripheral speed of the grinder to that recommended by the manufacturer.

(ii) Doors of pocket grinders shall be arranged so as to keep them from closing accidentally.

(2) *Bulting saws.* Hood guards shall be provided on bulting saws, in accordance with American National Standard O1.1—1954 (reaffirmed 1961).

(3) *Floors and platforms.* The requirements of paragraph (b)(3) of this section shall apply.

(4) *Personal protection.* Persons exposed to falling material shall wear eye, head, foot, and shin protection equipment, in accordance with American National Standards Z87.1—1968, Z88.2—1969, Z89.1—1969, and Z41.1—1967.

(j) *Stock preparation.*—(1) *Pulp shredders.* (i) Cutting heads shall be completely enclosed except for an opening at the feed side sufficient to permit only entry of stock. The enclosure shall be bolted or locked in place. The enclosure shall be of solid material or with mesh or other openings not exceeding one-half inch.

(ii) Either a slanting feed table with its outer edge not less than 36 inches from the cutting head or an automatic feeding device shall be provided.

(iii) Repairs for cleaning of blockage shall be done only when the shredder is shutdown and control devices locked.

(iv) All power-driven mechanisms shall be guarded in accordance with paragraph (b)(1) of this section.

(2) *Pulp conveyors.* Pulp conveyors and conveyor drive belts and pulleys shall be fully enclosed, or if open and within 7 feet of the floor, shall be constructed and guarded in accordance with American National Standard B20.1—1957.

(3) *Floors, steps, and platforms.* The requirements of paragraph (b)(3) of this section shall apply.

(4) *Beaters.* (i) Beater rolls shall be provided with covers.

(ii) Guard rails 42 inches high shall be provided around beaters where tub tops are less than 42 inches from the floor, in accordance with paragraph (b)(3) of this section and American National Standard A12.1—1967.

(iii) When cleaning, inspecting, or other work requires that persons enter the beaters, all control devices shall be locked or tagged out, in accordance with paragraph (b)(4) of this section.

(iv) When beaters are fed from floor above, the chute opening, if less than 42 inches from the floor, shall be provided with a complete rail or other enclosure. Openings for manual feeding shall be sufficient only for entry of stock and shall be provided with at least two permanently secured crossrails, in accordance American National Standard A12.1—1967.

(v) When beaters are fed manually from the floor above, conveniently located emergency stop devices should be provided at the top level.

(vi) Floors around beaters shall be provided with sufficient drainage to remove wastes.

(5) *Pulpers.* (i) All pulpers having the top or any other opening of vessel less than 42 inches from the floor or work platform shall have such openings guarded by railed or other enclosures. For manual charging, openings shall be sufficient only to permit the entry of stock and shall be provided with at least two permanently secured crossrails, in accordance with American National Standard A12.1—1967.

(ii) When cleaning, inspecting, or other work requires that persons enter the pulpers, they shall be equipped with safety belt and lifeline, and one person shall be stationed outside at a position to observe and assist in case of emergency.

(iii) When cleaning, inspecting, or other work requires that persons enter pulpers, all steam, water, or other control devices shall be locked or tagged out. Blank flanging and tagging of pipe lines is acceptable in place of closed and locked or tagged valves. Blank flanging of steam and water lines shall be acceptable in place of valve locks.

(iv) All power mechanisms shall be guarded in accordance with American National Standard B15.1—1953 (reaffirmed 1958).

(6) *Stock chests.* (i) All control devices shall be locked or tagged out when persons enter stock chests, in accordance with paragraph (b)(4) of this section.

(ii) All power mechanisms shall be guarded in accordance with paragraph (b)(1) of this section.

(iii) When cleaning, inspecting, or other work requires that persons enter stock chests, they shall be provided with a low-voltage extension light.

(k) *Machine room*—(1) *Emergency stops.* Paper machines shall be equipped with devices that will stop the machine quickly in an emergency. The devices shall consist of push buttons for electric motive power (or electrically operated engine stops), pull cords connected directly to the prime mover, control clutches, or other devices, interlocked with adequate braking action. The devices shall be tested periodically by making use of them when stopping the machine and shall be so located that any person working on the machine can quickly disconnect the machine from the source of power in case of emergency.

(2) *Drives.* (i) All drives, pulleys, couplings, and shafts on equipment requiring service while operating shall have standard guards in accordance with paragraph (b)(1) of this section.

(ii) All drives shall be provided with lockout devices at the power switch which interrupts the flow of current to the unit.

(iii) All ends of rotating shafts including dryer drum shafts shall be completely guarded.

(iv) All accessible disengaged doctor blades should be covered.

(v) All exposed shafts shall be guarded. Crossovers shall be provided.

(vi) Oil cups and grease fittings shall be placed in a safe area remote from nip and heat hazards.

(3) *Protective equipment.* Face shields, aprons, and rubber gloves shall be provided for workmen handling acids in accordance with paragraphs (b)(2) and (d)(1) of this section.

(4) *Walkways.* Steps and footwalks along the fourdrinier and press section shall have nonslip surfacing and be complete with standard handrails, wher practical, in accordance with paragraph (b)(3) of this section.

(5) *Floor openings.* All flush floor openings in the bottom of the wire pit should be guarded with a barrier-type guard.

(6) *Steps.* Steps of uniform rise and tread with nonslip surfaces shall be provided at each press in accordance with American National Standard A12.1—1967.

starting paper into the nip or drum-type reels.

(26) *Inrunning nip.* (i) Where the nipping points of all drum winders and rewinders is on the operator's side, it shall be guarded by barrier guards interlocked with the drive mechanism.

(ii) A zero speed switch should be installed to prevent the guard from being raised while the roll is turning.

(27) *Core collars.* Set screws for securing core collars to winding and unwinding shafts shall not protrude above the face of the collar. All edges of the collar with which an operator's hand comes in contact shall be beveled to remove all sharp corners.

(28) *Slitter knives.* Slitter knives shall be guarded so as to prevent accidental contact. Carriers shall be provided and used for transportation of slitter knives.

(29) *Winder shaft.* All shafts should be equipped with a winder collar guide. The winder shall have a guide rail to align the shaft for easy entrance into the opened rewind shaft bearing housings. If the winder is large and the rewind shafts are too heavy for manual insertion, powered rewind shaft injectors should be employed.

(30) *Core shaft.* When the core shaft weighs in excess of the safe standard, a mechanical device such as a dolly shall be provided for carrying all or part of the weight when it is being removed from the set of paper and placed in the dressing brackets on the winder. In the event that the force required to extract the shaft from the cores is excessive, even though the weight of the shaft is being supported, a powered shaft puller should be employed to relieve the operator of physical strain.

(31) *Winder area.* A nonskid surface shall be provided in the front vicinity of the winder to prevent accidental allipping.

(32) *Radiation.* Special standards regarding the use of radiation equipment shall be posted and followed as required by § 1910.96.

(l) *Finishing room*—(1) *Cleaning rolls.* Rolls shall be cleaned only on the outrunning side.

(2) *Emergency stops.* Electrically or manually operated quick power disconnecting devices, interlocked with braking action, shall be provided on all operating sides of the machine within easy reach of all employees. These devices shall be tested by making use of them when stopping the machine.

(3) *Core collars.* The requirements of paragraph (k)(27) of this section and the American National Standard B15.1—1953 (reaffirmed 1958) shall apply.

(4) *Elevators.* These shall be accordance with American National Standard A17.1—1965.

(5) *Control panels.* The requirements of paragraph (k)(22) of this section shall apply.

(6) *Guillotine-type cutters.* (i) Each guillotine-type cutter shall be equipped with a control which requires the operator and his helper, if any, to use both hands to engage the clutch.

(ii) Each guillotine-type cutter shall be equipped with a nonrepeat device.

(iii) Carriers shall be provided and used for transportation of guillotine-type cutter knives.

(7) *Rotary cutter.* (i) On single-knife machines a guard shall be provided at a point of contact to the knife.

(ii) On duplex cutters the protection required for single-knife machines shall be provided for the first knife, and a hood shall be provided for the second knife.

(iii) Safe access shall be provided to the knives of a rotary cutter by means of catwalks with nonslip surfaces, railings, and toeboards in accordance with paragraph (b)(3) of this section.

(iv) A guard shall be provided for the spreader or squeeze roll at the nip side on sheet cutters.

(v) Electrically or manually operated quick power disconnecting devices with adequate braking action shall be provided on all operating sides of the machine within easy reach of all operators.

(vi) The outside slitters shall be guarded.

(8) *Platers.* (i) A guard shall be arranged across the face of the rolls to serve as a warning that the operator's hand is approaching the danger zone.

(ii) A quick power disconnecting device shall be installed on each machine within easy reach of the operator.

(9) *Finishing room rewinders.* (i) The nipping points of all drum winders and rewinders located on the operator's side shall be guarded by either automatic or manually operated barrier guards of sufficient height to protect fully anyone working around them. The barrier guard shall be interlocked with the drive mechanism to prevent operating above jog speed without the guard in place.

A zero speed switch should be installed to prevent the guard from being raised while the roll is turning.

(7) *Plank walkways.* A removable plank shall be provided along each press, with standard guardrails installed. The planks shall have nonslip surfaces in accordance with paragraph (b)(3) of this section.

(8) *Dryer lubrication.* If a gear bearing must be oiled while the machine is in operation, an automatic oiling device to protect the oiler shall be provided, or oil cups and grease fittings shall be placed along the walkways out of reach of hot pipes and dryer gears.

(9) *Levers.* All levers carrying weights shall be constructed so that weights will not slip or fall off.

(10) *First dryer.* Either a permanent guardrail or apron guard or both shall be installed in front of the first dryer in each section in accordance with paragraph (b)(1) of this section.

(11) *Steam and hot-water pipes.* All exposed steam and hot-water pipes within 7 feet of the floor or working platform or within 15 inches measured horizontally from stairways, ramps, or fixed ladders shall be covered with an insulating material, or guarded in such manner as to prevent contact.

(12) *Dryer gears.* Dryer gears shall be guarded excepting where the oilers' walkway is removed out of reach of the gears' nips and spokes and hot pipes in accordance with American National Standard B15.1—1953 (reaffirmed 1958).

(13) *Broke hole.* (i) A guardrail shall be provided at broke holes in accordance with American National Standard A12.1—1967.

(ii) Where pulpers are located directly below the broke hole on a paper machine and where the broke hole opening is large enough to permit a worker to fall through, any employee pushing broke down the hole shall wear a safety belt attached to a safety belt line. The safety belt line shall be fastened in such a manner that it is impossible for the person to fall into the pulper.

(iii) An alarm bell or a flashing light shall be actuated before dropping material through the broke hole.

(14) *Feeder belt.* A feeder belt or other effective device shall be provided for starting paper through the calendar stack.

(15) *Steps.* Steps or ladders of uniform rise and tread with nonslip surfaces shall be provided at each calendar stack. Handrails and hand grips shall be provided at each calendar stack in accordance with American National Standard A12.1—1967.

(16) *Grounding.* All calendar stacks and spreader bars shall be grounded as protection against shock induced by static electricity in accordance with the requirements of § 1910.314.

(17) *Sole plates.* All exposed sole plates between dryers, calenders, reels, and rewinders shall have a nonskid surface.

(18) *Nip points.* The hazard of the nip points on all calender rolls shall be eliminated or minimized by means of an effective barrier device, or by feeding the paper into the rolls by means of a rope carrier, air jets, or hand feeding devices. Nips where paper is not being fed into the calender should be protected by barriers. Adequate nip warning signs should be used at all nip points that cannot be guarded physically.

(19) *Platforms.* (i) A nonslip walkway with standard handrail should be provided on both sides of the stacks, in accordance with the American National Standard A12.1—1967.

(ii) A nonslip platform should also be provided at the top of the calender stack if access to that area is required for changing rolls.

(20) *Scrapers.* Alloy steel scrapers with pullthrough blades approximately 3 by 5 inches in size shall be used to remove "scabs" from calender rolls.

(21) *Illumination.* Permanent lighting shall be installed in all areas where employees are required to make machine adjustments and sheet transfers in accordance with the American National Standard A11.1—1965 (R 1970).

(22) *Control panels.* Floor stand panels should be protected from being hit by moving equipment. All control panel handles and buttons shall be protected from accidental contact.

(23) *Space between reels.* On stack reels, a clearance of at least 8 inches between the reels of paper shall be maintained.

(24) *Lifting reels.* (i) The reels shall stop rotating before being lifted from bearings.

(ii) All lifting equipment (clamps, cables, and slings) shall be maintained in a safe condition and inspected regularly.

(iii) Reel shafts with square block ends shall be guarded.

(25) *Feeder belts.* Feeder belts, carrier ropes, air carriage, or other equally effective means shall be provided for

(ii) A nonskid surface shall be provided in front of the rewinder to prevent an employee from slipping in accordance with paragraph (b)(3) of this section.

(iii) Mechanical lifting devices shall be provided for placing and removing rolls from the machine.

(10) *Control panels.* The requirements of paragraph (k)(22) of this section shall apply.

(11) *Roll-type embosser.* The nipping point located on the operator's side shall be guarded by either automatic or manually operated barrier guards interlocked with the drive.

(12) *Sorting and counting tables.* (i) Tables shall be smooth and free from splinters, with edges and corners rounded.

(ii) Paddles shall be smooth and free from splinters.

(13) *Roll splitters.* The nip point and cutter knife shall be guarded by either automatic or manually operated barrier guards.

(m) *Materials handling*—(1) *Hand trucks.* No person shall be permitted to ride on a powered hand truck unless it is so designed by the manufacturer. A limit switch shall be on operating handle—30 degrees each way from a 45-degree angle up and down.

(2) *Power trucks.* Power trucks shall comply with American National Standard B56.1—1969. Adequate ventilation shall be provided and the trucks properly maintained, so that dangerous concentrations of carbon monoxide cannot be generated, especially in warehouses or other isolated areas of a plant.

(3) *Cartons.* The carton-stitching machine shall be guarded to prevent the operator from coming in contact with the stitching head.

(4) *Banding of skids, cartons, cases, etc.* Banders and helpers shall wear eye protection equipment in accordance with paragraph (b)(2) of this section.

(5) *Unloading cars or trucks.* (i) Where steel bands or wires are used in boxcars or trucks, all loaders and helpers shall wear eye protection in accordance with paragraph (b)(2) of this section.

(ii) The construction and use of bridge or dock plates shall conform to the requirements of American National Standard B56.1—1969.

(iii) Flag signals, derails, or other protective devices shall be used to protect men during switching operations. The blue flag policy shall be invoked according to paragraph (c)(9)(i) of this section.

(n) *Effective dates.* (1) The provisions of this § 1910.261 shall become effective on August 27, 1971, except as provided in the remaining subparagraphs of this paragraph.

(2) The following provisions shall become effective on February 15, 1972: § 1910.261 (a)(8), (b)(8), (f)(3)(iv), (f)(5), (g)(1)(iv), (g)(11)(i), (j)(3)(iv), (k)(12), (k)(32), and (m)(2).

(3) Notwithstanding anything in subparagraph (1), (2), or (4) of this paragraph, any provision in any other paragraph of this section which contains in itself a specific effective date or time limitation shall become effective on such date or shall apply in accordance with such limitation.

(4) Notwithstanding subparagraph (1) of this paragraph, if any standard in 41 CFR Part 50-204, other than a national consensus standard incorporated by reference in § 50-204.2(a)(1), is or becomes applicable at any time to any employment and place of employment, by virtue of the Walsh-Healey Public Contracts Act, or the Service Contract Act of 1965, or the National Foundation on Arts and Humanities Act of 1965, any corresponding established Federal standard in this § 1910.261 which is derived from 41 CFR Part 50-204 shall also become effective, and shall be applicable to such employment and place of employment, on the same date.

[39 FR 23502, June 27, 1974, as amended at 40 FR 23073, May 28, 1975]

§ 1910.262 Textiles.

(a) *Application requirements*—(1) *Application.* The requirements of this subpart for textile safety apply to the design, installation, processes, operation, and maintenance of textile machinery, equipment, and other plant facilities in all plants engaged in the manufacture and processing of textiles, except those processes used exclusively in the manufacture of synthetic fibers.

(2) *Standards incorporated by reference.* Standards covering issues of occupational safety and health which are of general application without regard to any specific industry are incorporated by reference in paragraphs of this section and made applicable to textiles. All such standards shall be construed according to the rules of construction set out in § 1910.5.

(b) *Definitions applicable to this section*—(1) *Belt shifter.* A "belt shifter"

is a device for mechanically shifting a belt from one pulley to another.

(2) *Belt shifter lock.* A "belt shifter lock" is a device for positively locking the belt shifter in position while the machine is stopped and the belt is idling on the loose pulleys.

(3) *Calender.* A "calender" in essence consists of a set of heavy rollers mounted on vertical side frames and arranged to pass cloth between them. Calenders may have two to ten rollers, or bowls, some of which can be heated.

(4) *Embossing calender.* An "embossing calender" is a calender with two or more rolls, one of which is engraved for producing figured effects of various kinds on a fabric.

(5) *Cans (drying).* Drying "cans" are hollow cylindrical drums mounted in a frame so they can rotate. They are heated with steam and are used to dry fabrics or yarn as it passes around the perimeter of the can.

(6) *Carbonizing.* "Carbonizing" means the removing of vegetable matter such as burns, straws, etc., from wool by treatment with acid, followed by heat. The undesired matter is reduced to a carbon-like form which may be removed by dusting or shaking.

(7) *Card.* A "card" machine consists of cylinders of various sizes—and in certain cases flats—covered with card clothing and set in relation to each other so that fibers in staple form may be separated into individual relationship. The speed of the cylinders and their direction of rotation varies. The finished product is delivered as a sliver. Cards of different types are: The revolving flat card, the roller-and-clearer card, etc.

(8) *Card clothing.* "Card clothing" is the material with which many of the surfaces of a card are covered; e.g., the cylinder, doffer, etc. It consists of a thick foundation material, usually made of textile fabrics, through which are pressed many fine, closely spaced, specially bent wires.

(9) *Comber.* A "comber" is a machine for combing fibers of cotton, wool, etc. The essential parts are a device for feeding forward a fringe of fibers at regular intervals and an arrangement of combs or pins which, at the right time, pass through the fringe. All tangled fibers, short fibers, and neps are removed and the long fibers are laid parallel.

(10) *Combing machinery.* "Combing machinery" is a general classification, including combers, sliver lap machines, ribbon lap machines, and gill boxes, but excluding cards.

(11) *Cutter (rotary staple).* A rotary staple "cutter" is a machine consisting of one or more rotary blades used for the purpose of cutting textile fibers into staple lengths.

(12) *Exposed to contact.* "Exposed to contact" shall mean that the location of an object, material, nip point, or point of operation is such that a person is liable to come in contact with it in his normal course of employment.

(13) *Garnett machine.* A "Garnett machine" means any of a number of types of machines for opening hard twisted waste of wool, cotton, silk, etc. Essentially, such machines consist of a lickerin; one or more cylinders, each having a complement worker and stripper rolls; and a fancy roll and doffer. The action of such machines is somewhat like that of a wool card, but it is much more severe in that the various rolls are covered with garnett wire instead of card clothing.

(14) *Gill box.* A "gill box" is a machine used in the worsted system of manufacturing yarns. Its function is to arrange the fibers in parallel order. Essentially, it consists of a pair of feed rolls and a series of followers where the followers move at a faster surface speed and perform a combing action.

(15) *Interlock.* An "interlock" is a device that operates to prevent the operation of machine while the cover or door of the machine is open or unlocked, and which will also hold the cover or door closed and locked while the machine is in motion.

(16) *Jig (dye).* A dye "jig" is a machine for dyeing piece goods. The cloth, at full width, passes from a roller through the dye liquor in an open vat and is then wound on another roller. The operation is repeated until the desired shade is obtained.

(17) *Kier.* A "kier" is a large metal vat, usually a pressure type, in which fabrics may be boiled out, bleached, etc.

(18) *Lapper (ribbon).* A ribbon "lapper" is a machine used to prepare laps for feeding a cotton comb; its purpose is to provide a uniform lap in which the fibers have been straightened as much as possible.

(19) *Lapper (sliver).* A sliver "lapper" is a machine in which a number of parallel card slivers are drafted slightly, laid side by side in a compact sheet, and wound into a cylindrical package.

(20) *Loom.* A "loom" is a machine for effecting the interlacing of two series of yarns crossing one another at right angles. The warp yarns are wound on a warp beam and pass through heddles and reed. The filling is shot across in a shuttle and settled in place by reed and lay, and the fabric is wound on a cloth beam.

(21) *Mangle (starch).* A "starch mangle" is a mangle that is used specifically for starching cotton goods. It commonly consists of two large rolls and a shallow open vat with several immersion rolls. The vat contains the starch solution.

(22) *Mangle (water).* A "water mangle" is a calender having two or more rolls used for squeezing water from fabrics before drying. Water mangles also may be used in other ways during the finishing of various fabrics.

(23) *Mule.* A "mule" is a type of spinning frame having a head stock and a carriage as its two main sections. The head stock is stationary. The carriage is movable and it carries the spindles which draft and spin the roving into the yarn. The carriage extends over the whole width of the machine and moves slowly toward and away from the head stock during the spinning operation.

(24) *Nip.* "Nip" shall mean the point of contact between two in-running rolls.

(25) *Openers and pickers.* "Openers and pickers" means a general classification which includes breaker pickers, intermediate pickers, finisher pickers, single process pickers, multiple process pickers, willow machines, card and picker waste cleaners, thread extractors, shredding machines, roving waste openers, shoddy pickers, bale breakers, feeders, vertical openers, lattice cleaners, horizontal cleaners, and any similar machinery equipped with either cylinders, screen section, calender section, rolls, or beaters used for the preparation of stock for further processing.

(26) *Paddler.* A "paddler" consists of a trough for a solution and two or more squeeze rolls between which cloth passes after being passed through a mordant or dye bath.

(27) *Point of operation.* "Point of operation" shall mean that part of the machine where the work of cutting, shearing, squeezing, drawing, or manipulating the stock in any other way is done.

(28) *Printing machine (roller type).* A "roller printing machine" is a machine consisting of a large central cylinder, or pressure bowl, around the lower part of the perimeter of which is placed a series of engraved color rollers (each having a color brough), a furnisher roller, doctor blades, etc. The machine is used for printing fabrics.

(29) *Ranges (bleaching continuous).* "Continuous bleaching ranges" are of several types and may be made for cloth in rope or open-width form. The goods, after wetting out, pass through a squeeze roll into a saturator containing a solution of caustic soda and then to an enclosed J-box. A V-shaped arrangement is attached to the front part of the J-box for uniform and rapid saturation of the cloth with steam before it is packed down in the J-box. The cloth, in a single strand rope form, passes over a guide roll down the first arm of the "V" and up the second. Steam is injected into the "V" at the upper end of the second arm so that the cloth is rapidly saturated with steam at this point. The J-box capacity is such that cloth will remain hot for a sufficient time to complete the scouring action. It then passes a series of washers with a squeeze roll in between. The cloth then passes through a second set of saturator, J-box, and washer, where it is treated with the peroxide solution. By slight modification of the form of the unit, the same process can be applied to open-width cloth.

(30) *Range (mercerizing).* A "mercerizing range" consists generally of a 3-bowl mangle, a tenter frame, and a number of boxes for washing and scouring. The whole setup is in a straight line and all parts operate continuously. The combination is used to saturate the cloth with sodium hydroxide, stretch it while saturated, and washing out most of the caustic before releasing tension.

(31) *Sanforizing machine.* A "sanforizing machine" is a machine consisting of a large steam-heated cylinder, an endless, thick, woolen felt blanket which is in close contact with the cylinder for most of its perimeter, and an electrically heated shoe which presses the cloth against the blanket while the latter is in a stretched condition as it curves around feed-in roll.

(32) *Shearing machine.* A "shearing machine" is a machine used in shearing cloth. Cutting action is provided by a number of steel blades spirally mounted on a roller. The roller rotates in close contact with a fixed ledger blade. There may be from one to six such rollers on a machine.

(33) *Singeing machine.* A "singeing machine" is a machine used particularly

with cotton; it comprises of a heated roller, plate, or an open gas flame. The material is rapidly passed over the roller or the plate or through the open gas flame to remove, fuzz or hairiness on yarn or cloth by burning.

(34) *Slasher.* A "slasher" is a machine used for applying a size mixture to warp yarns. Essentially, it consists of a stand for holding section beams, a size box, one or more cylindrical dryers or an enclosed hot air dryer, and a beaming end for finding the yarn on the loom beams.

(35) *Solvent (industrial organic).* "Industrial organic solvent" means any organic volatile liquid or compound, or any combination of these substances which are used to dissolve or suspend a nonvolatile or slightly volatile substance for industrial utilization. It shall also apply to such substances when used as detergents or cleansing agents. It shall not apply to petroleum products when such products are used as fuel.

(36) *Tenter frame.* A "tenter frame" is a machine for drying cloth under tension. It essentially consists of a pair of endless traveling chains fitted with clips of fine pins and carried on tracks. The cloth is firmly held at the selvages by the two chains which diverge as they move forward so that the cloth is brought to the desired width.

(37) *Warper.* A "warper" is any machine for preparing and arranging the yarns intended for the warp of a fabric, specifically, a beam warper.

(c) *General safety requirements*—(1) *Means of stopping machines.* Every textile machine shall be provided with individual mechanical or electrical means for stopping such machines. On machines driven by belts and shafting, a locking-type shifter or an equivalent positive device shall be used. On operations where injury to the operator might result if motors were to restart after power failures, provision shall be made to prevent machines from automatically restarting upon restoration of power.

(2) *Handles.* Stopping and starting handles shall be designed to the proper length to prevent the worker's hand or fingers from striking against any revolving part, gear guard, or any other part of the machine.

(3) *Machine guarding.* Mechanical power-transmission equipment shall be guarded in conformity with § 1910.219.

(4) *Housekeeping.* Aisles and working spaces shall be kept in good order, clean and free of obstructions in accordance with requirements of § 1910.141.

(5) *Inspection and maintenance.* All guards and other safety devices, including starting and stopping devices, shall be properly maintained.

(6) *Lighting.* Lighting shall conform to American National Standard A11.1—1965.

(7) *Identification of piping systems.* Identification of piping systems shall conform to American National Standard A13.1—1956.

(8) *Identification of physical hazards.* Identification of physical hazards shall be in accordance with the requirements of § 1910.144.

(9) *Steam pipes.* All pipes carrying steam or hot water for process or servicing machinery, when exposed to contact and located within seven feet of the floor or working platform shall be covered with a heat-insulating material, or otherwise properly guarded.

(d) *Openers and pickers*—(1) *Beater guards.* When any opening or picker machinery is equipped with a beater, such beater shall be provided with metal covers which will prevent contact with the beater. Such covers shall be provided with an interlock which will prevent the cover from being raised while the machine is in motion and prevent the operation of the machine while the cover is open.

(2) *Cleanout holes.* Cleanout holes within reaching distance of the fan or picker beater shall have their covers securely fastened and they shall not be opened while the machine is in motion.

(3) *Feed rolls.* The feed rolls on all opening and picking machinery shall be covered with a guard designed to prevent the operator from reaching the nip while the machinery is in operation.

(4) *Removal of foreign ferrous material.* All textile opener lines shall be equipped with magnetic separators, tramp iron separators, or other means for the removal of foreign ferrous material.

(e) *Cotton cards*—(1) *Enclosures.* Cylinder and lickerins shall be completely protected and the doffers should be enclosed.

(2) *Enclosure fastenings.* The enclosures or covers shall be kept in place while the machine is in operation, except when stripping or grinding.

(3) *Stripping rolls.* On operations calling for flat strippings which are allowed to fall on the doffer cover, where such

strippings are removed by hand, the doffer cover shall be kept closed and securely fastened to prevent the opening of the cover while the machine is in operation. When it becomes necessary to clean the cards while they are in motion, a long-handled brush or dust mop shall be used.

(f) *Garnett machines*—(1) *Lickerin.* Garnett lickerins shall be enclosed.

(2) *Fancy rolls.* Garnett fancy rolls shall be enclosed by covers. These shall be installed in a way that keeps worker rolls reasonably accessible for removal or adjustment.

(3) *Underside of machine.* The underside of the garnett shall be guarded by a screen mesh or other form of enclosure to prevent access.

(g) *Spinning mules*—A substantial fender of metal or hardwood shall be installed in front of the carriage wheels, the fender to extend to within one-fourth inch of the rail.

(h) *Slashers*—(1) *Cylinder dryers*—(i) *Reducing valves, safety valves, and pressure gages.* Reducing valves, safety valves, and pressure gages shall conform to the ASME Pressure Vessel Code, Section VIII, Unfired Pressure Vessels, 1968.

(ii) *Vacuum relief valves.* Vacuum relief valves shall conform to the ASME Code for Pressure Vessels, Section VIII, Unfired Pressure Vessels, 1968.

(iii) *Lever control.* When slashers are operated by control levers, these levers shall be connected to a horizontal bar or treadle located not more than 69 inches above the floor to control the operation from any point.

(iv) *Pushbutton control.* Slashers operated by pushbutton control shall have stop and start buttons located at each end of the machine, and additional buttons located on both sides of the machine, at the size box and the delivery end. If calender rolls are used, additional buttons shall be provided at both sides of the machine at points near the nips, except when slashers are equipped with an enclosed dryer.

(v) *Nip guards.* All nip guards shall comply with the requirements of subparagraph (2) (iv) of this paragraph.

(vi) *Cylinder enclosure.* When enclosures or hoods are used over cylinder drying rolls, such enclosures or hoods shall be provided with an exhaust system which will effectively prevent wet air and steam from escaping into the workroom.

(vii) *Expansion chambers.* Slasher kettles and cookers shall be provided with expansion chambers in the covers, or drains, to prevent surging over. Steam-control valves shall be so located that they can be operated without exposing the worker to moving parts, hot surfaces, or steam.

(2) *Enclosed hot air dryer*—(i) *Lever control.* When slashers are operated by control levers, these levers shall be connected to a horizontal bar or treadle located not more than 69 inches above the floor to control the operation from any point.

(ii) *Push-button control.* Slashers operated by push-button control shall have one start button at each end of the machine and stop buttons shall be located on both sides of the machines at intervals spaced not more than 6 feet on centers. Inching buttons should be installed.

(iii) *Dryer enclosure.* The dryer enclosure shall be provided with an exhaust system which will effectively prevent wet air and steam from escaping into the workroom.

(iv) *Nip guards.* All nip guards shall comply with Table R–1.

TABLE R–1

GUARD OPENINGS

Openings in the guard or between the guard and working surface shall not be greater than the following:

Distance of opening from nip point	Maximum width of opening
0 to 1½	½
1½ to 3½	⅝
3½ to 5½	½
5½ to 6½	⅝
6½ to 7½	¾
7½ to 8½	1¼

The measurements in Table R–1 are all in inches.

(v) *Expansion chambers.* Slasher kettles and cookers shall be provided with expansion chambers in the covers, or drains, to prevent surging over. Steam control valves shall be so located that they can be operated without exposing the worker to moving parts, hot surfaces, or steam.

(i) *Warpers*—(1) *Swiveled double-bar gates.* Swiveled double-bar gates shall be installed on all warpers operating in excess of 450 yards per minute. These gates shall be so interlocked that the machine cannot be operated until the gate is in the "closed post. ⁂," except for the purpose of inching or jogging.

(2) *Closed position.* "Closed position" shall mean that the top bar of the gate shall be at least 42 inches from the floor or working platform; and the lower bar shall be at least 21 inches from the floor or working platform; and the gate shall be located 15 inches from the vertical tangent to the beam head.

(j) *Drawing frames, slubbers, roping parts, cotton combers, ring spinning frames, twisters.* Gear housing covers on all installations of drawing frames, slubbers, roving frames, cotton combers, ring spinning frames, and twisters shall be equipped with interlocks.

(k) *Gill boxes*—(1) *Pin guard.* A guard shall be placed ahead of the feed end and shall be so designed that it will prevent the worker's fingers from being caught in the pins of the intersecting fallers.

(2) *Nip guards.* All nip guards shall comply with the requirements of paragraph (h)(2)(iv) of this section.

(l) *Heavy draw boxes, finishers, and speeders used in worsted drawing*—(1) *Band pulley covers.* Covers for band pulleys shall be closed when the machine is in motion.

(2) *Benches or working platforms.* Branches or working platforms approximately 10 inches in height and 8 inches in width should be installed along the entire running length of the machine for the worker to stand on while creeling the machine. Such benches or platforms shall be covered with an abrasive or nonslip material.

(m) *Sliver and ribbon lappers (cotton).* Cover guard. An interlocking cover guard shall be installed over the large calender drums and the lap spool, designed to prevent the operator from coming in contact with the nip.

(n) *Looms*—(1) *Shuttle guard.* Each loom shall be equipped with a guard designed to minimize the danger of the shuttle flying out of the shed.

(2) *Protection for loom fixer.* Provisions shall be made so that every loom fixer can prevent the loom from being started while he is at work on the loom. This may be accomplished by means of a lock, the key to which is retained in the possession of the loom fixer, or by some other effective means to prevent starting the loom.

(o) *Shearing machines.* All revolving blades on shearing machines shall be guarded so that the opening between the cloth surface and the bottom of the guard will not exceed three-eighths inch.

(p) *Continuous bleach range (cotton and rayon).*—(1) *J-box protection.* Each valve controlling the flow of steam, injurious gases, or liquids into a J-box shall be equipped with a chain, lock, and key, so that any worker who enters the J-box can lock the valve and retain the key in his possession. Any other method which will prevent steam, injurious gases, or liquids from entering the J-box while the worker is in it will be acceptable.

(2) *Open-width bleaching.* The nip of all in-running rolls on open-width bleaching machine rolls shall be protected with a guard to prevent the worker from being caught at the nip. The guard shall extend across the entire length of the nip.

(q) *Kiers*—(1) *Reducing valves, safety valves, and pressure gages.* Reducing valves, safety valves, and pressure gages shall conform to the ASME Code for Unfired Pressure Vessels, Section VIII, Unfired/Pressure Vessels, 1968.

(2) *Kier valve protection.* Each valve controlling the flow of steam, injurious gases, or liquids into a kier shall be equipped with a chain, lock, and key, so that any worker who enters the kier can lock the valve and retain the key in his possession. Any other method which will prevent steam, injurious gases, or liquids from entering the kier while the worker is in it will be acceptable.

(r) *Gray and white bins.* On new installations guard rails conforming to § 1910.33 shall be provided where workers are required to plait by hand from the top of the bin so as to protect the worker from falling to a lower level.

(s) *Mercerizing range (piece goods)*—(1) *Stopping devices.* A stopping device shall be provided at each end of the machine.

(2) *Frame ends.* A guard shall be installed at each end of the frame between the in-running chain and the clip opener, to prevent the worker's fingers from being caught.

(3) *Mangle and washers.* The nip at the in-running rolls shall conform to § 1910.264.

(t) *Tenter frames*—(1) *Stopping devices.* A stopping device shall be provided at each end of the machine.

(2) *Frame ends.* A guard shall be installed at each end of the frame at the in-running chain and clip opener.

(3) *Oil cups.* Oil cups shall be safely located to permit easy access.

(u) *Dyeing jigs*—(1) *Stopping devices.* Each dye jig shall be equipped with individual mechanical or electrical means for stopping the machine.

(2) *Roll arms.* Roll arms on jigs shall be built to allow for extra large batches, and to prevent the center bar from being forced off, causing the batch to fall.

(v) *Padders—Nip guards.* All nip guards shall comply with the requirements of paragraph (h)(2)(iv) of this section.

(w) *Drying cans*—(1) *Pressure reducing valves and pressure gages.* Pressure reducing valves and pressure gages shall conform to the ASME Code for Pressure Vessels, Section VIII, 1968, Unfired Pressure Vessels.

(2) *Vacuum collapse.* If cans are not designed to prevent vacuum collapse, each can shall be equipped with one or more vacuum relief valves with openings of sufficient size to prevent the collapse of the can if vacuum occurs.

(x) *Flat-work ironer*—(1) *Feed rolls.* The feed rolls shall be guarded to conform to § 1910.264.

(2) *Pressure rolls.* Pressure rolls shall be covered or guarded to conform to § 1910.264.

(y) *Extractors*—(1) *Centrifugal extractor*—(i) *Cover.* Each extractor shall be equipped with a metal cover.

(ii) *Interlocking device.* Each extractor shall be equipped with an interlocking device that will prevent the cover from being opened while the basket is in motion, and also prevent the power operation of the basket while the cover is open.

(iii) *Brakes.* Each extractor shall be equipped with a mechanically or electrically operated brake to quickly stop the basket when the power driving the basket is shut off.

(iv) *Maximum allowable speed.* Each centrifugal extractor shall be effectively secured in position on the floor or foundation so as to eliminate unnecessary vibration, and should not be operated at a speed greater than the manufacturer's rating, which shall be stamped where easily visible in letters not less than one-quarter inch in height. The maximum allowable speed shall be given in revolutions per minute (rpm).

(2) *Engine drum extractor—Overspeed governor.* Each engine individually driving an extractor shall be provided with an approved engine stop and speed limit governor.

(3) *Squeezer or wringer extractor—Nip guards.* All nip guards shall comply with the requirements of paragraph (h)(2)(iv) of this section.

(z) *Nip guards.* All nip guards for water mangle, starch mangle, backwasher (worsted yarn) crabbing machines, decating machines, shall comply with the requirements of paragraph (h)(2)(iv).

(aa) *Sanforizing and palmer machine.* A safety trip rod, cable, or wire center cord shall be provided across the front and back of all palmer cylinders extending the length of the face of the cylinder. It shall operate readily whether pushed or pulled. This safety trip shall be not more than 72 inches above the level on which the operator stands and shall be readily accessible.

(bb) *Rope washers*—(1) *Splash guard.* Splash guards shall be installed on all rope washers unless the machine is so designed as to prevent the water or liquid from splashing the operator, the floor, or working surface.

(2) *Safety stop bar.* A safety trip rod, cable or wire center cord shall be provided across the front and back of all rope washers extending the length of the face of the washer. It shall operate readily whether pushed or pulled. This safety trip shall be not more than 72 inches above the level on which the operator stands and shall be readily accessible.

(cc) *Laundry washer tumbler or shaker*—(1) *Interlocking device.* Each drying tumbler, each double cylinder shaker or clothes tumbler, and each washing machine shall be equipped with an interlock device which will prevent the power operation of the inside cylinder when the outer door on the case or shell is open, and which will also prevent the outer door on the case or shell from being opened without shutting off the power. This should not prevent the movement of the inner cylinder by means of a hand operated mechanism or an "inching device."

(2) *Means of holding covers or doors in open position.* Each enclosed barrel shall also be equipped with adequate means for holding open the doors or covers of the inner and outer cylinders or shells while it is being loaded or unloaded.

(dd) *Printing machine (roller type)*—(1) *Nip guards.* All nip guards shall

comply with the requirements of paragraph (h)(2)(iv) of this section.

(2) *Crown wheel and roller gear nip protection.* The engraved roller gears and the large crown wheel shall be provided with a protective disc which will enclose the nips of the in-running gears. Individual discs for each nip will be acceptable.

(ee) *Calenders.* The nip at the in-running side of the rolls shall be provided with a guard extending across the entire length of the nip and arranged to prevent the fingers of the workers from being pulled in between the rolls or between the guard and the rolls, and constructed so that the cloth can be fed into the rolls safely.

(ff) *Rotary staple cutters.* A guard shall be installed completely enclosing the cutters to prevent the hands of the operator from reaching the cutting zone.

(gg) *Clothing folding machine.* The crank arm and blade guide rods on both sides of the cloth-folding machines shall be protected from contact by barrier guards constructed to conform to the requirements of § 1910.219.

(hh) *Hand baling machine.* An angle-iron-handle stop guard shall be installed at the right angle to the frame of the machine. The stop guard shall be so designed and so located that it will prevent the handle from traveling beyond the vertical position should the handle slip from the operator's hand when the pawl has been released from the teeth of the takeup gear.

(ii) *Roll bench.* Cleats shall be installed on the ends of roll benches.

(jj) *Cuttle or wing folder (overhead type).* The bottom of the overhead folders shall be located not less than 7 feet from the floor or working surface.

(kk) *Color-mixing room.* Floors in color-mixing rooms shall be constructed to drain easily.

(ll) *Open tanks and vats for mixing and storage of hot or corrosive liquids*—(1) *Protection against falls.* Open tanks and vats containing hot or corrosive liquids shall be protected to conform to the requirements of § 1910.23.

(2) *Shutoff valves.* Boiling tanks, caustic tanks, and hot liquid containers, so located that the operator cannot see the contents from the floor or working area, shall have emergency shutoff valves controlled from a point not subject to danger of splash. Valves shall conform to the ASME Pressure Vessel Code, section VIII, Unfired Pressure Vessels, 1968.

(mm) *Dye kettles and vats.*—Pipes or drains of sufficient capacity to carry the contents safely away from the working area shall be installed where there are dye kettles and vats which may at any time contain hot or corrosive liquids. These shall not empty directly onto the floor.

(nn) *Acid carboys.* Carboys shall be provided with inclinators, or the acid shall be withdrawn from the carboys by means of pumping without pressure in the carboy, or by means of hand operated siphons.

(oo) *Handling caustic soda and caustic potash.* Means shall be provided for handling and emptying caustic soda and caustic potash containers to prevent workers from coming in contact with the caustic (see paragraph (qq) of this section).

(pp) *First aid.* Wherever acids or caustics are used, provision shall be made for a copious and flowing supply of fresh, clean water.

(qq) *Personal protective equipment*—(1) *Personal protective equipment.* Workers engaged in handling acids or caustics in bulk, repairing pipe lines containing acids or caustics, etc., shall be provided with protective occupational (safety) equipment to conform to the requirements of § 1910.132, § 1910.133, and § 1910.134.

(2) Respirators, gas masks, and such appliances, for emergency use only, shall be of a type required by § 1910.134.

(rr) *Workroom ventilation.* In all workrooms in which potentially toxic substances are used, the maximum allowable concentrations listed in § 1910.-1000 shall be maintained. Open surface tanks shall conform to the requirements of § 1910.94(d).

[39 FR 23502, June 27, 1974, as amended at 40 FR 23073, May 28, 1975]

§ 1910.263 Bakery equipment.

(a) *General requirements*—(1) *Application.* The requirements of this section shall apply to the design, installation, operation and maintenance of machinery and equipment used within a bakery.

(2) *Standards incorporated by reference.* Standards covering issues of occupational safety and health which are of general application without regard to any specific industry are incorporated by reference in paragraphs of this section and made applicable to bakeries. All such standards shall be construed

according to the rules of construction set out in § 1910.5.

(b) *Definitions applicable to this section*—(1) *Dumpbin and blender.* The term "dumpbin and blender" applies to those elements of a flour handling system in which flour in bags is first emptied for distribution.

(2) *Flour elevator.* The term "flour elevator" means the conveyor which is used to convey flour in a vertical direction and it includes bucket, spiral screw, or bulkflow conveyors.

(3) *Screw conveyor.* The term "screw conveyor" means the conveyor which is used to convey flour in a horizontal or inclined plane by means of a continuous spiral screw enclosed in a suitable casing which follows the same general contour of the perimeter of the screw.

(4) *Bolting reel.* The term "bolting reel" means a device in which the flour is screened through a rotating drum.

(5) *Sifter.* The term "sifter" means a device in which flour is sifted. It may be of the brush, oscillating, or vibrating type.

(6) *Flour scale.* The term "flour scale" means a scale for weighing flour.

(7) *Flour gate.* The term "flour gate" means the device or devices used to control the delivery of flour.

(8) *Direct fired ovens.* Direct fired ovens are ovens which burn fuel directly inside the baking chamber.

(9) *Direct recirculating ovens.* "Direct recirculating ovens" are ovens which have heating systems consisting of one or more heaters located inside or outside the baking chamber), each heater being equipped with a burner, the products of combustion of which are mixed with spent gases returned from the oven. Combustion gases are circulated through the heater and oven chamber by a fan. An overflow or vent removes part of the spent combustion gases to compensate for fresh combustion gases added by the burner.

(10) *Flue-type ovens.* "Flue-type ovens" are ovens which burn fuel in a furnace which is connected through flues which carry the combustion gases to a stack.

(11) *Indirect multiple-burner ovens.* "Indirect multiple-burner ovens" are ovens which are heated by burners (usually gas) which are totally enclosed in such a way that unburned gases or products of combustion cannot enter the baking chamber.

(12) *Steam-tube ovens.* "Steam-tube ovens" are ovens which are heated by a group of tubes which are partially filled with liquid and sealed at both ends. A small part of each tube is exposed to the heat of a furnace and the larger part placed inside the baking chamber. Heat is transmitted by evaporating liquid in the furnace end of the tube. Steam thus formed travels to the other end of the tube, where the steam condenses and returns to the furnace by gravity.

(13) *Indirect recirculating ovens.* "Indirect recirculating ovens" are ovens which are equipped with a gas tight duct system, a furnace, and a circulating fan. Gases of combustion are circulated through this enclosed system and mixed with fresh combustion gases generated by the burner in the combustion chamber. A vent or overflow removes a portion of the gases to compensate for the fresh gases added by the burner. No unburned gases or products of combustion have access to the baking chamber.

(14) *Electric ovens.* "Electric ovens" are ovens which are heated entirely by passing an electric current through resistance elements.

(c) *General machine guarding*—(1) *Electrical grounding.* The frame of each machine which is driven by an electric motor or has any electrical connection shall be effectively grounded.

(2) *Gears.* All gears shall be completely enclosed regardless of location.

(3) *Sprockets and V-belt drives.* Sprockets and V-belt drives located within reach from platforms or passageways or located within 8 feet 6 inches from the floor shall be completely enclosed.

(4) *Rotating parts.* Lubrication fittings on rotating parts shall be recessed or covered with collars so that the rotating surface will be smooth and flush.

(5) *Lubrication.* Where machinery must be lubricated while in motion, stationary lubrication fittings inside a machine shall be provided with extension piping to a point of safety so that the employee will not have to reach into any dangerous part of the machine when lubricating.

(6) *Removable covers or guards.* Any covers or guards which must be removed for cleaning and adjustment shall be made easily removable in order that they may be removed and replaced with the least effort.

(7) *Ventilation through machine guards.* Where it is necessary to guard

motors or other equipment which require ventilation, guards should be so designed that they will not restrict the circulation of the air.

(8) *Hot pipes.* Exposed hot water and steam pipes shall be covered with insulating material wherever necessary to protect employees from contact.

(d) *Flour-handling equipment.*—(1) *General requirements for flour handling.* (i) Wherever any of the various pieces of apparatus comprising a flour-handling system are run in electrical unity with one another the following safeguards shall apply:

(a) Each apparatus shall be properly safeguarded by of disconnecting means for the motor circuits as required by §§ 1910.312 and 1910.330.

(b) Wherever a flour-handling system is of such size that the beginning of its operation is far remote from its final delivery end, all electric motors operating each apparatus comprising this system shall be controlled at each of two points, one located at each remote end, either of which will stop all motors.

(c) Motor control switches shall be capable of being locked in the open position.

(d) Control circuits for magnetic controllers shall be so arranged that the opening of any one of several limit switches, which may be on an individual unit, will serve to de-energize all of the motors of that unit.

(ii) Removable covers on all flour-handling equipment shall be so designed that the lifting effort shall not be more than 50 pounds.

(iii) Wherever flour-handling systems are of large construction, suitable walkways or platforms or both shall be constructed around and over bins and apparatus, in accordance with the requirements of §§ 1910.22 and 1910.23.

(a) All walkway surfaces shall be maintained in nonslip condition.

(b) Elevated walkways shall have railings and toeboards.

(c) All ladders leading to upper walkways shall be in accordance with the requirements of § 1910.25, § 1910.26, and § 1910.27.

(d) Wherever walkways are near the ceiling construction of the building, where obstruction to head room is lower than normal standing height, proper methods shall be provided to warn any occupant of the walkway. This should be done by means of "tell tales" or other suitable means located ahead of the obstruction. Suitable signs shall also be placed on walkways warning occupants of possible danger.

(iv) All oscillating and vibrating sifters shall be protected with guard rails of suitable height and design.

(v) All mechanical transmission shafting, gearing, and sprocket drives shall be completely guarded, preferably with dust-tight housing. Lubrication fittings shall extend to the outside of the guard.

(vi) All guards shall be readily removable.

(vii) All flour-handling equipment, each individual unit or the entire system collectively, shall be so constructed that all interior or exterior protruding corners are of a rounded nature.

(viii) When Class II hazardous conditions prevail, electric motors, motor controllers, and switches shall be of the type approved for such locations in accordance with the requirements of § 1910.326.

(2) *Bag chutes and bag lifts (bag-arm elevators).* (i) Bag chutes (gravity chutes for handling flour bags) shall be so designed so as to keep to a minimum the speed of flour bags. If the chute inclines more than 30° from the horizontal, there shall be an upturn at the lower end of the chute to slow down the bags.

(ii) Bag-arm elevators with manual takeoff shall be designed to operate at a capacity not exceeding seven bags per minute. The arms on the conveyor chain shall be so spaced as to obtain the full capacity of the elevator with the lowest possible chain speed. There shall be an electric limit switch at the unloading end of the bag-arm elevator so installed as to automatically stop the conveyor chain if any bag fails to clear the conveyor arms.

(iii) The conveyor chain on bag-arm elevators shall travel in a suitable structure and all drums shall be completely guarded, so that in case of a broken chain ling the remainder of the chain will remain within its guides.

(iv) Man lifts shall be prohibited in bakeries. Bag or barrel lifts shall not be used as man lifts.

(3) *Dumpbin and blender.* (i) The dumpbin or blender shall be constructed of metal or other nonsplintering material.

(ii) Openings shall be protected by means of bars or grids. If grids are made of mesh, the openings shall be not more than 3 inches in either length or width. If parallel bars or rods are used, they shall be spaced not more than 3 inches apart on centers.

(iii) Hinged dumpbin covers shall be provided with locks or latches to hold the covers in the open position, so that they will not accidentally fall down while the dumpbin is in operation.

(iv) Dumpbins and blenders shall be so constructed that no separate pits in floors shall be required at the point which connects the final discharge to the usual elevator.

(v) All dumpbin and blender hoods shall be of sufficient capacity to prevent circulation of flour dust outside the hoods.

(vi) All dumpbins shall be of a suitable height from floor to enable the operator to dump flour from bags, without causing undue strain or fatigue. Where the edge of any bin is more than 24 inches above the floor, a bag rest step shall be provided.

(vii) A control device for stopping the dumpbin and blender shall be provided close to the normal location of the operator.

(viii) A screen shall be provided in the suction nozzle over the bin or blender to prevent sacks that are being cleaned from getting into the rotor of the dust collecting fan.

(4) *Flour elevators.* (i) Flour elevators shall be constructed of metal or other nonsplintering material.

(ii) All removable sections of the elevator casing shall be equipped with suitable stationary clamps for quick removal, or shall be equipped with equivalent locking devices which contain no loose parts which may become detached from either the casing or the cover.

(5) *Bolting reels.* (i) Bolting reels shall be constructed of metal or other nonsplintering material, with the exception of the bolting cloth.

(ii) Refuse tailing spouts shall be readily accessible and shall be located at a safe distance from unguarded moving parts.

(6) *Storage bins.* (i) Storage bins shall be constructed of metal or other nonsplintering material.

(ii) Storage bins shall be provided with gaskets and locks or latches to keep the cover closed, or other equivalent devices in order to insure the dust tightness of the cover. Covers at openings where an employee may enter the bin shall also be provided with a hasp and a lock, so located that the employee may lock the cover in the open position whenever it is necessary to enter the bin.

(iii) Storage bins where the side is more than 6 feet in depth shall be provided with standard stationary safety ladders, both inside and outside, to reach from floor level to top of bin and from top of bin to inside bottom, keeping the ladder end away from the moving screw conveyor.

(iv) Loading distribution conveyors shall be located in top of bin centrally unhoused, and all covers for entrance to the bins shall be located away from the loading distribution conveyor.

(v) An electric limit switch or other suitable protective device shall be provided in the top of the bin centrally over the loading screw conveyor on the opposite end of the flour entrance opening. It shall be so designed as to stop the loading screw if an excessive amount of flour is delivered to the bin.

(vi) The main entrance cover of large storage bins located at the interior exit ladder shall be provided with an electric interlock for motors operating both feed and unloading screw, so that these motors cannot operate while the cover is open.

(7) *Screw conveyors.* (i) Screw conveyors shall be constructed of metal or other nonsplintering material.

(ii) Each dead-end screw conveyer shall be provided with an overflow safety gate which will operate an electric limit switch to shut down the conveyer before dangerous pressure of material is built up at the dead end.

(iii) The covers of all screw conveyors shall be made removable in convenient sections, held on with stationary clamps located at proper intervals keeping all covers dust-tight. Where drop or hinged bottom sections are provided this provision shall not apply.

(8) *Sifters.* (i) Enclosures of all types of flour sifters shall be so constructed that they are dust-tight but readily accessible for interior inspection.

(ii) Oscillating and vibrating sifters shall be so constructed that all moving parts are well within the outer frame of the apparatus.

(iii) Refuse tailing spouts of all types of sifters shall be readily accessible and shall be located at a safe distance from unguarded moving parts.

(9) *Flour scales.* (i) Flour scales shall be constructed of metal or other nonsplintering material.

(ii) Where a transparent covering is provided over dial scales it shall be made of a nonshatterable transparent material.

(iii) Traveling or track-type flour scales shall be equipped with bar handles for moving same. The bar should be at least 1 inch in diameter and well away from trolley track wheels.

(iv) All moving trolley wheels located within 8 feet 6 inches of floors or platforms shall be fully guarded on sides and ahead of rotating motion.

(v) The scale cutoff switch shall be totally enclosed and connected to the scale beam in such a manner as to protect the operator from contact.

(vi) Where two or more scales are used on travelling flour scales, interlocks shall be provided so that the gate will not open unless the hopper is below.

(10) *Automatic flour gates.* Automatic flour-gate equipment shall be constructed of metal or other nonsplintering material.

(e) *Mixers.*—(1) *Horizontal dough mixers.* (i) Mixers with external power application shall have all belts, chains, gears, pulleys, sprockets, clutches, and other moving parts completely enclosed.

(ii) Mixers with built-in power units shall have all drive elements enclosed in such a manner as to prevent injury to operators or maintenance personnel performing their normal duties.

(iii) Each mixer shall be equipped with an individual motor and control, and with a conveniently located manual switch to prevent the mixer from being started in the usual manner while the machine is being serviced and cleaned.

(iv) All electrical control stations shall be so located that the operator must be in full view of the bowl in its open position. No duplication of such controls other than a stop switch shall be permitted.

(v) All mixers with power and manual dumping arrangements shall be equipped with safety devices which shall:

(a) Engage both hands of the operator, when the agitator is in motion under power, and while the bowl is opened more than one-fifth of its total opening.

(b) Prevent the agitator from being started, while the bowl is more than one-fifth open, without engaging both hands of the operator;

(c) Permit the operator to have a full view of the bowl opening while he is in the act of maintaining operation of the agitator at any time while the bowl is more than one-fifth open.

(vi) Mixers with power dumping devices shall be arranged so that the bowl opening cannot be closed beyond four-fifths of its total opening unless the operator maintains the control contact which causes the dump motor to complete the bowl closure. Alternatively the control may be so arranged that the operator must keep at least one hand engaged, by holding in a push button, during the entire closure of the mixing bowl.

(vii) Mixers shall be provided with flour-gate operating mechanisms, ingredient openings, and water inlets, which can be conveniently manipulated by the operator from the normal area of activity (either platform or floor) without requiring abnormal reaching, or improvisations which might jeopardise his safety.

(viii) Every mixer shall be equipped with a full enclosure over the bowl which is closed at all times while the agitator is in motion. Only minor openings in this enclosure, such as ingredient doors, flour inlets, etc., each representing less than 1½ square feet in area, shall be capable of being opened while the mixer is in operation.

(ix) No loose access doors and covers weighing more than 2 pounds shall be used on mixers. Such parts shall be hinged or otherwise held in proximity to the openings that they cover.

(x) Overhead covers or doors which are subject to accidental closure shall be counterbalanced to remain in an open position or provided with means to hold them open until positively released by the operator.

(xi) Provision shall be made to bolt mixers solidly to the floor to prevent dislocation or excessive vibration, and no open space between mixers and platforms shall be permitted which may endanger the operator.

(xii) Mixers shall be installed only on substantial foundations which are capable of safely withstanding the live loads incurred in full-capacity mixing operations.

(xiii) Access for lubrication at all points shall be provided so as to avoid contact between the lubricating device or the operator's hands and any moving parts.

(xiv) Any device or mechanism used to return "sponges" to a mixer shall be so interlocked with the mixer as to prevent injury to the operator.

(xv) No electrical pilot or control circuits shall be employed at a potential in excess of 240 volts.

(xvi) A motor-running overcurrent protective device shall be provided for each motor. Undervoltage protection shall be provided in all magnetic controllers.

(xvii) Positive means shall be provided to prevent application of pressure above the stipulated maximum in all mixer cooling jackets.

(xviii) Valves and controls to regulate the coolant in mixer jackets shall be located so as to permit access by the operator without jeopardising his safety.

(2) *Vertical mixers.* (i) Vertical mixers shall comply with subdivisions (i), (ii), (iii), (ix) through (xiii), (xv), (xvi), and (xvii) of subparagraph (1) of this paragraph.

(ii) Positive means shall be provided to prevent injury to the operator during speed-change manipulation.

(iii) Bowl locking devices shall be of a positive type which require the attention of the operator for unlocking.

(iv) Devices shall be made available for moving bowls weighing more than 60 pounds, with contents, into and out of the mixing position on the machine.

(v) Every precaution which does not impair the normal operation of the mixer shall be exercised in providing protection of the operator against injury by the moving agitators.

(f) *Dividers.*—(1) *Pinch and shear points.* All pinch points and shear points from reciprocating or rotating parts of the divider shall be enclosed or guarded, to protect the operator's hands and fingers from these hazards.

(2) *Front guards.* Guards at front of a divider shall be so arranged that the weight of dough can be adjusted without removing the guard.

(3) *Rear of divider.* The back of the divider shall have a complete cover to enclose all of the moving parts, or each individual part shall be enclosed or guarded to remove the separate hazards. The rear cover shall be provided with a limit switch in order that the machine cannot operate when this cover is open. The guard on the back shall be hinged so that it cannot be completely removed and if a catch or brace is provided for holding the cover open, it shall be designed so that it will not release due to vibrations or minor bumping whereby the cover may drop on an employee.

(4) *Oil holes in knife.* The oil holes in the knife at the back of the divider shall be of such size that an employee's finger cannot go through the hole.

(5) *Knife actuating arm.* There shall be a saddle guard or other protective device on any elongated hole in the knife actuating arm at the back of the divider.

(6) *Shear pins.* Dividers shall be equipped with mechanical overload release devices such as sheer pins.

(g) *Moulders.*—(1) *Hoppers.* Mechanical feed moulders shall be provided with hoppers so designed and connected to the proofer that an employee's hands cannot get into the hopper where they will come in contact with the in-running rolls.

(2) *Hand-fed moulders.* Hand-fed moulders shall be provided with a belt-feed device or the hopper shall be extended high enough so that the hands of the operator cannot get into the feed rolls. The top edge of such a hopper shall be well rounded to prevent injury when it is struck or bumped by the employee's hand.

(3) *Stopping devices.* There shall be a stopping device within easy reach of the operator who feeds the moulder and another stopping device within the reach of the employee taking the dough away from the moulder.

(4) *Cleanout holes.* Machines shall be so designed that there is no shear point in close proximity to the cleanout holes.

(5) *Rear of moulders.* At the rear of moulders all revolving shafts shall have round corners or cylindrical surfaces, and all bolts shall be flush. Tie rods shall be far enough from revolving parts to prevent a shearing or pinching hazard.

(6) *Adjustment crank.* Where a removable crank is used to adjust the moulder for different sizes of loaf brackets shall be provided on the side of the machine for holding the crank when it is not in use.

(h) *Manually fed dough brakes.*—(1) *Top-roll protection.* The top roll shall be protected by a heavy gage metal shield extending over the roll to go within 6 inches of the hopper bottom board. The shield may be perforated to permit observation of the dough entering the rolls.

(2) *Emergency stop bar.*—An emergency stop bar shall be provided, and so located that the body of the operator will press against the bar if the operator slips and falls toward the rolls, or if the operator gets his hand caught in the rolls. The bar shall apply the body pres-

sure to open positively a circuit that will deenergize the drive motor. In addition, a brake which is inherently self-engaging by requiring power or force from an external source to cause disengagement shall be activated at the same time causing the rolls to stop instantly. The emergency stop bar shall be checked for proper operation every 30 days.

(i) *Miscellaneous equipment*—(1) *Proof boxes.* All door locks shall be operable both from within and outside the box. Guide rails shall be installed to center the rack as it enters, passes through, and leaves the proof box.

(2) *Fermentation room.* Fermentation room doors shall have nonshatterable wire glass or plastic panels for vision through doors.

(3) *Troughs.* Troughs shall be mounted on antifriction bearing casters thus making it possible for the operator to move and direct the motion of the trough with a minimum of effort.

(4) *Hand trucks.* (i) Casters shall be set back from corners to be out of the way of toes and heels, but not far enough back to cause the truck to be unstable.

(ii) A lock or other device shall be provided to hold the handle in vertical position when the truck is not in use.

(5) *Lift trucks.* A lock or other device shall be provided to hold the handle in vertical position when the truck is not in use.

(6) *Racks.* (i) Sharp splintered or rough corners and edges shall be eliminated.

(ii) Racks shall be equipped with handles so located with reference to the frame of the rack that no part of the operator's hands extends beyond the outer edge of the frame when holding onto the handles.

(iii) Antifriction bearing casters shall be used to give the operator better control of the rack.

(iv) End guards shall be used at shelf levels on proofing racks.

(7) *Conveyors.* (i) Wherever a conveyor passes over a main aisleway, regularly occupied work area, or passageway, the underside of the conveyor shall be completely enclosed to prevent broken chains or other material from falling in the passageway.

(ii) Stop bumpers shall be installed on all delivery ends of conveyors, wherever manual removal of the product carried is practiced.

(iii) Where hazard of getting caught exists a sufficient number of stop buttons shall be provided to enable quick stopping of the conveyor.

(8) *Overhead rail systems.* (i) Handles for operating devices for trolley switches which hang less than 6 feet 8 inches from the floor shall be of pliable material.

(ii) Floor scales. Nonshatterable transparent material shall be used to cover dials.

(9) *Dough chutes.* The entrance to the chute shall be guarded so as to protect the employee from falling into chute, stepping into chute, or tripping over too low an edge of the chute.

(10) *Skids.* (i) All sharp corners or edges shall be eliminated on all metal skids.

(ii) All edges and corners shall be protected on skids to prevent exposed splinters.

(11) *Ingredient premixers, emulsifiers, etc.* (i) All top openings shall be provided with covers attached to the machines. These covers should be so arranged and interlocked that power will be shutoff whenever the cover is opened to a point where the operator's fingers might come in contact with the beaters.

(ii) Portable electrical agitators for ingredient premixers shall have the attachment cord so wired that the agitator will be grounded whenever it is connected to a source of power.

(12) *Chain tackle.* (i) All chain tackle shall be marked prominently, permanently, and legibly with maximum load capacity.

(ii) All chain tackle shall be marked permanently, and legibly with minimum support specification.

(iii) Safety hooks shall be used.

(13) *Trough hoists, etc.* (i) All hoists shall be marked prominently, permanently, and legibly with maximum load capacity.

(ii) All hoists shall be marked permanently and legibly with minimum support specifications.

(iii) Safety catches shall be provided for the chain so that the chain will hold the load in any position.

(iv) Safety hooks shall be used.

(14) *Air-conditioning units.* (i) All sharp corners and edges shall be eliminated.

(ii) On large units with doors to chambers large enough to be entered, all door locks shall be operable from both inside and outside.

(15) *Pan washing tanks.* (i) Counterbalanced hinged covers, or sliding covers, shall be provided.

(ii) The surface of the floor of the working platform shall be maintained in nonslip condition.

(iii) Working platforms shall be kept at least 32 inches below the top of the tank or guardrail.

(iv) All electrical sockets in pan washing rooms shall be nonmetallic and keyless and other electrical equipment shall be moisture proof.

(v) Power ventilated exhaust hoods shall be provided over the tanks.

(16) *Pan washing machines.* Sharp corners and edges shall be eliminated.

(17) *Cake depositors.* All pinch points shall be eliminated, guarded, or shielded so that hands and arms cannot reach these pinch points while the machine is in operation.

(18) *Icing machines.* All pinch points shall be eliminated, or provided with guards or shields so hands and arms cannot reach these pinch points while the machine is in operation.

(19) *Bread coolers, conveyor type.* (i) All pinch points shall be eliminated or guarded.

(ii) Stop bumpers on all delivery ends of conveyors shall be installed wherever manual removal of the product carried is practiced.

(20) *Bread coolers, rack type.* (i) Guardrails shall be installed to the center rack as it enters and leaves the cooler.

(ii) All door locks shall be operable from both within and outside the cooler.

(21) *Bread and cake boxes, trays, etc.* (i) Sharp corners and edges shall be eliminated on metal parts.

(iii) All wooden corners and edges shall be protected to prevent splinters.

(22) *Doughnut machines.* Separate flues shall be provided, (i) for venting vapors from the frying section, and (ii) for venting products of combustion from the combustion chamber used to heat the fat.

(23) *Open fat kettles.* (i) The floor around kettles shall be maintained in nonslip condition.

(ii) Fire extinguishing devices suitable for Class-B fires shall be provided See § 1910.157.

(iii) Goggles or face shields shall be provided to prevent injuries from hot fat splashes.

(iv) The top of the kettle shall be not less than 36 inches above floor or working level.

(24) *Steam kettles.* (i) Positive locking devices shall be provided to hold kettles in the desired position.

(ii) Kettles with steam jackets shall be provided with safety valves in accordance with the ASME Pressure Vessel Code, Section VIII, Unfired Pressure Vessels, 1968.

(j) *Slicers and wrappers*—(1) *Slicers.* (i) Sprockets, chains, and V-belt drives on slicers shall be completely enclosed.

(ii) All slicing machines shall be provided with a mechanical device to push the last loaf through the slicer knives.

(iii) The cover over the knife head of reciprocating-blade slicers shall be provided with an interlocking arrangement so that the machine cannot operate unless the cover is in place.

(iv) On slicers with endless band knives, each motor shall be equipped with a magnet brake which operates whenever the motor is not energized. Each door, panel, or other point of access to the cutting blades shall be arranged by means of mechanical or electric interlocks so that the motor will be deenergized if all such access doors, panels, or access points are not closed.

(v) When it is necessary to sharpen slicer blades on the machine, a barrier shall be provided leaving only sufficient opening for the sharpening stone to reach the knife blades.

(vi) Where pusher fingers attached to the feed chain enter the bed plate of the cross feed, the end guard shall be extended to cover the pinch point.

(vii) *Slicer wrapper conditions.* (a) Where the flight chain on the slicer turns under the bed plate on the crossfeed to the wrapper, a spring-hinged section of bed plate shall be provided so that there is no shear point between the flight chain and the bed plate.

(b) Wrapping and slicing machines obtained from separate manufacturers, shall be installed and connected so that the chains, sprockets, belts, and moving parts are properly guarded. Safe interconnections for the starting and stopping of such devices shall be employed.

(c) Mechanical control levers for starting and stopping both slicing machine conveyors and wrapping machines shall be extended or so located that an operator in one location can control both machines. Such levers should be provided wherever necessary, but these should be so arranged that there is only one station capable of start-

ing the wrapping machine and conveyor assembly, and this starting station should be so arranged or guarded as to prevent accidental starting. The electric control station for starting and stopping the electric motor driving the wrapping machine and conveyor should be located near the clutch starting lever.

(d) The transfer chain shall be completely covered on all sides, not just on front and top.

(2) *Wrappers.* (i) Any hand wheel which may be provided in order to turn the wrapping machine over by hand and which may run continuously shall be a smooth, solid disk wheel.

(ii) At the discharge end (or drive side) of the crossfeed conveyor there shall be either a one- or two-piece guard in front of the crossfeed chain.

(iii) Electrical heaters on wrappers shall be protected by a cover plate properly separated or insulated from the heaters in order that accidental contact with this cover plate will not cause a burn to the operator.

(iv) Electric wiring for the wrapper heaters shall be so arranged that a minimum number of wires are used to connect the movable heaters assembly to the permanent wiring of the machine. This wiring shall be heat-resisting type in accordance with the requirements of § 1910.320.

(v) Power-driven friction rollers used to feed paper into the wrapping machine shall be provided with a guard over the in-running nip point of the rubber rollers.

(vi) The nip point, between the chain and sprocket of the loose wrap attachment, shall be completely enclosed or guarded on both sides in such a way that employee's fingers cannot get into this nip point.

(vii) Sprocket, chain, and V-belt drives on wrappers shall be completely enclosed.

(k) *Biscuit and cracker equipment*—(1) *Meat, peanut, and fig grinders.* (i) If the hopper is removable it shall be provided with an electric interlock so that the machine cannot be put in operation when the hopper is removed.

(ii) Where grid guards cannot be used, feed conveyors to hoppers, or baffle-type hoppers, shall be provided. Hoppers in such cases shall be enclosed and provided with hinged covers, and equipped with electric interlock to prevent operation of the machine with the cover open.

(2) *Sugar and spice pulverizers.* (i) All drive belts used in connection with sugar and spice pulvisers shall be grounded by means of metal combs or other effective means of removing static electricity. All pulverizing of sugar or spice grinding shall be done in accordance with NFPA 62—1967 (Standard for Dust Hazards of Sugar and Cocoa), NFPA 656—1959 (Standard for Dust Hazards in Spice Grinding Plants).

(ii) Magnetic separators shall be provided to reduce fire and explosion hazards.

(3) *Cheese, fruit, and food cutters.* These machines shall be protected in accordance with the requirements of subparagraph (1) of this paragraph.

(4) *Jam, icing, and marshmallow beaters of horizontal tub type.* All top openings shall be provided with covers attached to the machines.

(5) *Reversible dough brakes.* Reversible brakes shall be provided with a guard or tripping mechanism on each side of the rolls. These guards shall be so arranged as to stop the machine or reverse the direction of the rolls so that they are onstrunning if the guard is moved by contact of the operator.

(6) *Cross-roll brakes.* Cross - roll brakes shall be provided with guards that are similar in number and equal in effectiveness to guards on hand-fed brakes.

(7) *Box- and roll-type dough sheeters.* (i) Sheeting rolls shall be guarded at the point where the dough enters the rolls so that the operator's fingers cannot get into the nip point.

(ii) Hoppers for sheeters shall have an automatic stop bar or automatic stopping device along the back edge of the hopper. If construction does not permit location at the back edge, the automatic stop bar or automatic stopping device shall be located where it will be most effective to accomplish the desired protection.

(8) *Cutting and panning, embossing, peeling, bar, and frutana machines.* (i) Roll stands, other than hand fed, shall be guarded at the point where the dough enters the rolls so that the operator's fingers cannot get into the nip points.

(ii) Guards shall be provided at each side of the cutter to prevent hands from getting under the cutter.

(iii) Reciprocating panner heads shall be guarded to protect the operator from being caught between moving and stationary parts.

(iv) Motor control buttons shall be located within view of the cutting head.

(9) *Rotary, die machines, pretzel rolling, and pretzel-stick extruding machines.* Dough hoppers shall have the entire opening protected with substantial grid-type guards to prevent the employee from getting his hands caught in moving parts, or the hopper shall be extended high enough so that the operator's hands cannot get into moving parts.

(10) *Band ovens.* Band ovens shall be so arranged, or guarded, that the operator cannot get caught at the nip point between the band and the drive pulley or the takeup pulley, or between the oven conveyor and the oven frame.

(11) *Wafer-cutting machines.* These machines shall be so guarded that it will be impossible for employee's fingers or hands to come in contact with the saws or knives while feeding the machine.

(12) *Pan cooling towers.* (i) Where pan cooling towers extend to two or more floors, a lockout switch shall be provided on each floor in order that mechanics working on the tower may positively lock the mechanism against starting. Only one start switch shall be used in the motor control circuit.

(ii) All unused sides of pan cooling tower conveyors shall be enclosed or effectively guarded to a height of 7 feet above each floor.

(iii) Wherever a pan cooling tower conveyor passes through a floor, the opening shall be protected by a standard railing and toe board, or by other equivalent protection.

(iv) Wherever a pan conveyor passes over a main aisleway, regularly occupied work area, or passageway, the underside of the conveyor shall be completely enclosed to prevent pans, broken chains, or other material from falling in the aisleway, work area or passageway.

(v) Sprocket wheels of pan conveyors shall be enclosed so that accidental contact cannot be made at the point where the chain comes in contact with the sprocket.

(vi) Wherever conveyor bars, flights, and attachments pass in opposite directions within 8 inches of each other, a sheet metal partition or screen with openings no larger than one-half inch shall be placed between the conveyor chains which run in opposite directions.

(13) *Chocolate melting, refining, and mixing kettles.* Each kettle shall be provided with a cover to enclose the top of the kettle. The bottom outlet of each kettle shall be of such size and shape that the operator cannot reach in to touch the revolving paddle or come in contact with the shear point between the paddle and the side of the kettle.

(14) *Caddie, cover, and box stitchers (wire stitchers).* A guard shall be mounted on the stitching head to prevent operators from getting fingers caught between the stitching head and the clincher block.

(15) *Carton-wrapping and bundling machines.* The end seal drums on carton and bundling machines shall be provided with guards.

(16) *Carton and liner feeding machines.* Cutting knives shall be provided with a hinged hood to cover the knives. These guards shall be electrically interlocked to stop the machine if they are removed.

(17) *Peanut cooling trucks.* Mechanically operated peanut cooling trucks shall have a grid-type cover over the entire top.

(l) *Ovens*—(1) *General location.* (i) Ovens shall be located with due regard to the possibility of fire resulting from overheating or from the escape of gas or fuel oil and the possibility of injury to persons resulting from explosions.

(ii) Ovens shall be built on noncombustible foundations; excepting that where unusual circumstances require that an oven be placed on a combustible floor, the sole of the oven itself shall be insulated and shall be separated from the floor by a ventilated air space of at least 3 inches. In no case shall the temperature of a combustible floor beneath an oven be permitted to exceed 160° F.

(iii) Sufficient insulation shall be used in the crown of any oven, and the space above this crown shall be sufficiently ventilated, to prevent the temperature of any combustible ceilings from rising above 200° F.

(iv) Where oven ducts or stacks pass through combustible walls or ceilings, sufficient clearance and insulation shall be provided to keep the temperature of combustible material below 160° F.

(v) Columns or structural members of a building shall not pass through an oven. When such columns or structural members are closer than 6 inches to the inner shell of an oven, fireproof material shall be used and insulated in such a way that the temperature of the column or structural member will be kept below 160° F

(vi) Ovens shall be located so as to be accessible from all sides and adequately spaced to permit the proper functioning of explosion vents.

(vii) Ovens shall be located so that possible fire or explosion will not expose groups of persons to possible injury. For this reason ovens shall not adjoin lockers, lunch or sales rooms, main passageways, or exits.

(2) *Recommended construction.* (i) structural parts of ovens shall be protected against corrosion or deterioration.

(ii) Roofs and other parts of ovens shall be structurally strong enough to support the weight of men who may be required to climb on top of ovens or inside of them.

(3) *Safeguards of mechanical parts.* (i) Emergency stop buttons shall be provided on mechanical ovens near the point where operators are stationed.

(ii) All piping at ovens shall be tested to be gastight.

(a) Soldered pipe joints shall not be permitted in connection with ovens. Pipe joints may be either screwed, flanged, or welded, in connection with ovens where such pipes carry fuel or steam.

(b) All pipe and fittings used shall be of good material, clear and free from cutter burrs and defects in structure or threading.

(iii) Main shutoff valves, operable separately from any automatic valve, shall be provided to permit turning off the fuel or steam in case of an emergency.

(a) Main shutoff valves shall be located so that explosions, fires, etc. will not prevent access to these valves.

(b) Main shutoff valves shall be locked in the closed position when men must enter the oven or when the oven is not in service.

(4) *Gas-burning systems.* (i) Liquefied petroleum gas shall be stored and distributed in accordance with the requirements of § 1910.110.

(ii) Inspirators on atmospheric (low-pressure) gas-burning systems shall be so constructed and machined as to insure correct alignment of the gas jet with the axis of the inspirator. Air adjustments or shutters on inspirators on atmospheric gasburning systems shall either be permanently fixed or else provided with a locking device to positively prevent accidental change of setting. The shutter shall be so located that adjustments can be made when the oven is in normal operating condition.

(iii) Dampers controlling the draft on ovens equipped with atmospheric gas-burning systems shall be interconnected with the gas supply so that no gas can be admitted to the burners if the damper is closed.

(a) Atmospheric pipe burners extending into the baking chamber of ovens fired with atmospheric gas-burning systems shall have secondary air ducts installed below each burner and extending over its full length. Air inlets for these ducts shall be placed outside the baking chamber.

(b) Stack dampers on ovens equipped with atmospheric gas-burning systems shall have a hole of the following diameter:

Diameter of flue	*Diameter of opening*
3 to 5	½
6 to 10	1
11 to 18	1½

Dimensions given in inches.

(iv) Nozzle or blast burners on atmospheric gas-burning systems shall be equipped with gas pilots or electric ignition; with the exception that burners operated on a maximum-minimum flame or modulating principle which are equipped with quick acting combustion safeguards actuated by the main burner flame may be equipped with automatic or hand torch ignition to be used for initial lighting only.

(v) Burners of the perforated pipe, ribbon, slot, tip, or similar types, having many individual ports, shall be capable of maintaining a stable flame over the entire length (or surface) of the burner throughout the turndown range and under all draft conditions which may arise in the operation of the oven, unless ignition of gas from every port shall immediately result from the ignition of gas at any single port, when gas is supplied to the burner at the highest and lowest rating of the burners.

(vi) Premixed gas burners shall be so designed that the burner will not backfire or blow off within the operating range of the burner.

(a) Multiple port burners, such as ribbon, strip, or tip burners, when used on premixed gas systems, shall be capable of instant ignition of the burner over its entire length when operated within the proper range of the burner, either in a normal or steam-laden oven atmosphere or under any other oven conditions which might extinguish the flame.

(b) Where a number of premixed gas burners are connected to a single premixing device, each burner shall be equipped with electric or gas ignition.

(vii) High-pressure inspirators (using gas at pressures exceeding 1 p.s.i.) shall be so constructed and machined as to insure perfect alignment of the gas jet with the axis of the inspirator.

(a) No high-pressure inspirator shall be installed with a valve or other obstruction between the inspirator and the burner.

(b) Each high-pressure inspirator shall have a gas adjustment consisting of a fixed replaceable orifice or an adjustable orifice. When an adjustable orifice is used, the adjusting screw shall be protected by a gas-tight plug.

(c) Air adjustments on high-pressure inspirators shall be provided with positive locking means.

(d) High-pressure inspirators shall be so located that air adjustments can be made during the operation of the oven.

(e) High-pressure inspirators shall be mounted in such a position that should a backfire occur, it cannot injure the operator or ignite any combustible material.

(f) High-pressure inspirators used on gas-burning systems, which are supplied under pressure with a partial mixture of air and gas instead of straight gas, shall not be used unless the amount of air mixed with the gas is sufficiently low to keep the mixture rich enough to be above the upper explosive limit.

(g) Low-pressure proportioning inspirating sets (using air at pressures from one-half to 1½ p.s.i. and gas at or about atmospheric pressure) shall be equipped with a positive locking device on the adjustment for setting the gas-air ratio.

(viii) Low-pressure proportioning inspirators equipped with zero governors, which do not compensate for any change in resistance in the mixture pipe, shall be installed so that there is no valve or other obstruction between the inspirators and the burners. Diaphragm air spaces of governors on low-pressure proportioning inspirating sets shall be vented to the outside of the building.

(ix) Two-pipe systems: No valve or other obstruction shall be placed between the mixing valve and the burners on any two-pipe system which uses air and gas under pressure, unless the mixing valve is equipped with a device which automatically will prevent excessive pressure rise in the mixture pressures. Two-pipe systems shall be equipped with means for cleaning the air and gas before they enter the mixing valve.

(5) *Gas mixing machines.* (i) All burners supplied with complete mixture from the machine shall be equipped with flash and flame arrestors equipped with automatic shutoff valves actuated by heat installed as close to the burners as practical and also at the outlet of the premixing machine ahead of the individual burner shutoffs. This is to prevent the flame from reaching the mixture supply pipe.

(a) The main mixture lines and the gas machine proper shall be amply protected against fire or explosion hazard by flashback arrestors and relief vents or softheads located outside the building. Some gas mixing machines are used for partially premixing gas and air and supplying this mixture to high-pressure inspirators where additional air is entrained. If the gas-air ratio is such that the mixture remains so rich as to be above the upper explosive limit over the entire range of the machine, flash arrestors or explosion vents are not required. Positive means shall be provided which will prevent any such gas mixing machine from producing an explosive mixture.

(b) All diaphragm or similar chambers shall be connected to the atmosphere outside of the building.

(c) An automatic safety shutoff valve shall be provided in the gas line leading to the mixing valve which will close the gas supply in case the suction disappears at the compressor inlet or the current to the compressor is shutoff.

(d) Air inlets to gas mixing machines shall be piped to a location outside the building and shall be located at a point protected against dust.

(ii) No valve or obstruction shall be installed between mixing blowers and burners.

(a) Mixing blowers shall be so constructed that they will supply a mixture of air and gas that will not blow off or backfire over the entire range of adjustments.

(b) Mixing blowers shall be provided with a pressure regulator in the gas line at the inlet to the mixing valve (to prevent variations in the air-gas ratio).

(c) Housings of mixing blowers shall be constructed to withstand any possible internal explosion.

(d) Mixing blowers shall be provided with an automatic safety shutoff valve in the gas line leading to the blower, which safety shutoff valve will close in case of failure of either gas pressure or electric current.

(6) *Oil-burning equipment.* (i) The storage and distribution of fuel oil in bakeries shall be arranged according to reference NFPA 31—1968 Standard for Installation of Oil Burning Equipment.

(ii) Oil burners shall be of a type approved by Underwriters' Laboratories, Inc.

(a) Each oil burner shall be equipped with an electric ignition or gas pilot.

(b) Oil burners shall be protected against flame failure and overflowing of oil by a quick-acting combustion safeguard operated by the main burner flame. The time interval between flame failure and fuel shutoff shall be short enough to prevent a dangerous accumulation of an explosive mixture or the entry of a dangerous amount of fuel oil into the heating system; with the exception that on ovens requiring 150,000 B.t.u. per hour or less any combustion safeguard listed by the Underwriters' Laboratories, Inc., may be used.

(c) The shutting off of the fuel supply shall be accomplished by stopping the individual burner pump equipped with a pressure cutoff valve, or by closing a suitable valve.

(d) Oil-fired ovens shall have dampers so arranged that a small amount of air is passed through the furnace at all times.

(e) Oil burners capable of being withdrawn from the furnace (for adjustment, etc.) shall be provided with an interlock which will prevent the burner from starting when in the withdrawn position.

(f) Preheating of oil, where necessary, shall be done by steam, hot water, or electric heater, and shall be thermostatically controlled. Heaters shall be substantially constructed with all joints made oil tight. Thermometers shall be installed at suitable locations to indicate the temperature of the heated oil. Heaters shall be bypassed or provided with suitable means to prevent abnormal pressure.

(g) Oil burners equipped with mechanical means for supplying air shall have an interlock between the air pressure and the oil supply so that the burner cannot operate unless air for proper combustion is available.

(iii) High-pressure atomizing oil burners shall be provided with a pressure cutoff valve between the pump and the nozzle.

(iv) Air atomizing burners equipped with maximum-minimum or modulating controls, and which are arranged to have the ignition turned off after initial lighting has been accomplished, shall be equipped with a quick-acting flame safeguard directly actuated by the main flame of the burner.

(v) Mechanical atomizing burners of the rotary type shall be operated on the on-off principle and shall be equipped with safeguards actuated by the main flame.

(vi) Evaporator-type burners shall be installed in such a way that provision is made to open the draft damper before oil can be admitted to the burners.

(vii) Burners supplied by "vapoflers" shall be equipped with a protected gas or electric pilot. In combination vapoflier-gas heating systems, the burner shall be protected in accordance with the requirements of subparagraph (4) of this paragraph.

(7) *Solid-fuel firing equipment.* (i) In solid-fuel firing systems proper draft shall be maintained at the stack as long as there is fuel in the furnace. All breachings and flues shall be kept in a tight and clean condition. Solid-fuel firing systems using forced draft shall have the air supply to the ash pit interconnected with the furnace in such a way that the air pressure is shut off when the furnace door is opened.

(ii) *Mechanical stokers.* (a) Fuel feed and air supply to mechanical stokers shall be interlocked in such a way that fuel cannot be fed without sufficient air being available.

(b) Dampers in mechanical-stoker fired systems shall be interlocked with the stoker in such a way that the stoker cannot be started unless the damper is open.

(8) *Electrical heating equipment.* (i) All electrical equipment shall be built and installed according to Subpart S of this part.

(ii) Open heating elements inside the baking chamber shall be guarded against accidental touching by the product being baked, by the body of the operator, or by current-conducting implements which may be used.

(iii) A main disconnect switch or circuit breaker shall be provided. This switch or circuit breaker shall be so located that it can be reached quickly and safely. The main switch or circuit breaker shall have provisions for locking it in the open position if any work on the electrical equipment or inside the oven must be performed.

(9) *General requirements.* (i) Protecting devices shall be properly maintained and kept in working order.

(ii) All safety devices on ovens shall be inspected at intervals of not less than twice a month by an especially appointed, properly instructed bakery employee, and not less than once a year by representatives of the oven manufacturers.

(iii) (a) Protection of gas pilot lights shall be provided when it is impracticable to protect the main flame of the burner and where the pilot flame cannot contact the flame electrode without being in the path of the main flame of the burner. Failure of any gas pilot shall automatically shut off the fuel supply to the burner.

(b) Ovens with multiple burners shall be equipped with individual atmospheric pilot lights where there is sufficient secondary air in the baking chamber and where gas is available; or else each burner shall be equipped with an electric spark-type ignition device.

(iv) Burners of a capacity exceeding 150,000 B.t.u. per hour equipped with electric ignition shall be protected in addition by quick-acting combustion safeguards.

(a) The high-tension current for any electric spark-type ignition device shall originate in a power supply line which is interlocked with the fuel supply for the oven in such a way that in case of current failure both the source of electricity to the high-tension circuits and the fuel supply shall be turned off simultaneously.

(b) All electric circuits in connection with ignition systems on ovens shall comply with Subpart S of this part.

(c) Combustion safeguards used in connection with electric ignition systems on ovens shall be so designed as to prevent an explosive mixture from accumulating inside the oven before ignition has taken place.

(v) When fuel is supplied and used at line pressure, safety shutoff valves shall be provided in the fuel line leading to the burner.

(a) When fuel is supplied in excess of line pressure, safety shutoff valves shall be provided in the fuel line leading to the burners, unless the fuel supply lines are equipped with other automatic valves which will prevent the flow of fuel when the compressing equipment is stopped.

(b) The safety shutoff valve shall be positively tight and shall be tested at least twice monthly.

(c) Packing glands shall be designed so that the valve will not be made inoperative by excessive tightening of the packing gland.

(d) Electrically operated safety shutoff valves shall be normally closed and not depend on electricity for shutting off the fuel supply.

(e) A safety shutoff valve shall require manual operation for reopening after it has closed, or the electric circuit shall be so arranged that it will require a manual operation for reopening the safety shutoff valve.

(f) Manual reset-type safety shutoff valves shall be so arranged that they cannot be locked in an open position by external means.

(g) Where blowers are used for supplying the air for combustion the safety shutoff valve shall be interlocked so that it will close in case of air failure.

(h) Where gas or electric ignition is used, the safety shutoff valve shall close in case of ignition failure. On burners equipped with combustion safeguards, the valve shall close in case of burner flame failure.

(vi) One main, manually operated, fuel shutoff valve shall be provided on each oven, and shall be located ahead of all other valves in the system.

(vii) All individual gas or oil burners with a heating capacity over 150,000 B.t.u. per hour shall be protected by a safeguard which is actuated by the flame and which will react to flame failure in a time interval not to exceed 2 seconds. All safeguards, once having shut down a gas or oil burner, shall require manual resetting and starting of the burner or burners.

(viii) Any space in an oven (except direct fired ovens) which could be filled with an explosive mixture shall be protected by explosion vents. Explosion vents shall be made of minimum weight consistent with adequate insulation.

(a) Explosion doors which have a substantial weight shall be attached by chains or similar means to prevent flying parts from injuring the personnel in case of an explosion.

(b) Where explosion vents are so located that flying parts or gases might endanger the personnel working on or near the oven, internal or external protecting means shall be provided in the form of heavily constructed shields or deflectors made from noncombustible material.

(c) Specifically exempted from the provisions of subdivision (viii) of this subparagraph are heating systems on ovens in which the fuel is admitted only to enclosed spaces which shall have been tested to prove that their construction will resist repeated explosions without deformation are exempt from the requirements of subdivisions (viii) (a) and (b) of this paragraph.

(ix) Flues and dampers. (a) All ovens (except electrically heated) shall be properly and firmly connected to an active chimney or flue of ample size to carry away the flue gases.

(b) The chimney shall be preinspected after installation or repair to determine whether it is in suitable condition.

(c) The flue pipe or breeching shall be properly supported in all cases.

(d) Means shall be employed which will prevent the flue pipe or breeching from entering beyond the inner wall of the chimney flue.

(e) Flue pipe shall be cemented or otherwise sealed to the chimney wall so as to prevent infiltration of air.

(f) A flue damper or other equivalent means for regulating draft shall be installed on each oven, the proper operation of which depends on natural draft.

(g) Dampers, where used, shall be equipped with suitably located minimum and maximum stops. The minimum stop for dampers shall be adjusted to obtain sufficient air for combustion at the minimum oven output. Where stack dampers are used in connection with oil- or gas-fired ovens, they shall be equipped with means to turn the burner off when the damper is closed.

(x) Where the initial pressure of the fuel is lower than the air pressure used for combustion, check valves shall be installed in the fuel line to prevent air from backing up into the fuel lines. For instance, in gas burner apparatus, which uses air at pressures exceeding the gas service pressure, a check valve shall be provided in the gas line next to the mixing device.

(xi) Where the gas supply pressure is substantially higher than that at which the burners of an oven are designed to operate, a gas pressure regulator shall be employed.

(a) Gas pressure regulators, where used, shall maintain the gas pressure to the manifold within 10 percent of the operating pressure from maximum to minimum consumption rates.

(b) Regulators shall be of the spring-loaded, dead-weight, or pressure-balanced type. Spring- or weight-loaded regulators shall have springs or weights covered by suitable housing. Under no circumstances shall a weight and lever type of regulator be used.

(c) A gas pressure regulator, requiring access to atmosphere for successful operation, shall be vented to the outer air.

(d) A relief valve shall be placed on the outlet side of gas pressure regulators where gas is supplied at high pressure. The discharge from this valve shall be piped to the outside of the building.

(xii) All chambers which have to be connected to the atmosphere, but are separated from any gaseous or other volatile fuel by a flexible membrane, as, for instance, a diaphragm, bellows, etc., shall be connected by a pipe of at least one-half inch size to the outside atmosphere. The outside end of this pipe shall be protected against flooding or accidental plugging by ice formation, insects, or other causes, by providing a "tee" with double elbow connections pointing downwards at the top of the pipe, and screened outlets. Where several of such chambers are used in close proximity, a common vent line may be used.

(xiii) Where accumulation of dust in the air supply might affect the proper functioning of mixing devices and burners, the air supply inlet shall be equipped with suitable air filters. A standby filter should be available to permit interchanging filters for cleaning purposes.

(10) *Direct-fired ovens.* (i) Direct-fired ovens shall be safeguarded against failure of fuel, air, or ignition.

(ii) To prevent the possible accumulation of explosive gases from being ignited after a shutdown, all direct-fired ovens with a heating capacity over 150,000 B.t.u. per hour shall be ventilated before the ignition system, combustion air blower, and the fuel can be turned on. The preventilation shall insure at least four complete changes of atmosphere in the baking chamber by discharging the oven atmosphere to the outside of the building and entraining fresh air into it. The preventilation shall be repeated whenever the heating equipment is shut down by a safety device.

(11) *Direct recirculating ovens.* (i) Each circulating fan in direct recirculating ovens shall be interconnected with the burner in such a manner that the fuel is shut off by a safety valve when the fan is not running.

(ii) The flame of the burner or burners in direct recirculating ovens shall be protected by a quick-acting flame-sensitive safeguard which will automatically shut off the fuel supply in case of burner failure.

(iii) Direct recirculating ovens shall be equipped with preventilating devices.

(iv) Fans in direct recirculating ovens shall be constructed of materials suitable for the temperatures at which they will operate and designed with an ample safety factor to prevent rupture of the wheel.

(v) Fan wheel in direct recirculating oven shall be protected against direct impingement of the flame of the burner or burners.

(vi) Direct recirculating ovens, and particularly fans in and on such ovens, shall be protected from overheating by means of a temperature limiting device.

(vii) When the burner or burners on direct recirculating ovens are mounted at elevated positions permanent steps shall be provided for safe and convenient access to the burner or burners.

(12) *Flue-type ovens.* (i) Flue-type ovens shall be operated in such a way that less than atmospheric pressure is maintained in the flues.

(ii) Gas burners in flue-type ovens shall be protected against flame failure.

(iii) Oil burners on flue-type ovens shall be equipped with combustion safeguards as listed by the Underwriters' Laboratories, Inc.

(iv) Solid-fuel stoker-fired flue-type ovens shall have the stack damper interlocked with the stoker so that the stoker cannot be operated when the damper is closed.

(13) *Indirect-fired multiple burner ovens.* (i) Indirect-fired multiple-burner ovens shall be equipped with safety shut-off valves which are interlocked with the ignition system, the air pressure and the gas pressure.

(ii) Parts of enclosures reaching through the wall of indirect-fired multiple-burner ovens, and observation windows on such ovens, shall be tested at least once each year with repeated explosions, and afterward inspected for leaks.

(14) *Steam-tube ovens.* Steam-tube ovens shall be protected against overfiring (firing at an excessive rate) and overheating (heating to excessive temperatures) by devices which control the maximum amount of fuel admitted to the furnace and the maximum permissible temperature in the baking chamber.

(15) *Indirect recirculating ovens.* (i) Indirect recirculating ovens shall have all oil and gas burners equipped with quick-acting flame sensitive combustion safeguards.

(ii) Duct systems in indirect-recirculating ovens shall be protected by explosion vents having a minimum total area of 1 square foot of vent to 15 cubic feet of total duct volume. These explosion vents shall be so located that they will not release hot gases or flying parts in the direction of an operator.

(iii) Duct systems (in ovens) operating under pressure shall be tested for tightness in the initial starting of the oven and also at intervals not farther apart than 6 months.

(iv) Fans and other parts in indirect recirculating ovens shall comply with requirements as listed under subparagraph (11) of this paragraph.

(16) *Electric ovens.* Electric ovens shall be installed, operated, and maintained in accordance with Subpart S of this part.

§ 1910.264 Laundry machinery and operations.

(a) *Definitions applicable to this section.* (1) *Laundry.* The term "laundry" shall mean an establishment wherein the washing, ironing, or other finishing of clothes, or any other textiles is done, but excluding printing, bleaching, dry cleaning, or dyeing of clothes or other textiles.

(2) *Marking machine.* The term "marking machine" shall mean a power-driven machine used for marking clothes or other textiles.

(3) *Washing machine.* The term "washing machine" shall mean a power-driven machine used for washing clothes or other textiles. It generally consists of a stationary case or shell inside of which is a revolving perforated cylinder.

(4) *Extractor.* The term "extractor" shall mean a power-driven centrifugal machine used for removing surplus moisture from clothes or other textiles by centrifugal action.

(5) *Wringer.* The term "wringer" shall mean one or more power-driven rolls used for removing surplus moisture from clothes or other textiles.

(6) *Starch mixer.* The term "starch mixer" shall mean a power-driven machine used for mixing or processing starch.

(7) *Starching machine.* The term "starching machine" shall mean a power-driven machine used for the starching of clothes or other textiles.

(8) *Drying tumbler.* The term "drying tumbler" shall mean a machine within which clothes or other textiles are dried by air, and which usually consists of an enclosure inside of which is a revolving cylinder.

(9) *Shaker.* The term "shaker" (clothes tumbler) shall mean a revolving cylinder used for shaking out clothes or other textiles.

(10) *Drying room.* The term "drying room" shall mean an enclosure used for drying clothes or other textiles, and containing any power-driven mechanism.

(11) *Dampening machine.* The term "dampening machine" shall mean a machine used for dampening clothes or other textiles.

(12) *Ironer.* The term "ironer" shall mean a hand- or power-operated machine, with one or more rolls or heated surfaces in contact, used for ironing or smoothing clothes or other textiles.

(13) *Shaping machine.* The term "shaping machine" shall mean a power-driven machine used to shape, mold, or otherwise finish clothes or other textiles; this term shall also include shaping tables, stands, or shelves upon which the machine may be mounted.

(14) *Sewing machine.* The term "sewing machine" shall mean a machine used for sewing or stitching clothes or other textiles.

(15) *Guarded.* The term "guarded" shall mean covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers or casings, barrier rails, safety bars, or screens, to eliminate the possibility of accidental contact with, or dangerous approach by, persons or objects.

(16) *Enclosed.* The term "enclosed" shall mean that the object or equipment or part thereof is so guarded that accidental contact at the point of danger, during the regular operation of the equipment, is not possible.

(17) *Safety interlock.* The term "safety interlock" shall mean a device that will prevent the operation of the machine while the cover or door is open or unlocked and will hold the cover or door closed and locked while the basket or cylinder is in motion.

(18) *Moving parts.* The term "moving parts" shall mean gears, sprockets, revolving shafts, clutches, belts, pulleys, or other revolving or reciprocating parts that are attached to, or form an integral part of, a machine.

(19) *Power transmission.* The term "power transmission" shall pertain to equipment such as shafting, gears, belts, pulleys, or other parts used for transmitting power to the machine, and shall include prime movers.

(20) *Prime movers.* The term "prime movers," shall include steam, gas, oil, and air engines or motors, and steam and hydraulic turbines.

(21) *Point of operation.* The term "point of operation" shall mean the point or points at which clothes or other textiles are inserted or manipulated in the operation of the machine.

(b) *General requirements.* This section applies to moving parts of equipment used in laundries and to conditions peculiar to this industry, with special reference to the point of operation of laundry machines. This section does not apply to dry-cleaning operations.

(c) *Point-of-operation guards.*—(1) *Washroom machines.*—(i) *Marking machine.* Each power marking machine shall be equipped with a spring-compression device of such design as to prevent injury to fingers, should they be caught between the marking plunger and platen; or the marking machine shall be equipped with a control mechanism that will require the simultaneous action of both hands to operate the machine; or there shall be a guard that will act as a barrier in front of, and which will prevent the operator's fingers from coming into contact with, the marking plunger.

(ii) *Washing machine.* (a) Each washing machine shall be equipped with an interlocking device that will prevent the inside cylinder from moving when the outer door on the case or shell is open, and will also prevent the door from being opened while the inside cylinder is in motion. This device should not prevent the movement of the inner cylinder under the action of a hand-operated mechanism or under the operation of an "inching device."

(b) Each washing machine shall be provided with means for holding open the doors or covers of inner and outer cylinders or shells while being loaded or unloaded.

(iii) *Extractor.* (a) Each extractor shall be equipped with a metal cover.

(b) Each extractor shall be equipped with an interlocking device that will prevent the cover from being opened while the basket is in motion, and will also prevent the power operation of the basket while the cover is not fully closed and secured. This device should not prevent the movement of the basket by hand to ensure an even loading.

(c) Each extractor shall also be effectively secured in position on the floor or foundation so as to eliminate unnecessary vibrations, and shall not be operated at a speed greater than that given in the manufacturer's rating, which shall be stamped on the inside of the basket where it is easily visible, in letters not less than one-fourth inch in height. The maximum permissible speed shall be given in revolutions per minute.

(d) Each engine individually driving an extractor shall be provided with an engine stop approved by Underwriters' Laboratories, Inc., and a speed-limit governor. It is suggested that where an extractor is driven by a direct-current motor a "no field" release be installed to prevent overspeed, which may result from an open or broken field.

(iv) *Power wringer.* Each power wringer shall be equipped with a safety bar or other guard across the entire front of the feed or first pressure rolls, so arranged that the striking of the bar or guard by the hand of the operator or other person will stop the machine.

(2) *Starching and drying machines.*—(i) *Starching machine (cylinder or box type).* Each starching machine, cylinder or box type, shall be enclosed or guarded so as to prevent the operator or other person from coming into accidental contact with the cylinder or box while the machine is in motion.

(ii) *Drying-room fan.* Each drying-room fan, any part of which is within 7 feet of the floor or working platform, shall be guarded with wire mesh or screen of not less than No. 16 gage, the openings of which will reject a ball one-half inch in diameter.

(iii) *Drying tumbler.* (a) Each drying tumbler shall be equipped with an interlocking device that will prevent the inside cylinder from moving when the outer door on the case or shell is open, and also prevent the door from being opened while the inside cylinder is in motion. This device should not prevent the movement of the inner cylinder under the action of a hand-operated mechanism or under the operation of an inching device.

(b) Each drying tumbler shall be provided with means for holding open the doors or covers of inner and outer cylinders or shells while being loaded or unloaded.

(iv) *Shaker (clothes tumbler).* (a) (1) Each shaker or clothes tumbler of the single-cylinder type shall be equipped with a device that will automatically prevent the tumbler from moving while the door is open.

(2) The tumbler shall also be enclosed or guarded so as to prevent accidental contact by the operator or other person while the machine is in motion.

(b) (1) Each shaker or clothes tumbler of the double-cylinder type shall be equipped with an interlocking device that will prevent the inside cylinder from moving when the outer door on the case or shell is open, and will also prevent the door from being opened while the inside cylinder is in motion. This device should not prevent the movement of the inner cylinder under the action of a hand-operated mechanism or under the operation of an inching device.

(2) Each shaker or clothes tumbler of the double-cylinder type shall be provided with means for holding open the doors or covers of inner and outer cylinders or shells while being loaded or unloaded.

(v) *Exception.* Provisions of subdivision (iii), (iv) (a) (1), and (iv) (b) of this subparagraph shall not apply to shakeout or conditioning tumblers where the clothes are loaded into the open end of the revolving cylinder and are automatically discharged out of the opposite end.

(3) *Finishing machines.*—(i) *Dampening machine.* Each roll-dampening machine shall be so equipped that the rolls will be entirely enclosed and so arranged as to prevent the fingers of the operator or other person from being caught between the rolls. This may be accomplished by:

(a) A slot or hopper;

(b) A rod or strip located directly in front of the feed and extending the full length of the rolls.

(ii) *Ironer.* (a) Each flat-work or collar ironer shall be equipped with a safety bar or other guard across the entire front of the feed or first pressure rolls, so

arranged that the striking of the bar or guard by the hand of the operator or other person will stop the machine. The pressure rolls shall be covered or guarded so that the operator or other person cannot reach into the rolls without removing the guard. This may be either a vertical guard on all sides or a complete cover. If a vertical guard is used, the distance from the floor or working platform to the top of guard shall be not less than 6 feet.

(b) Each body-type ironer, roll or shoe type, including sleeve and band ironers, shall be equipped with a safety bar or other guard across the entire length of the feed roll or shoe, so arranged that the striking of the bar or guard by the hand of the operator or other person will stop the machine. The hot roll or shoe shall also be covered in such a way that the operator or other person cannot come into contact with the heated surfaces.

(c) Each combined rotary-bosom and coat ironer shall be equipped with a safety bar or other guard across the entire length of the feed roll or shoe, so arranged that the striking of the bar or guard by the hand of the operator or other person will stop the machine. The hot roll or shoe shall also be covered in such a way that the operator or other person cannot come into contact with the heated surfaces.

(d) Each ironing press (excluding hand or foot powered ones) shall be equipped with a guard or means that will prevent the fingers of the operator or other person from being caught between the ironing surfaces.

(4) *Miscellaneous machines and equipment*—(i) *Sewing machine.* Each sewing machine shall be equipped with a guard permanently attached to the machine, so that the operator's fingers cannot pass under the needle. It shall be of such form that the needle can be conveniently threaded without removing the guard.

(ii) *Exhaust or ventilating fans.* Each exhaust or ventilating fan within 7 feet of the floor or working platform shall be completely covered with wire mesh of not less than No. 16 gage, and with openings that will reject a ball one-half inch in diameter.

(iii) *Steam pipes.* (a) All steam pipes that are within 7 feet of the floor or working platform, and with which the worker may come into contact, shall be insulated or covered with a heat-resistive material or shall be otherwise properly guarded.

(b) Where pressure-reducing valves are used, one or more relief or safety valves shall be provided on the low-pressure side of the reducing valve, in case the piping or equipment on the low-pressure side does not meet the requirements for full initial pressure. The relief or safety valve shall be located adjacent to, or as close as possible to, the reducing valve. Proper protection shall be provided to prevent injury or damage caused by fluid escaping from relief or safety valves if vented to the atmosphere. The vents shall be of ample size and as short and direct as possible. The combined discharge capacity of the relief valves shall be such that the pressure rating of the lower-pressure piping and equipment will not be exceeded if the reducing valve sticks or fails to open.

(iv) *Starting and stopping devices.* Each power-driven machine shall be provided with means for disconnecting from the source of power. Starting and stopping devices for machines shall be so located as to be operable from the front of the machine, and so constructed as to allow proper guarding of belts and pulleys.

(d) *Operating rules*—(1) *General*—(i) *Floors.*

(a) The floors of every room in a laundry that are used for washing purposes shall be properly constructed of cement, tile, or similar material. The floors shall be watertight, free from projections, crevices, or dangerous gradients. They shall be maintained in good repair and so drained that no water may accumulate.

(b) The floors of every room except washrooms shall be constructed of hardwood or any impervious material, free from protruding nails, splinters, or loose boards, and shall be maintained in a safe condition.

(ii) *Table tops, shelves, and machine woodwork.* Table tops, shelves, and machine woodwork shall be constructed of materials properly surfaced, finished free from splinters, and so maintained.

(iii) *Markers.* Markers and others handling soiled clothes shall be warned against touching the eyes, mouth, or any part of the body on which the skin has been broken by a scratch or abrasion; and they shall be cautioned not to touch or eat food until their hands have been thoroughly washed.

(iv) *Ventilation.* Where artificial ventilation is necessary to the maintenance of comfortable working conditions, an adequate ventilating system shall be installed.

(v) *Instruction of employees.* Employees shall be properly instructed as to the hazards of their work and be instructed in safe practices, by bulletins, printed rules, and verbal instructions.

(2) *Mechanical*—(i) *Safety guards.* (a) No safeguard, safety appliance, or device attached to, or forming an integral part of any machinery shall be removed or made ineffective except for the purpose of making immediate repairs or adjustments. Any such safeguard, safety appliance, or device removed or made ineffective during the repair or adjustment of such machinery shall be replaced immediately upon the completion of such repairs or adjustments.

(b) No machine shall be operated until such repairs and adjustments have been made and the machine is in good working condition.

(ii) *Steam-pressure apparatus.* Steam machines shall not be operated at a pressure above that given by the manufacturer's pressure rating as shown on name plate. If the steam source is at a pressure higher than that given by the manufacturer's rating, a stop valve, reducing valve, pressure gage, and safety valve shall be installed, in the order named, from the source. The safety valve shall be located in a nonhazardous place.

(iii) *Machine adjustments.* No moving parts of any machine shall be oiled, cleaned, adjusted, or repaired while said machine is in operation or in motion except that the rolls of adjusting machines not equipped with hand-power means shall be operated at the slowest speed possible with an operator constantly at the starting mechanism.

(iv) *Extractors.* Each extractor shall be dismantled and inspected at least once a year and, if necessary, repaired. Overdriven extractors, if provided with handholes through which basket and rings can be inspected, need not be dismantled.

(e) *Moving parts*—(1) *Machine guarding (other than point of operation).* Moving parts of machines, such as gears, sprockets, belts, pulleys, and shafts, shall be guarded in accordance with the requirements of § 1910.219.

(2) *Prime-mover guarding.* Moving parts of prime movers, such as flywheels, cranks and connecting rods, tail rods or extension piston rods, and governor balls, shall be guarded in accordance with the requirements of § 1910.219.

(f) *General industrial safety standards*—(1) *General.* The general safety standards adopted by reference in subparagraph (2) of this paragraph, the provisions of which apply to nearly every industrial plant, are now incorporated by reference in this section and are made applicable to laundry operations. The rules of construction set forth in paragraph (3) of § 1910.5 shall apply.

(2) *Additional requirements.* The employer shall comply with the provisions of the standards referenced in this subparagraph. In the event of any conflict between this subparagraph and paragraphs (b) through (e) of this section, the requirements of paragraphs (b) through (e) of this section shall apply.

(i) *Industrial lighting.* American National Standard Practice for Industrial Lighting, ANSI A11.1—1965 (R–1970).

(ii) *Floor and wall openings, railings, and toeboards.* American National Standard Safety Requirements for Floor and Wall Openings, Railings, and Toeboards, ANSI A12.1—1967.

(iii) *Identification of piping systems.* American National Standard Scheme for the Identification of Piping Systems, ANSI A13.1—1956.

(iv) *Mechanical power transmission apparatus.* American National Standard Safety Standard for Mechanical Power Transmission Apparatus, ANSI B15.1—1971.

(v) *Pressure piping—power piping.* American National Standard Code for Pressure Piping—Power Piping, ANSI B31.1.0—1967. Addenda to the American National Standard Code for Pressure Piping—Power Piping, ANSI B31.1.0a—1969.

(vi) *Sanitation.* American National Standard Requirements for Sanitation in Places of Employment, ANSI Z4.1—1968.

(vii) *Local exhaust systems.* American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2—1960.

(viii) *Gas appliances and gas piping.* American National Standard for the Installation of Gas Appliances and Gas Piping, ANSI Z21.30—1964.

§ 1910.265 Sawmills.

(a) *General requirements*—(1) *Application.* This section includes safety requirements for sawmill operations in-

cluding, but not limited to, log and lumber handling, sawing, trimming, and planing; waste disposal; operation of dry kilns; finishing; shipping; storage; yard and yard equipment; and for power tools and affiliated equipment used in connection with such operations, but excluding the manufacture of plywood, cooperage, and veneer.

(2) *Incorporation of standards by reference.* Certain of the paragraphs of this section incorporate and apply occupational safety and health standards of general application without regard to any specific industry. Such standards shall apply to sawmill operations in accordance with the rules of construction set forth in § 1910.5.

(b) *Definitions applicable to this section.* A *frame* means a structure made of two independent columns fastened together at the top and separated at the bottom for stability.

(2) *Annealing.* The term "annealing" means heating then cooling to soften and render less brittle.

(3) *Binder.* The term "binder" means a chain, cable, rope, or other approved material used for binding loads.

(4) *Boom.* The term "boom" means logs or timbers fastened together end to end and used to contain floating logs. The term includes enclosed logs.

(5) *Brow log.* The term "brow log" means a log placed parallel to a roadway at a landing or dump to protect vehicles while loading or unloading.

(6) *Bunk.* The term "bunk" means a cross support for a load.

(7) *Cant.* The term "cant" means a log slabbed on one or more sides.

(8) *Carriage (log carriage).* The term "carriage" means a framework mounted on wheels which runs on tracks or in grooves in a direction parallel to the face of the saw, and which contains apparatus to hold a log securely and advance it towards the saw.

(9) *Carrier.* The term "carrier" means an industrial truck so designed and constructed that it straddles the load to be transported with mechanisms to pick up the load and support it during transportation.

(10) *Chipper.* The term "chipper" means a machine which cuts material into chips.

(11) *Chock (bunk block) (cheese block).* The terms "chock", "bunk block", and "cheese block" mean a wedge that prevents logs or loads from moving.

(12) *Cold deck.* The term "cold deck" means a pile of logs stored for future removal.

(13) *Crotch lines.* The term "crotch lines" means two short lines attached to a hoisting line by a ring or shackle, the lower ends being attached to loading hooks.

(14) *Dog (carriage dog).* The term "dog" means a steel tooth, one or more of which are attached to each carriage knee to hold log firmly in place on carriage.

(15) *Drag saw.* The term "drag saw" means a power-driven, reciprocating crosscut saw mounted on suitable frame and used for bucking logs.

(16) *Head block.* The term "head block" means that part of a carriage which holds the log and upon which it rests. It generally consists of base, knee, taper set, and mechanism.

(17) *Head rig.* The term "head rig" means a combination of head saw and log carriage used for the initial breakdown of logs into timbers, cants, and boards.

(18) *Hog.* The term "hog" means a machine for cutting or grinding slabs and other coarse residue from the mill.

(19) *Husk.* The term "husk" means a head saw framework on a circular mill.

(20) *Industrial truck.* The term "industrial truck" means a mobile power-driven truck or tractor.

(21) *Kiln tender.* The term "kiln tender" means the operator of a kiln.

(22) *Lift truck.* The term "lift truck" means an industrial truck used for lateral transportation and equipped with a power-operated lifting device, usually in the form of forks, for piling or unpiling lumber units or packages.

(23) *Live rolls.* The term "live rolls" means cylinders of wood or metal mounted on horizontal axes and rotated by power, which are used to convey slabs, lumber, and other wood products.

(24) *Loading boom.* The term "loading boom" means any structure projecting from a pivot point to guide a log when lifted.

(25) *Log deck.* The term "log deck" means a platform in the sawmill on which the logs remain until needed for sawing.

(26) *Lumber hauling truck.* The term "lumber hauling truck" means an industrial truck, other than a lift truck or a carrier, used for the transport of lumber.

(27) *Log haul.* The term "log haul" means a conveyor for transferring logs to mill.

(28) *Package.* The term "package" means a unit of lumber.

(29) *Peavy.* The term "peavy" means a stout wooden handle fitted with a spike and hook and used for rolling logs.

(30) *Pike pole.* The term "pike pole" means a long pole whose end is shod with a sharp pointed spike.

(31) *Pitman rod.* The term "pitman rod" means connecting rod.

(32) *Resaw.* The term "resaw" means band, circular, or sash gang saws used to break down slabs, cants, or flitches into lumber.

(33) *Running line.* The term "running line" means any moving rope as distinguished from a stationary rope such as a guyline.

(34) *Safety factor.* The term "safety factor" means a calculated reduction factor which may be applied to laboratory test values to obtain safe working stresses for wooden beams and other mechanical members; ratio of breaking load to safe load.

(35) *Saw guide.* The term "saw guide" mean a device for steadying a circular or bandsaw.

(36) *Setwork.* The term "setwork" means a mechanism on a sawmill carriage which enables an operator to move the log into position for another cut.

(37) *Sorting gaps.* The term "sorting gaps" means the areas on a log pond enclosed by boom sticks into which logs are sorted.

(38) *Spreader wheel.* The term "spreader wheel" means a metal wheel that separates the board from the log in back of circular saws to prevent binding.

(39) *Splitter.* The term "splitter" means a knife-type, nonrotating spreader.

(40) *Sticker.* The term "sticker" means a strip of wood or other material used to separate layers of lumber.

(41) *Stiff boom.* The term "stiff boom" means the anchored, stationary boom sticks which are tied together and on which boom men work.

(42) *Swifter.* The term "swifter" is a means of tying boom sticks together to prevent them from spreading while being towed.

(43) *Telltale.* The term "telltale" means a device used to serve as a warning for overhead objects.

(44) *Top saw.* The term "top saw" means the upper of two circular saws on a head rig, both being on the same husk.

(45) *Tramway.* The term "tramway" means a way for trams, usually consisting of parallel tracks laid on wooden beams.

(46) *Trestle.* The term "trestle" means a braced framework of timbers, piles or steelwork for carrying a road or railroad over a depression.

(c) *Building facilities, and isolated equipment*—(1) *Safety factor.* All buildings, docks, tramways, walkways, log dumps, and other structures shall be designed, constructed and maintained so as to support the imposed load in accordance with a safety factor.

(2) *Work areas.* Work areas under mills shall be as evenly surfaced as local conditions permit. They shall be free from unnecessary obstructions and provided with lighting facilities in accordance with American National Standard for Industrial Lighting A11.1—1965.

(3) *Floors.* Flooring in buildings and on ramps and walkways shall be constructed and installed in accordance with established principles of mechanics and sound engineering practices. They shall be of adequate strength to support the estimated or actual dead and live loads acting on them with the resultant stress not exceeding the allowable stress for the material being used.

(i) *Floor and wall openings.* All floor and wall openings shall be protected as prescribed in § 1910.23.

(ii) *Areas beneath floor openings.* Areas under floor openings shall, where practical, be fenced off. When this is not practical, they shall be plainly marked and telltales shall be installed to hang over these areas.

(iii) *Floor maintenance.* The flooring of buildings, docks, and passageways shall be kept in good repair. When a hazardous condition develops that cannot be immediately repaired, the area shall be guarded until adequate repairs are made.

(iv) *Nonslip floors.* Floors, footwalks, and passageways in the work area around machines or other places where a person is required to stand or walk shall be provided with effective means to minimize slipping.

(4) *Walkways, docks, and platforms*—(i) *Width.* Walkways, docks, and platforms shall be of sufficient width to provide adequate passage and working areas.

(ii) *Maintenance.* Walkways shall be evenly floored and kept in good repair.

(iii) *Docks.* Docks and runways used for the operation of lift trucks and other vehicles shall have a substantial guard or shear timber except where loading and unloading are being performed.

(iv) *Elevated walks.* All elevated walks, runways, or platforms, if 4 feet or more from the floor level, shall be provided with a standard railing except on loading or unloading sides of platforms. If height exceeds 6 feet, a standard toe board also shall be provided to prevent material from rolling or falling off.

(v) *Elevated platforms.* Where elevated platforms are used routinely on a daily basis they shall be equipped with stairways or fixed ladders in accordance with § 1910.27.

(vi) *Hazardous locations.* Where required, walkways and stairways with standard handrails shall be provided in elevated and hazardous locations. Where such passageways are over walkways or work areas, standard toe boards shall be provided.

(5) *Stairways* — (i) *Construction.* Stairways shall be constructed in accordance with § 1910.24.

(ii) *Handrails.* Stairways shall be provided with a standard handrail on at least one side or on any open side. Where stairs are more than four feet wide there shall be a standard handrail at each side, and where more than eight feet wide, a third standard handrail shall be erected in the center of the stairway.

(iii) *Lighting.* All stairways shall be adequately lighted as prescribed in Subparagraph (9) of this paragraph.

(6) *Emergency exits including doors and fire escapes*—(i) *Opening.* Doors shall not open directly on or block a flight of stairs, and shall swing in the direction of exit travel.

(ii) *Identification.* Exits shall be located and identified in a manner that affords ready exit from all work areas.

(iii) *Swinging doors.* All swinging doors shall be provided with windows; with one window for each section of double swinging doors. Such windows shall be of shatterproof or safety glass unless otherwise protected against breakage.

(iv) *Sliding doors.* Where sliding doors are used as exits, an inner door shall be cut inside each of the main doors and arranged to open outward.

(v) *Barriers and warning signs.* Where a doorway opens upon a railroad track or upon a tramway or dock over which vehicles travel, a barrier or other warning device shall be placed to prevent workmen from stepping into moving traffic.

(7) *Air requirements.* Ventilation shall be provided to supply adequate fresh healthful air to rooms, buildings, and work areas.

(8) *Vats and tanks.* All open vats and tanks into which workmen could fall shall be guarded.

(9) *Lighting*—(i) *Adequacy.* Illumination shall be provided and designed to supply adequate general and local lighting to rooms, buildings, and work areas during the time of use.

(ii) *Effectiveness.* Factors upon which the adequacy and effectiveness of illumination will be judged, include the following:

(a) The quantity of light in foot-candle intensity shall be sufficient for the work being done.

(b) The quality of the light shall be such that it is free from glare, and has correct direction, diffusion, and distribution.

(c) Shadows and extreme contrasts shall be avoided or kept to a minimum.

(10) *Ladders.* Ladders shall be installed and maintained as specified in §§ 1910.26, 1910.26, and 1910.27.

(11) *Hazard marking.* Physical hazard marking shall be as specified in § 1910.144 of this part.

(12) *Electrical wiring and equipment.* (i) All electrical equipment should be installed and maintained in accordance with requirements specified in Subpart S of this part.

(ii) *Repairs.* Electrical repairs shall be made only by authorized and qualified personnel.

(iii) *Identification.* Marks of identification on electrical equipment shall be clearly visible.

(iv) *Protective equipment.* Rubber protective equipment shall be provided as required by § 1910.137.

(v) *Open switches.* Before working on electrical equipment, switches shall be open and shall be tagged, blocked, or locked out.

(vi) *Concealed conductors.* Where electrical conductors are known to be concealed, no work shall be performed until such conductors are located.

(vii) *Overload relays.* Overload relays shall be reset by authorized qualified personnel only.

(viii) *Passageways to panels.* Passageways to switch centers or panels shall at all times be kept free from obstruction. Not less than 3 feet of clear space shall be maintained in front of switch centers or panels at all times.

(ix) *Bridging fuses.* Doubling or bridging fuses shall be prohibited.

(13) *Hydraulic systems.* Means shall be provided to block, chain, or otherwise secure equipment normally supported by hydraulic pressure so as to provide for safe maintenance.

(14) *Liquefied petroleum gas storage and handling.* Storage and handling of liquified petroleum gas shall be in accordance with the requirements of § 1910.110.

(15) *Gas piping and appliances.* All gas piping and appliances shall be installed in accordance with the American National Standard Requirements for the Installation of Gas Appliances and Gas Piping Z21.30—1964.

(16) *Flammable liquids.* Flammable liquids shall be stored and handled in accordance with § 1910.106.

(17) *Storage, handling, and use of chemicals*—(i) *Threshold limits.* Employees shall not be exposed to airborne concentration of toxic dusts, fumes, vapors, mists or gases that exceed the threshold limit values set forth by § 1910.1000.

(ii) *Protective equipment.* The use of chemicals shall be controlled so as to protect employees from harmful exposure to toxic materials. Where necessary, employees shall be provided with and required to wear such protective equipment as will afford adequate protection against harmful exposure as required by Subpart I of this part.

(iii) *Open surface tank operations.* Open surface tank operations shall conform to the requirements of § 1910.94(d)

(18) *Conveyors*—(i) *Standards.* Construction, operation, and maintenance of conveyors shall be in accordance with American National Standard B20.1—1957.

(ii) *Guarding.* Spiked live rolls shall be guarded.

(19) *Stationary tramways and trestles*—(i) *Foundations and walkways.* Tramways and trestles shall have substantial mud sills or foundations which shall be frequently inspected and kept in repair. When vehicles are operated on tramways and trestles which are used for foot passage, traffic shall be controlled or a walkway with standard handrails at the outer edge and shear timber on the inner edge shall be provided. This walkway shall be wide enough to allow adequate clearance to vehicles. When walkways cross over other thoroughfares, they shall be solidly fenced at the outer edge to a height of 42 inches over such thoroughfares.

(ii) *Clearance.* Stationary tramways and trestles shall have a vertical clearance of 22 feet over railroad rails. When constructed over carrier docks or roads, they shall have a clearance of 6 feet above the driver's foot rest on the carrier, and in no event shall this clearance be less than 12 feet from the roadway. In existing operations where it is impractical to obtain such clearance, telltales, electric signals, signs or other precautionary measures shall be installed.

(20) *Blower, collecting, and exhaust systems*—(i) *Design, construction, and maintenance.* Blower collecting, and exhaust systems should be designed, constructed, and maintained in accordance with American National Standards Z33.1—1961 (For the Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying) and Z12.2—1962 (R1969) (Code for the Prevention of Dust Explosion in Woodworking and Wood Flour Manufacturing Plants).

(ii) *Collecting systems.* All mills containing one or more machines that create dust, shavings, chips, or slivers during a period of time equal to or greater than one-fourth of the working day, shall be equipped with a collecting system. It may be either continuous or automatic, and shall be of sufficient strength and capacity to enable it to remove such refuse from points of operation and immediate vicinities of machines and work areas.

(iii) *Exhaust or conveyor systems.* Each woodworking machine that creates dust, shavings, chips, or slivers shall be equipped with an exhaust or conveyor system located and adjusted to remove the maximum amount of refuse from the point of operation and immediate vicinity.

(v) *Exhaust pipes.* Exhaust pipes shall be of such construction and internal dimensions as to minimize the possibility of clogging. They should be accessible for cleaning.

(v) *Dust chambers.* Exhaust pipes shall not discharge into an unconfined outside pile if uncontrolled fire or explosion hazards are created. They may empty into settling or dust chambers, designed to prevent the dust or refuse from entering any work area. Such chambers shall be constructed and operated to minimize the danger of fire or dust explosion.

(vi) *Hand removal of refuse.* Provision for the daily removal of refuse shall be made in all operations not required to have an exhaust system or having refuse too heavy, bulky, or otherwise unsuitable to be handled by the exhaust system.

(21) *Chippers*—(i) *Whole-log chippers.* The feed system to the chipper shall be arranged so the operator does not stand in direct line with the chipper spout (hopper). The chipper spout shall be enclosed to a height of not less than 36 inches from the floor or the operator's platform. A safety belt and lifeline shall be worn by workmen when working at or near the spout unless the spout is guarded. The lifeline shall be short enough to prevent workers from falling into the chipper.

(ii) *Hogs.* (a) Hog mills shall be so designed and arranged that from no position on the rim of the chute shall the distance to the cutter knives be less than 40 inches.

(b) Hog feed chutes shall be provided with suitable and approved baffles, which shall minimize material from being thrown from the mill.

(c) Employees feeding hog mills shall be provided with safety belts and lines unless guarded.

(22) *Mechanical power-transmission apparatus.* The construction, operation, and maintenance of all mechanical power-transmission apparatus shall be in accordance with the requirements of § 1910.219.

(23) *Bins, bunkers, hoppers, and fuel houses*—(i) *Guarding.* Open bins, bunkers, and hoppers whose upper edges extend less than 3 feet above working level shall be equipped with standard handrails and toe boards, or have their tops covered by a substantial grill or grating with openings small enough to prevent a man from falling through.

(ii) *Use of wheeled equipment to load bins.* Where automotive or other wheeled equipment is used to move materials into bins, bunkers, and hoppers, adequate guard rails shall be installed along each side of the runway, and a substantial bumper stop provided when necessary.

(iii) *Exits, lighting, and safety devices.* Fuel houses and bins shall have adequate exits and lighting, and all necessary safety devices shall be provided and shall be used by persons entering these structures.

(iv) *Walkways.* Where needed, fuel houses and bins shall have a standard railed platform or walkway near the top.

(24) *Ropes, cables, slings, and chains*—(i) *Safe usage.* Ropes, cables, slings, and chains shall be used in accordance with safe use practices recommended by the manufacturer or within safe limits recommended by the equipment manufacturer when used in conjunction with it.

(ii) *Hooks.* No open hook shall be used in rigging to lift any load where there is hazard from relieving the tension on the hook from the load or hook catching or fouling.

(iii) *Work by qualified persons.* Installation, inspection, maintenance, repair, and testing of ropes, cables, slings, and chains shall be done only by persons qualified to do such work.

(iv) *Slings.* (a) Slings and their fittings and fastenings, when in use, shall be inspected daily for evidence of overloading, excessive wear, or damage. Slings found to be defective shall be removed from service.

(b) Proper storage shall be provided for slings while not in use.

(c) Suitable protection shall be provided between the sling and sharp unyielding surfaces of the load to be lifted.

(v) *Ropes or cables.* (a) Wire rope or cable shall be inspected when installed and once each week thereafter, when in use. It shall be removed from hoisting or load-carrying service when kinked or when one of the following conditions exists:

(1) When three broken wires are found in one lay of 6 by 6 wire rope.

(2) When six broken wires are found in one lay of 6 by 19 wire rope.

(3) When nine broken wires are found in one lay of 6 by 37 wire rope.

(4) When eight broken wires are found in one lay of 8 by 19 wire rope.

(5) When marked corrosion appears.

(6) Wire rope of a type not described herein shall be removed from service when 4 percent of the total number of wires composing such rope are found to be broken in one lay.

(b) Wire rope removed from service due to defects shall be plainly marked or identified as being unfit for further use on cranes, hoists, and other load-carrying devices.

(c) The ratio between the rope diameter and the drum, block, sheave, or pulley tread diameter shall be such that the rope will adjust itself to the bend without excessive wear, deformation, or injury. In no case shall the safe value of drums, blocks, sheaves, or pulleys be reduced when replacing such items unless compensating changes are made for rope used and for safe loading limits.

(vi) *Drums, sheaves, and pulleys.* Drums, sheaves, and pulleys shall be smooth and free from surface defects liable to injure rope. Drums, sheaves, or pulleys having eccentric bores or cracked hubs, spokes, or flanges shall be removed from service.

(vii) *Connections.* Connections, fittings, fastenings, and other parts used in connection with ropes and cables shall be of good quality and of proper size and strength, and shall be installed in accordance with the manufacturer's recommendations.

(viii) *Socketing, splicing, and seizing.* (a) Socketing, splicing, and seizing of cables shall be performed only by qualified persons.

(b) All eye splices shall be made in an approved manner and wire rope thimbles of proper size shall be fitted in the eye, except that in slings the use of thimbles shall be optional.

(c) Wire rope clips attached with U-bolts shall have these bolts on the dead or short end of the rope. The U-bolt nuts shall be retightened immediately after initial load carrying use and at frequent intervals thereafter.

(d) When a wedge socket-type fastening is used, the dead or short end of the cable shall be clipped with a U-bolt or otherwise made secure against loosening.

(e) *Fittings.* Hooks, shackles, rings, pad eyes, and other fittings that show excessive wear or that have been bent, twisted, or otherwise damaged shall be removed from service.

(f) *Running lines.* Running lines of hoisting equipment located within 6 feet 6 inches of the ground or working level shall be boxed off or otherwise guarded, or the operating area shall be restricted.

(g) *Number of wraps on drum.* There shall be not less than two full wraps of hoisting cable on the drum of cranes and hoists at all times of operation.

(h) *Drum flanges.* Drums shall have a flange at each end to prevent the cable from slipping off.

(i) *Sheave guards.* Bottom sheaves shall be protected by close fitting guards to prevent cable from jumping the sheave.

(j) *Preventing abrasion.* The reeving of a rope shall be so arranged as to minimize chafing or abrading while in use.

(ix) *Chains.* (a) Chains used in load carrying service shall be inspected before initial use and weekly thereafter.

(b) Chain shall be normalized or annealed periodically as recommended by the manufacturer.

(c) If at any time any 3-foot length of chain is found to have stretched one-third the length of a link it shall be discarded.

(d) Bolts or nails shall not be placed between two links to shorten or join chains.

(e) Broken chains shall not be spliced by inserting a bolt between two links with the head of the bolt and nut sustaining the load, or by passing one link through another and inserting a bolt or nail to hold it.

(x) *Fiber rope.* (a) Frozen fiber rope shall not be used in load carrying service.

(b) Fiber rope that has been subjected to acid or excessive heat shall not be used for load carrying purposes.

(c) Fiber rope shall be protected from abrasion by padding where it is fastened or drawn over square corners or sharp or rough surfaces.

(25) [Reserved]

(26) *Mechanical stackers and unstackers*—(i) *Power-transmission apparatus.* Stackers and unstackers, shall have all gears, sprockets, chains, belt drives, and other power transmission apparatus guarded as specified in § 1910.219.

(ii) *Lumber lifting devices.* Lumber lifting devices on all stackers shall be designed and arranged so as to minimize the possibility of lumber falling from such devices.

(iii) *Blocking hoisting platform.* Means shall be provided to positively block the hoisting platform when employees must go beneath the stacker or unstacker hoist.

(iv) *Identifying controls.* Every manually operated control switch shall be properly identified and so located as to be readily accessible to the operator.

(v) *Locking main control switches.* Main control switches shall be so designed that they can be locked in the open position.

(vi) *Guarding side openings.* The hoistway side openings at the top level of the stacker and unstacker shall be protected by enclosures of standard railings.

(vii) *Guarding hoistway openings.* When the hoist platform or top of the load is below the working platform, the hoistway openings shall be guarded.

(viii) *Guarding lower landing area.* The lower landing area of stackers and unstackers shall be guarded by enclosures that prevent entrance to the area or pit below the hoist platform. Entrances should be protected by electrically interlocked gates which, when open, will disconnect the power and set the hoist brakes. When the interlock is not installed, other positive means of protecting the entrance shall be provided.

(ix) *Inspection.* Every stacker and unstacker shall be inspected at frequent intervals and all defective parts shall be immediately repaired or replaced.

(x) *Cleaning pits.* Safe means of entrance and exit shall be provided to permit cleaning of pits.

(xi) *Preventing entry to hazardous area.* Where the return of trucks from unstacker to stacker is by mechanical power or gravity, adequate signs, warning devices, or barriers shall be erected to prevent entry into the hazardous area.

(27) *Lumber piling and storage—*(i) *Pile foundations.* In stacking units of lumber, pile foundations shall be designed and arranged to support maximum loads without sinking, sagging, or permitting the piles to topple. In unit package piles, substantial bolsters or unit separators shall be placed between each package directly over the stickers.

(ii) *Stacking dissimilar unit packages.* Long units of lumber shall not be stacked upon shorter packages except where a stable pile can be made with the use of package separators.

(iii) *Unstable piles.* Piles of lumber which have become unstable shall be immediately made safe, or the area into which they might fall shall be fenced or barricaded and employees prohibited from entering it.

(iv) *Stickers.* Unit packages of lumber shall be provided with stickers as necessary to insure stability under ordinary operating conditions.

(v) *Sticker alignment.* Stickers shall extend the full width of the package, shall be uniformly spaced, and shall be aligned one above the other. Stickers may be lapped with a minimum overlapping of 12 inches. Stickers shall not protrude more than 2 inches beyond the sides of the package.

(vi) *Pile height.* The height of unit package piles shall be dependent on the dimensions of the packages and shall be such as to provide stability under normal operating conditions. Adjacent lumber piles may be tied together with separators to increase stability.

(28) *Lumber loading.* Loads shall be built and secured to insure stability in transit.

(29) *Burners—*(i) *Guying.* If the burner stack is not self-supporting, it shall be guyed or otherwise supported.

(ii) *Runway.* The conveyor runway to the burner shall be equipped with a standard handrail. If the runway crosses a roadway or thoroughfare, standard toe boards shall be provided in addition.

(30) *Vehicles—*(i) *Scope.* Vehicles shall include all mobile equipment normally used in sawmill, planing mill, storage, shipping, and yard operations.

(ii) *Warning signals and spark arrestors.* All vehicles shall be equipped with audible warning signals and where practicable shall have spark arrestors.

(iii) *Lights.* All vehicles operated in the dark or in poorly lighted areas shall be equipped with head and tail lights.

(iv) *Overhead guard.* All vehicles operated in areas where overhead hazards exist shall be equipped with an approved overhead guard. See American National Standard Safety Code for Powered Industrial Trucks, B56.1—1969.

(v) *Platform guard.* Where the operator is exposed to hazard from backing the vehicle into objects, an approved platform guard shall be provided and so arranged as to not impede exit of driver from vehicle.

(vi) *Exposed parts.* Vehicle flywheels, gears, sprockets, chains, shear points, and other exposed parts constituting a hazard to the operator or other persons shall be guarded in accordance with the requirements of § 1910.219.

(vii) *Operation in buildings.* Vehicles powered by internal combustion engines shall not operate in buildings unless the buildings are adequately ventilated.

(viii) *Load limits.* No vehicle shall be operated with loads exceeding its safe load capacity.

(ix) *Brakes.* All vehicles shall be equipped with brakes capable of holding and controlling the vehicle and capacity load upon any incline or grade over which they may be operated.

(x) *Lift trucks.* Lift trucks shall be designed, constructed, maintained, and operated in accordance with the requirements of § 1910.178.

(xi) *Carriers.* (a) Carriers shall be so designed and constructed that the operator's field of vision shall not be unnecessarily restricted.

(b) Carriers shall be provided with an access ladder or equivalent.

(xii) *Lumber hauling trucks.* (a) On trucks where movement of load on stopping would endanger the operator, a substantial bulkhead shall be installed behind the operator's seat. This shall extend to the top of the operator's compartment.

(b) Stakes, stake pockets, racks, tighteners, and binders shall provide adequate means to secure the load against any movement during transit.

(c) Where rollers are used, at least two shall be equipped with locks which shall be locked when supporting loads during transit.

(31) *Traffic control and flow—*(i) *Hazardous crossings.* Railroad tracks and other hazardous crossings shall be plainly posted and appropriate traffic control devices (American National Standard D8.1—1967 for Railroad-Highway Grade Crossing Protection) should be utilized.

(ii) *Restricted overhead clearance.* All areas of restricted side or overhead clearance shall be plainly marked.

(iii) *Pickup and unloading points.* Pickup and unloading points and paths for lumber packages on conveyors and transfers and other areas where accurate spotting is required, shall be plainly marked and wheel stops provided where necessary.

(iv) *Aisles, passageways, and roadways.* Aisles, passageways, and roadways shall be sufficiently wide to provide safe side clearance. One-way aisles may be used for two-way traffic if suitable turnouts are provided.

(d) *Log handling, sorting, and storage—*(1) *Log unloading methods, equipment, and facilities—*(i) *Unloading methods.* (a) Stakes and chocks which trip shall be constructed in such manner that the tripping mechanism that releases the stake or chocks is activated at the opposite side of the load being tripped.

(b) Binders on logs shall not be released prior to securing with unloading lines or other unloading device.

(c) Binders shall be released only from the side on which the unloader operates, except when released by remote control devices or except when person making release is protected by racks or stanchions or other equivalent means.

(d) Loads on which a binder is fouled by the unloading machine shall have an extra binder or metal band of equal strength placed around the load, or the load shall be otherwise secured so the fouled binder can be safely removed.

(ii) *Unloading equipment and facilities.* (a) Machines used for hoisting, unloading, or lowering logs shall be equipped with brakes capable of controlling or holding the maximum load in midair.

(b) The lifting cylinders of all hydraulically operated log handling machines shall be equipped with a positive device for preventing the uncontrolled lowering of the load or forks in case of a failure in the hydraulic system.

(c) A limit switch shall be installed on powered log handling machines to prevent the lift arms from traveling too far in the event the control switch is not released in time.

(d) When forklift-type machines are used to load trailers, a means of securing the loading attachment to the fork shall be installed and used.

(e) A-frames and similar log unloading devices shall have adequate height to provide safe clearance for swinging loads and to provide for adequate crotch lines and spreader bar devices.

(f) Log handling machines used to stack logs or lift loads above operator's head shall be equipped with adequate overhead protection.

(g) All mobile log handling machines shall be equipped with headlights and backup lights.

(h) Unloading devices shall be equipped with a horn or other plainly audible signaling device.

(i) Movement of unloading equipment shall be coordinated by audible or hand signals when operator's vision is impaired or operating in the vicinity of other employees.

(j) Wood pike poles shall be made of straight-grained, select material. Metal or conductive pike poles shall not be used around exposed energized electrical conductors. Defective, blunt, or dull pike poles shall not be used.

(2) *Log unloading and storage areas—*(i) *General.* (a) Log dumps, booms, ponds, or storage areas used at night shall be illuminated in accordance with the requirements of American National Standard A11.1—1965 (R-1970) Standard Practice for Industrial Lighting.

(b) Log unloading areas shall be arranged and maintained to provide a safe working area.

(c) Where skids are used, space adequate to clear a man's body shall be maintained between the top of the skids and the ground.

(d) Signs prohibiting unauthorized foot or vehicle traffic in log unloading and storage areas shall be posted.

(ii) *Water log dumps.* (a) Ungrounded electrically powered hoists using handheld remote control in grounded locations, such as log dumps or mill log lifts, shall be actuated by circuits operating at less than 50 volts to ground.

(b) Roadbeds at log dumps shall be of sufficient width and evenness to insure safe operation of equipment.

(c) An adequate brow log or skid timbers or the equivalent shall be provided where necessary. Railroad-type dumps, when located where logs are dumped directly into water or where entire loads are lifted from vehicle, may be exempted providing such practice does not create a hazardous exposure of personnel or equipment.

(d) Unloading lines shall be arranged so that it is not necessary for the employees to attach them from the pond or dump side of the load except when entire loads are lifted from the log-transporting vehicle.

(e) Unloading lines, crotch lines, or equally effective means shall be arranged and used in a manner to minimize the possibility of any log from swinging or rolling back.

(f) When logs are unloaded with peavys or similar manual methods, means shall be provided and used that will minimize the danger from rolling or swinging logs.

(g) Guardrails, walkways, and standard handrails shall be installed.

(h) Approved life rings (see: 46 CFR 160.009 and 46 CFR 160.050) with line attached and maintained to retain buoyancy shall be provided.

(iii) *Log booms and ponds.* (a) Walkways and floats shall be installed and securely anchored to provide adequate passageway for employees.

(b) All regular boom sticks and foot logs shall be reasonably straight, with no protruding knots and bark, and shall be capable of supporting, above the water line at either end, the weight of an employee and equipment.

(c) Permanent cable swifters shall be so arranged that it will not be necessary to roll boom sticks in order to attach or detach them.

(d) Periodic inspection of cable or dogging lines shall be made to determine when repair or removal from service is necessary.

(e) The banks of the log pond in the vicinity of the log haul shall be reinforced to prevent caving in.

(f) Artificial log ponds shall be drained, cleaned, and refilled when unhealthy stagnation or pollution occurs.

(g) Employees whose duties require them to work from boats, floating logs, boom sticks, or walkways along or on water shall be provided with and shall wear appropriate buoyant devices while performing such duties.

(h) Stiff booms shall be two float logs wide secured by boom chains or other connecting devices, and of a width adequate for the working needs. Walking surfaces shall be free of loose material and maintained in good repair.

(i) Boom sticks shall be fastened together with adequate crossties or couplings.

(j) Floating donkeys or other power-driven machinery used on booms shall be placed on a raft or float with enough buoyancy to keep the deck well above water.

(k) All sorting gaps shall have a substantial stiff boom on each side.

(iv) *Pond boats and rafts.* The applicable provisions of the Standard for Fire Protection for Motorcraft, NFPA No. 302—1968, shall be complied with.

(a) Decks of pond boats shall be covered with nonslip material.

(b) Powered pond boats or rafts shall be provided with at least one approved fire extinguisher, and one lifering with line attached.

(c) Boat fuel shall be transported and stored in approved safety containers (Underwriters' Laboratories, Inc.).

(d) Inspection, maintenance, and ventilation of the bilge area shall be provided to prevent accumulation of highly combustible materials.

(e) Adequate ventilation shall be provided for the cabin area on enclosed cabin-type boats to prevent accumulation of harmful gases or vapors.

(v) *Dry deck storage.* (a) Dry deck storage areas shall be kept orderly and shall be maintained in a condition which is conducive to safe operation of mobile equipment.

(b) Logs shall be stored in a safe and orderly manner, and roadways and traffic lanes shall be maintained at a width adequate for safe travel of log handling equipment.

(c) Logs shall be arranged to minimize the chance of accidentally rolling from the deck.

(vi) *Log hauls and slips.* (a) Walkways along log hauls shall have a standard handrail on the outer edge, and cleats or other means to assure adequate footing and enable employees to walk clear of the log chute.

(b) Log haul bull chains or cable shall be designed, installed, and maintained to provide adequate safety for the work need.

(c) Log haul gear and bull chain drive mechanism shall be guarded.

(d) Substantial troughs for the return strand of log haul chains shall be provided over passageways.

(e) Log haul controls shall be located and identified to operate from a position where the operator will, at all times, be in the clear of logs, machinery, lines, and rigging. In operations where control is by lever exposed to incoming logs, the lever shall be arranged to operate the log haul only when moved toward the log slip or toward the log pond.

(f) A positive stop shall be installed on all log hauls to prevent logs from traveling too far ahead in the mill.

(g) Overhead protection shall be provided for employees working below logs being moved to the log deck.

(h) Log wells shall be provided with safeguards to minimize the possibility of logs rolling back into well from log deck.

(3) *Log decks—*(i) *Access.* Safe access to the head rig shall be provided.

(ii) *Stops.* Log decks shall be provided with adequate stops, chains, or other safeguards to prevent logs from rolling down the deck onto the carriage or its runway.

(iii) *Barricade.* A barricade or other positive stop of sufficient strength to stop any log shall be erected between the sawyer's stand and the log deck.

(iv) *Loose chains.* Loose chains from overhead canting devices or other equipment shall not be allowed to hang over the log deck in such manner as to strike employees.

(v) *Swing saws.* Swing saws on log decks shall be equipped with a barricade and stops for protection of employees who may be on the opposite side of the log haul chute.

(vi) *Drag saws.* Where reciprocating log cutoff saws (drag saws) are provided, they shall not project into walkway or aisle.

(vii) *Circular cutoff saws.* Circular log bucking or cutoff saws shall be so located and guarded as to allow safe entrance to and exit from the building.

(viii) *Entrance doorway.* Where the cutoff saw partially blocks the entrance from the log haul runway, the entrance shall be guarded.

(4) *Mechanical barkers—*(i) *Rotary barkers.* Rotary barking devices shall be so guarded as to protect employees from flying chips, bark, or other extraneous material.

(ii) *Elevating ramp.* If an elevating ramp or gate is used, it shall be provided with a safety chain, hook, or other means of suspension while employees are underneath.

(iii) *Area around barkers.* The hazardous area around ring barkers and their conveyors shall be fenced off or posted as a prohibited area for unauthorized persons.

(iv) *Enclosing hydraulic barkers.* Hydraulic barkers shall be enclosed with strong baffles at the inlet and outlet. The operator shall be protected by adequate safety glass or equivalent.

(v) *Holddown rolls.* Holddown rolls shall be installed at the infeed and outfeed sections of mechanical ring barkers to control the movement of logs.

(e) *Log breakdown and related machinery and facilities—*(1) *Log carriages and carriage runways—*(i) *Bumpers.* A substantial stop or bumper with adequate shock-absorptive qualities shall be installed at each end of the carriage runway.

(ii) *Footing.* Rider-type carriages shall be floored to provide secure footing and a firm working platform for the block setter.

(iii) *Sheave housing.* Sheaves on rope-driven carriages shall be guarded at floor line with substantial housings.

(iv) *Carriage control.* A positive means shall be provided to prevent unintended movement of the carriage. This may involve a control locking device, a carriage tie-down, or both.

(v) *Barriers and warning signs.* A barrier shall be provided to prevent employees from entering the space necessary for travel of the carriage, with headblocks fully receded, for the full length and extreme ends of carriage runways. Warning signs shall be posted at possible entry points to this area.

(vi) *Overhead clearance.* For a rider-type carriage adequate overhead clear space above the carriage deck shall be provided for the full carriage runway length.

(vii) *Sweeping devices.* Carriage track sweeping devices shall be used to keep track rails clear of debris.

(viii) *Dogs.* Dogging devices shall be adequate to secure logs, cants, or boards, during sawing operations.

(2) *Head saws*—(i) *Band head saws.* (a) Band head saws shall not be operated at speeds in excess of those recommended by the manufacturer.

(b) Band head saws shall be thoroughly inspected for cracks, splits, broken teeth, and other defects. A band-saw with a crack greater than one-tenth the width of the saw shall not be placed in service until width of saw is reduced to eliminate crack, until cracked section is removed, or crack development is stopped.

(c) Provisions shall be made for alerting and warning employees before starting band head saws, and measures shall be taken to insure that all persons are in the clear.

(ii) *Bandsaw wheels.* (a) No bandsaw wheel shall be run at a peripheral speed in excess of that recommended by the manufacturer. The manufacturer's recommended maximum speed shall be stamped in plainly legible figures on some portion of the wheel.

(b) Band head saw wheels shall be subjected to monthly inspections. Hubs, spokes, rims, bolts, and rivets shall be thoroughly examined in the course of such inspections. A loose or damaged hub, a rim crack, or loose spokes shall make the wheel unfit for service.

(c) Band wheels shall be completely encased or guarded, except for a portion of the upper wheel immediately around the point where the blade leaves the wheel, to permit operator to observe movement of equipment. Necessary ventilating and observation ports may be permitted. Substantial doors or gates are allowed for repair, lubrication, and saw changes; such doors or gates shall be closed securely during operation. Band head rigs shall be equipped with a saw catcher or guard of substantial construction.

(iii) *Single circular head saws.* (a) Circular head saws shall not be operated at speeds in excess of those specified by the manufacturer. Maximum speed shall be etched on the saw.

(b) Circular head saws shall be equipped with safety guides which can be readily adjusted without use of hand tools.

(c) The upper saw of a double circular mill shall be provided with a substantial hood or guard. A screen or other suitable device shall be placed so as to protect the sawyer from flying particles.

(d) All circular sawmills where live rolls are not used behind the head saw shall be equipped with a spreader wheel or splitter.

(iv) *Twin circular head saws.* Twin circular head saw rigs such as scrag saws shall meet the specifications for single circular head saws in subdivision (iii) of this subparagraph where applicable.

(v) *Whole-log sash gang saws (Swedish gangs).* (a) Cranks, pitman rods, and other moving parts shall be adequately guarded.

(b) Feed rolls shall be enclosed by a cover over the top, front, and open ends except where guarded by location. Drive mechanism to feed rolls shall be enclosed.

(c) Carriage cradles of whole-log sash gang saws (Swedish gangs), shall be of adequate height to prevent logs from kicking out while being loaded.

(3) *Resaws*—(i) *Band resaws.* Band resaws shall meet the specifications for band head saws as required by subparagraph (2) (i) of this paragraph.

(ii) *Circular gang resaws.* (a) Banks of circular gang resaws shall be guarded by a hood.

(b) Circular gang resaws shall be provided with safety fingers or other anti-kickback devices.

(c) Circular gang resaws shall not be operated at speeds exceeding those recommended by the manufacturer.

(d) Feed belts and drive pulleys shall be guarded in accordance with the requirements of § 1910.219.

(e) Feed rolls shall be guarded.

(f) Each circular gang resaw, except self-feed saws with a live roll or wheel at back of saw, shall be provided with spreaders.

(iii) *Sash gang resaws.* Sash gang resaws shall meet the safety specifications of whole-log sash gang saws in accordance with the requirements of subparagraph (2) (v) of this paragraph.

(4) *Trimmer saws*—(i) *Maximum speed.* Trimmer saws shall not be run at peripheral speeds in excess of those recommended by the manufacturer.

(ii) *Guards.* (a) Trimmer saws shall be guarded in front by adequate baffles to protect against flying debris and they shall be securely bolted to a substantial frame. These guards for a series of saws shall be set as close to the top of the trimmer table as is practical.

(b) The end saws on trimmers shall be guarded.

(c) The rear of trimmer saws shall have a guard the full width of the saws and as much wider as practical.

(iii) *Safety stops.* Automatic trimmer saws shall be provided with safety stops or hangers to prevent saws from dropping on table.

(5) *Edgers*—(i) *Location.* (a) Where vertical arbor edger saws are located ahead of the main saw, they shall be so guarded that an employee cannot contact any part of the edger saw from his normal position.

(b) Edgers shall not be located in the main roll case behind the head saws.

(ii) *Guards.* (a) The top and the openings in end and side frames of edgers shall be adequately guarded and gears and chains shall be fully housed. Guards may be hinged or otherwise arranged to permit oiling and the removal of saws.

(b) All edgers shall be equipped with pressure feed rolls.

(c) Pressure feed rolls on edgers shall be guarded against accidental contact.

(iii) *Antikickback devices.* (a) Edgers shall be provided with safety fingers or other approved methods of preventing kickbacks or guarding against them. A barricade in line with the edger, if properly fenced off, may be used if safety fingers are not feasible to install.

(b) A controlling device shall be installed and located so that the operator can stop the feed mechanism without releasing the tension of the pressure rolls.

(iv) *Operating speed of live rolls.* Live rolls and tailing devices in back of edger shall operate at a speed not less than the speed of the edger feed rolls.

(6) *Planers*—(i) *Guards.* (a) All cutting heads shall be guarded.

(b) Side head hoods shall be of sufficient height to safeguard the head setscrew.

(c) Pressure feed rolls and "pineapples" shall be guarded.

(d) Levers or controls shall be so arranged or guarded as to reduce the possibility of accidental operation.

(f) *Dry kilns and facilities*—(1) *Kiln foundations.* Dry kilns shall be constructed upon solid foundations to prevent cracks from sagging.

(2) *Passageways.* A passageway shall be provided to give adequate clearance on at least one side or in the center of end-piled kilns and on two sides of cross-piled kilns.

(3) *Doors*—(i) *Main kiln doors.* (a) Main kiln doors shall be provided with a method of holding them open while kiln is being loaded.

(b) Counterweights on vertical lift doors shall be boxed or otherwise guarded.

(c) Adequate means shall be provided to firmly secure main doors, when they are disengaged from carriers and hangers, to prevent toppling.

(ii) *Escape doors.* (a) If operating procedures require access to kilns, kilns shall be provided with escape doors that operate easily from the inside, swing in the direction of exit, and are located in or near the main door at the end of the passageway.

(b) Escape doors shall be of adequate height and width to accommodate an average size man.

(4) *Pits.* Pits shall be well ventilated, drained, and lighted, and shall be large enough to safely accommodate the kiln operator together with operating devices such as valves, dampers, damper rods, and traps.

(5) *Steam mains.* All high-pressure steam mains located in or adjacent to an operating pit shall be covered with heat-insulating material.

(6) *Ladders.* A fixed ladder, in accordance with the requirements of § 1910.27 or other adequate means shall be provided to permit access to the roof. Where controls and machinery are mounted on the roof, a permanent stairway with standard handrail shall be installed in accordance with the requirements of § 1910.24.

(7) *Chocks.* A means shall be provided for chocking or blocking cars.

(8) *Kiln tender room.* A warm room shall be provided for kiln employees to stay in during cold weather after leaving a hot kiln.

(9) *Mechanical equipment.* All belts, pulleys, blowers, and other exposed moving equipment used in or about kilns shall be guarded in accordance with the requirements of § 1910.219.

(g) *Personal protective equipment.* The requirements for personal protective equipment specified in subpart I shall be complied with.

(h) *Sanitation requirements.* The requirements of § 1910.141 shall govern sanitation practices.

(i) *Fire protection.* The requirements of Subpart L of this part shall be complied with in providing the necessary fire protection for sawmills.

(j) *Effective dates.* (1) The provisions of this § 1910.265 shall become effective on August 27, 1973, except as provided in the remaining subparagraphs of this paragraph.

(2) The following provisions shall become effective on February 15, 1972:

§ 1910.265 (c) (19), (c) (15), and (c) (30) (iv).

(3) Notwithstanding subparagraph (1), (2), or (4) of this paragraph, any provision in any other paragraph of this section which contains in itself a specific effective date or time limitation shall become effective on such date or shall apply in accordance with such limitation.

(4) Notwithstanding anything in subparagraph (1) of this paragraph, if any standard in 41 CFR Part 50–204, other than a national consensus standard incorporated by reference in § 50–204.2 (a) (1), is or becomes applicable at any time to any employment and place of employment, by virtue of the Walsh-Healey Public Contracts Act, or the Service Contract Act of 1965, or the National Foundation on Arts and Humanities Act of 1965, any corresponding established Federal standard in this § 1910.265 which is derived from 41 CFR Part 50–204 shall also become effective, and shall be applicable to such employment and place of employment, on the same date.

[39 FR 23502, June 27, 1974, as amended at 40 FR 23073, May 28, 1975]

§ 1910.266 Pulpwood logging.

(a) *Application*—(1) *General.* This section applies to pulpwood logging operations including but not limited to the operations of felling; limbing, marking, bucking, loading, skidding, prehauling and other operations associated with the preparation and movement of pulpwood timber from the stump to the point of delivery. The provisions of this section do not apply to logging operations relating to sawlogs, veneer bolts, poles, piling and other forest products.

(2) *Standards incorporated by reference.* Standards covering issues of occupational safety and health which are of general application without regard to any specific industry are incorporated by reference in paragraphs of this section and made applicable to pulpwood logging. All such standards shall be construed according to the rules of construction set out in § 1910.5.

(b) *Definitions applicable to this section*—(1) *Arch.* The term "arch" means an extension to rear section of a vehicle used in skidding used to raise the forward part of a load clear of the ground.

(2) *Back cut (felling cut).* The term "back cut" means the final cut in a felling operation made on the opposite side from the undercut.

(3) *Backfill.* The term "backfill" means excavated material used to build up a road higher than the original level.

(4) *Ballistic nylon.* The term "ballistic nylon" means a fabric of high tensile properties designed to provide protection from lacerations.

(5) *Borrow.* The term "borrow" means road construction material which is taken to another location for use. The source area is called "borrow pit."

(6) *Buck.* The term "buck" means the process of severing a tree into sections (logs or bolts).

(7) *Choker.* The term "choker" means a length of wire rope or chain with a loop or noose at one end used to secure trees or sections of trees for skidding.

(8) *Debark.* The term "debark" means the action of removing bark from trees or sections of trees. Debark generally denotes mechanical means as opposed to manual peeling. Synonyms are "bark" and "barking".

(9) *Fairlead.* The term "fairlead" means an arrangement of horizontal, and sometimes vertical, rollers usually mounted at the end of an arch to allow free play of wire rope during winching.

(10) *Fell.* The term "fell" means the process of severing a tree from the stump so that it drops to the ground. Note that "fell" and "feller" are used in this standard. The terms "fall" and "faller" are

commonly used in the Western United States and they have the same meaning as "fell" and "feller".

(11) *Grade (see slope).* The term "grade" means the slope of a surface such as a roadway. Also, the elevation of a real or planned surface or structure.

(12) *Guarded.* The term "guarded" means protected by a cover, shield, rail, or other device, or by location, so as to reduce the probability of injury.

(13) *Guyline.* The term "guyline" means a line used to stay or support spar trees, booms, etc.

(14) *Landing.* The term "landing" means any area where wood is concentrated. It is also called "yard," "deck," "brow."

(15) *Lodged tree.* The term "lodged tree" means a tree that has not fallen to the ground after being partly or wholly separated from its stump or otherwise displaced from its natural position.

(16) *Pickaroon.* The term "pickaroon" means a device with a head similar to an axe but with a point rather than a blade mounted on the end of a handle which is used to assist in the lifting and placement of bolts of wood.

(17) *Prehaul.* The term "prehaul" means the hauling of forest products by off-the-road vehicles, nonhighway transport, or other movement prior to highway or rail movement, where the pulpwood travels clear of the ground. The term "forward" has the same meaning.

(18) *Riprap.* The term "riprap" means rock, metal stripping, or wooden timbers used to contain and stabilize earth embankments and fills.

(19) *Root wad.* The term "root wad" means the ball of roots which extends above ground level when a tree is pushed over by wind or other means.

(20) *Skid.* The term "skid" means the movement of bolts, logs, or trees by pulling or towing across the terrain. It may be accomplished by a stationary machine, a moving vehicle, or animal. The term is also called "yarding". The definitive feature is contact between the terrain and the product during movement.

(21) *Slope (see grade).* The term "slope" is a term of measurement in percent and means the increase in height over the distance measured. An increase of 1 foot over a distance of 5 feet is expressed as a 20 percent slope.

(22) *Snag.* The term "snag" means any dead standing tree or portion thereof remaining standing.

(23) *Spring pole.* The term "spring pole" means a section of tree, sapling, limb, etc. which is, by virtue of its arrangement with relation to other materials, under tension.

(24) *Undercut.* The term "undercut" means a notch cut in a tree to guide the tree in felling.

(25) *Widow maker.* The term "widow maker" means an overhanging limb or section of tree which could become dislodged and drop to the ground (see also "lodged tree").

(26) *Wood hook.* The terms "wood hook" and "pulp hook" mean a device to be held in one hand which is fitted with a pointed section. The device is used to assist in the manual piling and handling of bolts of wood (see Pickaroon).

(c) *General requirements*—(1) *Clothing, personal protective devices, and first aid.*

(i) Gloves shall be provided for use when working with wire rope in any form.

(ii) Safety boots or shoes (excluding low cut shoes) shall be provided in accordance with American National Standard for Men's Safety-Toe Footwear, Z41.1—1967.

(iii) Safety helmets of approved design in accordance with American National Standard for Safety Requirements for Industrial Head Protection, Z89.1—1969 shall be provided.

(iv) Eye or face protection in accordance with American National Standard for Practice for Occupational and Educational Eye and Face Protection, Z87.1—1968 shall be provided for use where chips and sawdust or flying particles are present.

(v) Dust masks in accordance with American National Standard Practices for Respiratory Protection Z88.2—1969 shall be provided for use where conditions warrant.

(vi) Protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in Table G–16 of § 1910.95 when measured on the A scale of a standard sound level meter at slow response.

(vii) First aid kits sufficient for the number of employees shall be provided at the work site and on all transport vehicles. In all areas where poisonous

snakes may exist, snake bite kits shall be a part of the regular first aid equipment. First aid kits shall be regularly inspected and replenished.

(2) *Handtools.* (i) The employer shall be responsible for the safe condition of tools when furnished by him and user shall inspect tool to assure safe condition.

(ii) Handles shall be sound, straight and tight fitting.

(iii) Driven tools shall be dressed to remove any mushrooming.

(iv) Cutting tools shall be kept sharp and properly shaped.

(v) Wood hooks and pickaroons of good grade steel shall be used.

(vi) Tools shall be used for purposes for which they were designed.

(vii) Handtools shall be sheathed or boxed if transported in a vehicle with personnel. If not contained in a box, the sheathed tools shall be fastened to the vehicle.

(viii) Proper storage facilities shall be provided for hand tools. Tools shall be stored in the provided location at all times when not in use.

(ix) Periodic inspections shall be made to assure all tools are serviceable and others removed from use.

(3) *Environmental conditions.* (i) All work shall terminate and employees moved to a place of safety during electrical storms and periods of high winds or other unusual weather conditions are dangerous to personnel.

(ii) Dead, broken, or rotted limbs or trees that are a hazard (widow makers) shall be felled or otherwise removed before commencing logging operations, building roads, trails or landing, in their vicinity.

(4) *Work areas.* (i) All persons shall be instructed to work within the vocal range of other workmen unless a procedure has been established for periodically checking their location and welfare.

(ii) All men shall be accounted for at the end of each work day.

(iii) An approved (Underwriters' Laboratories or Factory Mutual Engineering Corp.) fire extinguisher shall be provided at locations where machines are operating and/or on each vehicle.

(iv) Fuel shall be stored only in approved (Underwriters' Laboratories or Factory Mutual Engineering Corp.) well-marked containers located for safe access for fueling vehicles and equipment and at a safe distance from all fire hazards.

(5) *Chain saw operations.* (i) Chain saw operators shall be instructed to daily inspect the saws daily to assure that all handles and guards are in place and tight, that all controls function properly, and that the muffler is operative.

(ii) Chain saw operators shall be instructed to follow manufacturer's instructions as to operation and adjustment.

(iii) Chain saw operators shall be instructed to fuel the saw only in safe areas and not under conditions conducive to fire such as near men smoking, hot engine, etc.

(iv) Chain saw operators shall be instructed to hold the saw with both hands during operation.

(v) Chain saw operators shall be instructed to start the saw at least 10 feet away from fueling area.

(vi) Chain saw operators shall be instructed to start the saw only on the ground or when otherwise firmly supported.

(vii) Chain saw operators shall be instructed to be certain of footing and to clear away brush which might interfere before starting to cut.

(viii) Chain saw operators shall be instructed not to use engine fuel for starting fires or as a cleaning solvent.

(ix) Chain saw operators shall be instructed to shut off the saw when carrying it for a distance greater than from tree to tree or in hazardous conditions such as slippery surfaces or heavy underbrush. The saw shall be at idle speed when carried short distances.

(x) Chain saw operators shall be instructed to carry the saw in a manner to prevent contact with the chain and muffler.

(xi) Chain saw operators shall be instructed not to use the saw to cut directly overhead or at a distance that would require the operator to relinquish a safe grip on the saw.

(6) *Stationary and mobile equipment operation.* (i) Equipment operators shall be instructed as to the manufacturers recommendations for equipment operation, maintenance, safe practices, and site operating procedures.

(ii) Equipment shall be kept free of flammable material.

(iii) Equipment shall be kept free of any material which might contribute to slipping and falling.

(iv) Engine of equipment shall be shut down during fueling, servicing, and repairs except where operation is required for adjustment.

(v) Equipment shall be inspected for evidence of failure or incipient failure.

(vi) The equipment operator shall be instructed to walk completely around machine and assure that no obstacles or personnel are in the area before startup.

(vii) The equipment operator shall be instructed to start and operate equipment only from the operator's station or from safe area recommended by the manufacturer.

(viii) Seat belt shall be provided on mobile equipment.

(ix) The equipment operator shall be instructed to check all controls for proper function and response before starting working cycle.

(x) The equipment operator shall be instructed to ground or secure all movable elements when not in use.

(xi) The equipment operator shall be advised of the load capacity and operating speed of the equipment.

(xii) The equipment operator shall be advised of the stability limitations of the equipment.

(xiii) The equipment operator shall be instructed to maintain adequate distance from other equipment and personnel.

(xiv) Where signalmen are used, the equipment operator shall be instructed to operate the equipment only on signal from the designated signalman and only when signal is distinct and clearly understood.

(xv) The equipment operator shall be instructed not to operate movable elements (boom, grapple, load, etc.) close to or over personnel.

(xvi) The equipment operator shall be instructed to signal his intention before operation when personnel are in or near the working area.

(xvii) The equipment operator shall be instructed to dismount and stand clear for all loading and unloading of his mobile vehicle by other mobile equipment. The dismounted operator shall be visible to loader operator.

(xviii) The equipment operator shall be instructed to operate equipment in a manner that will not place undue shock loads on wire rope.

(xix) The equipment operator shall be instructed not to permit riders or observers on the machine unless approved seating and protection is provided.

(xx) The equipment operator shall be instructed to shut down the engine when the equipment is stopped, apply brake locks and ground moving elements before he dismounts.

(xxi) The equipment operator shall be instructed, when any equipment is transported from one job location to another, to transport it on a vehicle of sufficient rated capacity and the equipment shall be properly secured during transit.

(xxii) When any equipment is being moved or operated in the vicinity of an electric distribution line a minimum clearance of ten feet shall be maintained between the electric distribution line and all elements of the machine.

(7) *Explosives.* Only trained and experienced personnel shall handle or use explosives. Usage shall comply with the requirements of § 1910.109.

(8) *Equipment protective devices—stationary and mobile equipment.*—(i) *Operator's manual.* There shall be an operator's manual or operating instructions with each machine. It will describe operation, maintenance, and safe practices.

(ii) *Protective canopy.* A protective canopy shall be provided for the operator of mobile equipment. It shall be so constructed as to protect the operator from injury due to falling trees or limbs, saplings or branches which might enter the compartment side areas, and snapping winch lines or other objects.

(a) The canopy shall be of adequate size so as not to impair the operator's movements.

(b) The canopy framework shall consist of at least two arches, either transverse or longitudinal. If transverse, one arch shall be installed behind the operator and one immediately in front of the operator. They shall be joined at the top by at least two longitudinal braces. There shall be two braces which shall act as deflecting guards extending from the leading edge of the forward arch to the front part of the frame of the tractor. If longitudinal arches are used, they shall be extended from behind the operator to the front part of the frame and each arch shall have an intermediate support located immediately ahead of the operator so that ingress or egress is not impeded. Regardless of the type of construction used, the fabrication and method of connecting to the tractor shall be of such design as to develop a strength equivalent to the upright members.

(c) The overhead covering shall be of solid material and extend the full width of the canopy.

(d) The lower portion of cab shall be completely enclosed with solid material, except at entrances, to prevent the operator from being injured from obstacles entering the cab.

(e) The upper rear portion of cab shall be fully enclosed with open mesh material with openings of such a size as to reject the entrance of an object larger than 1¾ inch in diameter. It shall provide maximum rearward visibility.

(f) Open mesh shall be extended forward as far as possible from the rear corners of the cab sides so as to give the maximum protection against obstacles, branches, etc., entering the cab area.

(g) Deflectors shall also be installed ahead of the operator to deflect whipping saplings and branches. These shall be located so as to not impede ingress or egress from the compartment.

(h) The entrance opening of the canopy shall be not less than 52 inches in vertical height.

(i) Where glass is used it shall be safety glass. An approved substitute may be used.

(a) An additional metal screen shall be used where glass alone is not adequate operator protection.

(b) Provision shall be made to clean glass to assure adequate visibility.

(9) *Guards.* Guards shall be provided for exposed moving elements such as shafts, pulleys, belts, conveyors, and gears in accordance with § 1910.219 and American National Standard Safety Code for Conveyors, Cableways, and Related Equipment, B20.1—1957. Guards shall be in place at all times machine is in operation.

(10) *Mufflers.* Mufflers provided by the manufacturer or their equivalent shall be in place at all times the machine is in operation.

(11) *Guylines.* Guylines shall be arranged in such manner that stresses will be imposed on not less than two guylines. Stumps used for anchoring guylines shall be carefully chosen as to position and strength. They shall be tied back if necessary. Standing trees shall not be used for this purpose.

(12) *Stability and reliability.* Crane and loader stability and boom reliability shall be in accordance with American National Standard Safety Code for Cranes, Derricks and Hoists Overhead and Gantry Cranes, B30.2.0—1967, and American National Standard Safety Code for Cranes, Derricks and Hoists—Crawler, Locomotive, and Truck Cranes, B30.5—1968.

(c) *Pulpwood harvesting.*—(1) *Felling, general.* (i) Work areas shall be assigned such that a tree cannot fall into an adjacent work area. The recommended distance between workers is twice the height of trees being felled.

(ii) When trees may fall into public roads a flagman shall be assigned to direct traffic.

(iii) Workers shall be instructed not to approach a feller closer than twice the height of trees being felled until the feller has acknowledged the signal of approach.

(iv) Lodged trees shall be pulled to the ground at first opportunity with mechanical equipment or animal.

(v) Workers shall be instructed not to work under a lodged tree.

(vi) Special precautions shall be taken to prevent felling trees into powerlines.

(vii) If a tree does make contact with a powerline the power company shall be notified immediately and all personnel shall remain clear of the area until power company personnel advises that conditions are safe.

(2) *Manual felling.* (i) The feller shall be instructed to plan retreat path and clear path as necessary before cut is started.

(ii) The feller shall be instructed to appraise situation for dead limbs, the lean of tree to be cut, wind conditions, location of other trees and other hazards and exercise proper precautions before cut is started.

(iii) Undercuts shall be about one-third the diameter of the tree to guide tree and reduce possibility of splitting. (Local practice where small diameter trees are felled without being undercut is acceptable if the direction of fall is controlled by the practice.)

(iv) Back or felling cut shall be parallel to the inner edge of the undercut and approximately two inches higher than the undercut.

(v) The saw shall be shut off before feller starts his retreat.

(vi) On terrain where trees are likely to slide or roll fellers shall be instructed to fell trees from the uphill side and arrange to keep uphill from previously felled trees.

(3) *Bucking.* (i) Bucking on slopes shall be from the uphill side unless the log has been securely blocked to prevent rolling or swinging.

(ii) Spring poles and trees under stress shall be cut so that employee is clear when the tension is released. (This is accomplished by cutting under the bend.)

(iii) Trees piled for bucking shall be piled in an orderly parallel manner that minimizes hazard to employees.

(4) *Limbing.* Spring poles and limbs under stress shall be cut in such a manner that the employee is clear when tension is released.

(5) *Mechanical debarking and delimbing.* Guarding shall be provided so as to protect employees from flying chunks, logs, chips, bark, limbs, and other material and to prevent the worker from contacting moving parts.

(6) *Skidding and prehauling, general.*—(i) Only a designated, trained operator shall operate a skid or prehaul machine.

(ii) Choker setters shall work on uphill side of log.

(iii) No passenger personnel shall ride on a prehaul vehicle, logs, pallets, skid pans or other load unless adequate seating and protection is provided except on animal powered wagons.

(iv) Chokers shall be positioned near the end of the log or tree length to allow turning of the prehaul vehicle, to prevent the penetration of the operator station and to reduce possibility of striking the wheel or track.

(v) During winching, the equipment shall be positioned so that the winch line is in alignment with the long axis of the prehaul machine.

(vi) A stuck or inoperative vehicle shall be towed. A loaded pallet shall not be pushed.

(vii) Stakes shall not be added to permit a load beyond the rated capacity of pallets and trailers.

(viii) The operator shall be instructed to be observant and cautious of height of load and vehicle when traveling under trees, limbs, and other overhead obstructions.

(7) *Skidding and prehauling equipment requirements.* (i) Arches, fairleads, drawbars, hitches and bumpers or fenders shall be designed and constructed to allow a minimum radius vehicle turn without the load contacting a rear tire or the rear of a track assembly.

(ii) Towed equipment such as skid pans, pallets and trailers shall be attached in such a manner as to allow a full 90° turn, prevent overrunning of the towed vehicle, and assure control of the towed equipment.

(iii) Animal towed equipment shall be equipped with a hand brake within reach of the driver.

(iv) Prehaulers shall have a means for securely retaining pallets or pulpwood.

(v) Prehaulers shall have a means of securely retaining loader for transport when so equipped.

(vi) Provision shall be made to securely fasten and to protect all tools and material on the carrier.

(8) *Personnel transport.* (i) The driver shall be properly licensed.

(ii) Flammable liquids shall not be transported on personnel carriers unless a safe and adequate compartment is provided.

(iii) Seats shall be securely fastened.

(9) *Off highway truck transport.* Truck drivers shall be instructed to stop their vehicles, dismount, check and tighten loose load binders, either just before or immediately after leaving a private road to enter a public road.

(10) *Manual loading.* (i) The carrier shall be positioned to provide safe working clearance between carrier and pile.

(ii) Proper lifting techniques shall be used, i.e., straight back and bend knees.

(iii) The stick shall be placed in the carrier in such manner that it is or will be properly secured.

(iv) Manual handling shall be limited to a weight consistent with safe practices.

(11) *Machine loading.* (i) Piles shall be located to provide a safe work area.

(ii) Only the machine operator and slingman, where used, shall be in the work area.

(iii) The load shall be positioned for balance and to prevent slippage or loss. Slings shall be placed to secure and balance the load.

(12) *Storage.* Piles shall be located and constructed in a manner to provide safe working area around them.

(13) *Banding and piling bundles.* (i) Steel bands in good condition shall be used.

(ii) Bands shall be placed when bundle is close to ground.

(iii) No part of the body shall be under the bundle at any time. Bundles shall be placed on runners. Bundles may be double stacked with top end bundle one half or more back from the lower rank end bundle.

(14) *Chipping (in-woods locations).* (i) Access covers or doors shall not be opened until the drum or disk is at a complete stop.

(ii) Infeed and discharge ports shall be designed to prevent contact by personnel with disc, knives, or blower blades.

(15) *Roads and trails, general.* (i) Roads shall be maintained and hazardous conditions corrected.

(ii) Where vision is limited warnings shall be posted.

(iii) Curve radii shall be the maximum consistent with terrain.

(iv) When nightwork is necessary adequate lighting shall be provided.

(v) Local road standards and maximum weight of traffic expected shall be used as guides for materials, construction features and drainage.

(16) *Road and trail pioneering and earthwork.* (i) Banks at the borrow area shall be sloped to prevent slides.

(ii) Backfill shall be adequately compacted.

(iii) Roadside banks shall be sloped or stabilized to prevent slides.

(iv) Overhanging banks, large rocks and debris shall be removed or secured.

(v) Where riprap is used the material and design shall assure safe containment of material.

(vi) Trees or snags which may fall into the road shall be felled.

(17) *Road and trail drainage.* (i) Drainage shall be provided to prevent washouts and landslides.

(ii) Culverts shall be of adequate strength and of a size to handle maximum runoff.

(iii) Where necessary, ditches and banks shall be stabilized by vegetation, riprap or other adequate means.

(18) *Road and trail surfacing.* Road surface shall be properly compacted, graded and crowned.

(19) *Bridges.* (i) Construction shall provide for maximum anticipated loads and side thrust with a substantial safety factor.

(ii) Bridges shall be decked and curbed.

(f) *Effective dates.* (1) The provisions of this § 1910.266 shall become effective on August 27, 1971, except as provided in the remaining subparagraphs of this paragraph.

(2) Paragraph (d)(2) of this section shall become effective on February 15, 1972.

(3) Notwithstanding anything in subparagraph (1), (2), or (4) of this paragraph, any provision in any other paragraph of this section which contains in itself a specific effective date or time limitation shall become effective on such date or shall apply in accordance with such limitation.

(4) Notwithstanding anything in subparagraph (1) of this paragraph, if any standard in 41 CFR Part 50-204, other than a national consensus standard incorporated by reference in § 50-204.2 (a)(1), is or becomes applicable at any time to any employment and place of employment, by virtue of the Walsh-Healey Public Contracts Act, or the Service Contract Act of 1965, or the National Foundation on Arts and Humanities Act of 1965, any corresponding established Federal standard in this § 1910.266 which is derived from 41 CFR Part 50-204 shall also become effective, and shall be applicable to such employment and place of employment, on the same date.

§ 1910.267 Agricultural operations.

These standards have been transferred to § 1928.21 of this chapter.

[Sec. 6(b), Pub. L. 91-596, 84 Stat. 1593 (29 U.S.C. 655), Secretary of Labor's Order No. 12-71, 36 FR 8754) [40 FR 18368, Apr. 25, 1975]

§ 1910.268 Telecommunications.

(a) *Application.* (1) This section sets forth safety and health standards that apply to the work conditions, practices, means, methods, operations, installations and processes performed at telecommunications centers and at telecommunications field installations, which are located outdoors or in building spaces used for such field installations. "Center" work includes the installation, operation, maintenance, rearrangement, and removal of communications equipment and other associated equipment in telecommunications switching centers. "Field" work includes the installation, operation, maintenance, rearrangement, and removal of conductors and other equipment used for signal or communication service, and of their supporting or containing structures, overhead or underground, on public or private rights of way, including buildings or other structures.

(2) These standards do not apply: (i) To construction work, as defined in § 1910.12, nor (ii) to installations under the exclusive control of electric utilities used for the purpose of communications or metering, or for generation, control, transformation, transmission, and distribution of electric energy, which are located in buildings used exclusively by the electric utilities for such purposes, or located outdoors on property owned or leased by the electric utilities or on public highways, streets, roads, etc., or outdoors by established rights on private property.

(3) Operations or conditions not specifically covered by this section are subject to all the applicable standards contained in this Part 1910. See § 1910.5(c). Operations which involve construction work, as defined in § 1910.12 are subject to all the applicable standards contained in Part 1926 of this chapter.

(b) *General.*—(1) *Buildings containing telecommunications centers.*—(i) *Illumination.* Lighting in telecommunication centers shall be provided in an adequate amount such that continuing work operations, routine observations, and the passage of employees can be carried out in a safe and healthful manner. Certain specific tasks in centers, such as splicing cable and the maintenance and repair of equipment frame lineups, may require a higher level of illumination. In such cases, the employer shall install permanent lighting or portable supplemental lighting to attain a higher level of illumination shall be provided as needed to permit safe performance of the required task.

(ii) *Working surfaces.* Guard rails and toe boards may be omitted on distribution frame mezzanine platforms to permit access to equipment. This exemption applies only on the side or sides of the platform facing the frames and only on those portions of the platform adjacent to equipped frames.

(iii) *Working spaces.* "Maintenance aisles," or "wiring aisles," between equipment frame lineups are working spaces and are not a means of egress for purposes of § 1910.35(a).

(iv) *Special doors.* When blastproof or power actuated doors are installed in specially designed hardsite security buildings and spaces, they shall be designed and installed so that they can be used as a means of egress in emergencies.

(v) *Equipment, machinery and machine guarding.* When power plant machinery in telecommunications centers is operated with commutators and couplings uncovered, the adjacent housing shall be clearly marked to alert personnel to the rotating machinery.

(2) *Battery handling.* (i) Eye protection devices which provide side as well as frontal eye protection for employees shall be provided when measuring storage battery specific gravity or handling electrolyte, and the employer shall ensure that such devices are used by the employees. The employer shall also ensure that acid resistant gloves and aprons shall be worn for protection against spattering. Facilities for quick drenching or flushing of the eyes and body shall be provided unless the storage batteries are of the enclosed type and equipped with explosion proof vents, in which case sealed water rinse or neutralizing packs may be substituted for the quick drenching or flushing facilities. Employees assigned to work with storage batteries shall be instructed in emergency procedures such as dealing with accidental acid spills.

(ii) Electrolyte (acid or base, and distilled water) for battery cells shall be mixed in a well ventilated room. Acid or base shall be poured gradually, while stirring, into the water. Water shall never be poured into concentrated (greater than 75 percent) acid solutions. Electrolyte shall never be placed in metal containers nor stirred with metal objects.

(iii) When taking specific gravity readings, the open end of the hydrometer shall be covered with an acid resistant material while moving it from cell to cell to avoid splashing or throwing the electrolyte.

(3) *Medical and first aid.* First aid supplies recommended by a consulting physician shall be placed in weatherproof containers (unless stored indoors) and shall be easily accessible. Each first aid kit shall be inspected at least once a month. Expended items shall be replaced.

(4) *Hazardous materials.* Highway mobile vehicles and trailers stored in garages in accordance with § 1910.110 may be equipped to carry more than one LP-gas container, but the total capacity of LP-gas containers per work vehicle stored in garages shall not exceed 100 pounds of LP-gas. All container valves shall be closed when not in use.

(5) *Compressed gas.* When using or transporting nitrogen cylinders in a horizontal position, special compartments, racks, or adequate blocking shall be provided to prevent cylinder movement. Regulators shall be removed or guarded before a cylinder is transported.

(6) *Support structures.* No employee, or any material or equipment, may be supported or permitted to be supported on any portion of a pole structure, platform, ladder, walkway or other elevated structure or aerial device unless the employer ensures that the support structure is first inspected by a competent person and it is determined to be adequately strong, in good working condition and properly secured in place.

(7) *Approach distances to exposed energized overhead power lines and parts.* The employer shall ensure that no employee approaches or takes any conductive object closer to any electrically energized overhead power lines and parts than prescribed in Table R-2, unless:

(i) The employee is insulated or guarded from the energized parts (insulating gloves rated for the voltage involved shall be considered adequate insulation), or

(ii) The energized parts are insulated or guarded from the employee and any other conductive object at a different potential, or

(iii) The power conductors and equipment are deenergized and grounded.

TABLE R-2—APPROACH DISTANCES TO EXPOSED ENERGIZED OVERHEAD POWER LINES AND PARTS

Voltage range (phase to phase, RMS)	Approach distance (inches)
300 V and less	[1]
Over 300V, not over 750V	12
Over 750V not over 2 kV	18
Over 2 kV, not over 15 kV	24
Over 15 kV, not over 37 kV	36
Over 37 kV, not over 87.5 kV	42
Over 87.5 kV, not over 121 kV	48
Over 121 kV, not over 140 kV	54

[1] Avoid contact.

(8) *Illumination of field work.* Whenever natural light is insufficient to adequately illuminate the worksite, artificial illumination shall be provided to enable the employee to perform the work safely.

(c) *Training.* Employers shall provide training in the various precautions and safe practices described in this section and shall insure that employees do not engage in the activities to which this section applies until such employees have received proper training in the various precautions and safe practices required by this section. However, where the employer can demonstrate that an employee is already trained in the precautions and safe practices required by this section prior to his employment, training need not be provided to that employee in accordance with this section. Where training is required, it shall consist of on-the-job training or classroom-type training or a combination of both. The training program shall include a list of the subject courses and the types of personnel required to receive such instruction. A written description of the training program and a record of employees who have received such training shall be maintained for the duration of the employee's employment and shall be made available upon request to the Assistant Secretary for Occupational Safety and Health. Such training shall, where appropriate, include the following subjects:

(1) Recognition and avoidance of dangers relating to encounters with harmful substances, and animal, insect, or plant life.

(2) Procedures to be followed in emergency situations, and

(3) First aid training, including in-

(d) *Employee protection in public work areas.* (1) Before work is begun in the vicinity of vehicular or pedestrian traffic which may endanger employees, warning signs and/or flags or other traffic control devices shall be placed conspicuously to alert and channel approaching traffic. Where further protection is needed, barriers shall be utilized. At night, warning lights shall be prominently displayed, and excavated areas shall be enclosed with protective barricades.

(2) If work exposes energized or moving parts that are normally protected, danger signs shall be displayed and barricades erected, as necessary, to warn other personnel in the area.

(3) The employer shall insure that an employee finding any crossed or fallen wires which create or may create a hazardous situation at the work area: (i) Remains on guard or adopts other adequate means to warn other employees of the danger and (ii) has the proper authority notified at the earliest practical moment.

(e) *Tools and personal protective equipment—Generally.* Personal protective equipment, protective devices and special tools needed for the work of employees shall be provided and the employer shall ensure that they are used by employees. Before each day's use the employer shall ensure that these personal protective devices, tools, and equipment are carefully inspected by a competent person to ascertain that they are in good condition.

(f) *Rubber insulating equipment.* (1) Rubber insulating equipment designed for the voltage levels to be encountered shall be provided and the employer shall ensure that they are used by employees as required by this section. This equipment shall meet the electrical and physical requirements contained in ANSI J6.6-1971 "Standard Specifications for Rubber Insulating Gloves," and ANSI J6.4-1971 "Standard Specifications for Rubber Insulating Blankets," with the exception that the maximum proof test current for a 14 inch Class I glove shall be no more than 14 mA, and with the further exception that existing 14 inch Class I rubber gloves that meet a maximum proof test current of 16 mA and a minimum breakdown voltage of 17,000 volts (RMS) acquired prior to July 1, 1975 may be used as long as these gloves comply with the retest requirements of paragraph (f)(5) of this section.

(2) When these gloves are used on jobs where they may be torn, they shall be protected with heavy outer canvas or leather gloves.

(3) Insulating gloves may be of multiply construction with contrasting colors to aid in the detection of cuts, cracks, and deep abrasions.

(4) Protective equipment fabricated of material other than rubber shall provide electrical and mechanical protection at least equal to that of the rubber equipment.

(5) The employer is responsible for the periodic retesting of all insulating gloves, blankets, and other rubber insulating equipment. This retesting shall be electrical, visual and mechanical. The following maximum retesting intervals shall apply:

Gloves, blankets, and other insulating equipment	Natural rubber	Synthetic rubber
	Months	Months
New	12	18
Re-issued	9	15

(6) Gloves and blankets shall be marked to indicate compliance with the retest schedule, and shall be marked with the date the next test is due. Gloves found to be defective in the field or by the tests set forth in paragraph (f)(5) of this section shall be destroyed by cutting them open from the finger to the gauntlet.

(7) When not being used, insulating gloves shall be stored in glove bags or in their original containers. Insulating blankets shall be stored in a canister or other device which offers equivalent protection.

(8) Insulating gloves and blankets shall be stored away from direct sunlight, steampipes, radiators and other sources of excessive heat. Gloves and blankets shall not be folded while in storage; however, blankets may be rolled for storage.

(9) Rubber gloves shall be visually inspected and air tested prior to each day's use.

(g) *Personal climbing equipment.*—(1) *General.* Safety belts and straps shall be provided and the employer shall ensure their use when work is performed at positions more than 4 feet above ground, on poles, and on towers, except as provided in paragraphs (n)(7) and (n)(8) of this section. No safety belts, safety straps or lanyards acquired after July 1, 1975 may be used unless they meet the tests set forth in paragraph (g)(3) of this section. The employer shall ensure that all safety belts and straps are inspected by a competent person prior to each day's use to determine that they are in safe working condition.

(2) *Telecommunication lineman's body belts, safety straps, and lanyards.*—(i) *General requirements.* (A) Hardware for lineman's body belts, safety straps, and lanyards shall be drop forged or pressed steel and shall have a corrosion resistant finish tested to meet the requirements of the American Society for Testing and Materials B117-64 (50-hour test). Surfaces shall be smooth and free of sharp edges. Production samples of lineman's safety straps, body belts and lanyards shall be approved by a nationally recognized testing laboratory, as having been tested in accordance with and as meeting the requirements of this paragraph.

(B) All buckles shall withstand a 5,000-pound tensile test with a maximum permanent deformation no greater than one sixty-forth inch.

(C) D rings shall withstand a 5,000-pound tensile test without cracking or breaking.

(D) Snaphooks shall withstand a 5,000-pound tensile test, or shall withstand a 3,000-pound tensile test and a 180° bend test. Tensile failure is indicated by distortion of the snaphook sufficient to release the keeper; bend test failure is indicated by cracking of the snaphook.

(ii) *Specific requirements.* (A) (*1*) All fabric used for safety straps shall be capable of withstanding an A.C. dielectric test of not less than 25,000 volts per foot "dry" for 3 minutes, without visible deterioration.

(*2*) All fabric and leather used shall be tested for leakage current. Fabric or leather may not be used if the leakage current exceeds 1 milliampere when a potential of 3,000 volts is applied to the electrodes positioned 12 inches apart.

(*3*) In lieu of alternating current tests, equivalent direct current tests may be performed.

(B) The cushion part of the body belt shall:

(*1*) Contain no exposed rivets on the inside. This provision does not apply to belts used by craftsmen not engaged in line work.

(*2*) Be at least three inches in width;

(*3*) Be at least five thirty-seconds (5/32) inch thick, if made of leather; and

(*4*) Have pocket tabs that extend at least 1½ inches down and three inches back of the inside of the circle of each D ring for riveting on plier or tool pockets. On shifting D ring belts, this measurement for pocket tabs shall be taken when the D ring section is centered.

(C) There may be no more than four tool loops on any body belt.

(D) Suitable copper, steel, or equivalent liners shall be used around the bars of D rings to prevent wear between these members and the leather or fabric enclosing them.

(E) All stitching shall be done with a minimum 42-pound weight nylon or equivalent thread and shall be lock stitched. Stitching parallel to an edge may not be less than three-sixteenths (3/16) inch from the edge of the narrowest member caught by the thread. The use of cross stitching on leather is prohibited.

(F) The keepers of snaphooks shall have a spring tension that will not allow the keeper to begin to open when a weight of 2½ pounds or less is applied, but the keepers shall begin to open when a weight of four pounds is applied. In making this determination, the weight shall be supported on the keeper against the end of the nose.

(G) Safety straps, lanyards, and body belts shall be tested in accordance with the following procedure:

(*1*) Attach one end of the safety strap or lanyard to a rigid support, and the other end to a 250-pound canvas bag of sand;

(*2*) Allow the 250-pound canvas bag of sand to free fall 4 feet when testing safety straps and 6 feet when testing lanyards. In each case, the strap or lanyard shall stop the fall of the 250-pound bag;

(*3*) Failure of the strap or lanyard shall be indicated by any breakage or slippage sufficient to permit the bag to fall free from the strap or lanyard.

(*4*) The entire "body belt assembly" shall be tested using one D ring. A safety strap or lanyard shall be used that is capable of passing the "impact loading test" described in paragraph (g) (*2*) (ii) (G) (*2*) of this section and attached as required in paragraph (g) (*2*) (ii) (G) (*1*) of this section. The body belt shall be secured to the 250-pound bag of sand at a point which simulates the waist of a man and shall be dropped as stated in paragraph (g) (*2*) (ii) (G) (*2*) of this section. Failure of the body belt shall be indicated by any breakage or slippage sufficient to permit the bag to fall free from the body belt.

(*3*) *Pole climbers.* (i) Pole climbers may not be used if the gaffs are less than 1¼ inches in length as measured on the underside of the gaff. The gaffs of pole climbers shall be covered with safety caps when not being used for their intended use.

(ii) The employer shall ensure that pole climbers are inspected by a competent person for the following conditions: Fractured or cracked gaffs or leg irons, loose or dull gaffs, broken straps or buckles. If any of these conditions exist, the defect shall be corrected before the climbers are used.

(iii) Pole climbers shall be inspected as required in this paragraph (g) (*3*) before each day's use and a gaff cut-out test performed at least weekly when in use.

(iv) Pole climbers may not be worn when:

(A) Working in trees (specifically designed tree climbers shall be used for tree climbing),

(B) Working on ladders,

(C) Working in an aerial lift,

(D) Driving a vehicle, nor

(E) Walking on rocky, hard, frozen, brushy or hilly terrain.

(h) *Ladders.* (*1*) The employer shall ensure that no employee nor any material or equipment may be supported or permitted to be supported on any portion of a ladder unless it is first determined, by inspections and checks conducted by a competent person that such ladder is adequately strong, in good condition, and properly secured in place, as required in Subpart D of this part and as required in this section.

(*2*) The spacing between steps or rungs permanently installed on poles and towers shall be no more than 18 inches (36 inches on any one side). This requirement also applies to fixed ladders on towers, when towers are so equipped. Spacing between steps shall be uniform above the initial unstepped section, except where working, standing, or access steps are required. Fixed ladder rungs and step rungs for poles and towers shall have a minimum diameter of ¾". Fixed ladder rungs shall have a minimum clear width of 12 inches. Steps for poles and towers shall have a minimum clear width of 4½ inches. The spacing between detachable steps may not exceed 30 inches on any one side, and these steps shall be properly secured when in use.

(*3*) After April 30, 1975, portable wood ladders intended for general use may not be painted but may be coated with a translucent nonconductive coating. Portable wood ladders may not be longitudinally reinforced with metal.

(*4*) Portable wood ladders that are not being carried on vehicles and are not in active use shall be stored where they will not be exposed to the elements and where there is good ventilation.

(*5*) The provisions of § 1910.25(c)(*5*) shall apply to rolling ladders used in telecommunications centers, except that such ladders shall have a minimum inside width, between the side rails, of at least eight inches.

(*6*) Climbing ladders or stairways on scaffolds used for access and egress shall be affixed or built into the scaffold by proper design and engineering, and shall be so located that their use will not disturb the stability of the scaffold. The rungs of the climbing device shall be equally spaced, but may not be less than 12 inches nominal nor more than 16 inches nominal apart. Horizontal end rungs used for platform support may also be utilized as a climbing device if such rungs meet the spacing requirement of this paragraph (h)(*6*), and if there is sufficient clearance between the rung and the edge of the platform to afford an adequate handhold. If a portable ladder is affixed to the scaffold, it shall be securely attached and shall have rungs meeting the spacing requirements of this paragraph (h)(*6*). Clearance shall be provided in the back of the ladder of not less than 6 inches from center of rung to the nearest scaffold structural member.

(*7*) When a ladder is supported by an aerial strand, and ladder hooks or other supports are not being used, the ladder shall be extended at least 2 feet above the strand and shall be secured to it (e.g. lashed or held by a safety strap around the strand and ladder side rail). When a ladder is supported by a pole, it shall be securely lashed to the pole unless the ladder is specifically designed to prevent movement when used in this application.

(*8*) The following requirements apply to metal manhole ladders. (i) Metal manhole ladders shall be free of structural defects and free of accident hazards such as sharp edges and burrs. The metal shall be protected against corrosion unless inherently corrosion-resistant.

(ii) These ladders may be designed with parallel side rails, or with side rails varying uniformly in separation along the length (tapered), or with side rails flaring at the base to increase stability.

(iii) The spacing of rungs or steps shall be on 12-inch centers.

(iv) Connections between rungs or steps and siderails shall be constructed to insure rigidity as well as strength.

(v) Rungs and steps shall be corrugated, knurled, dimpled, coated with skid-resistant material, or otherwise treated to minimize the possibility of slipping.

(vi) Ladder hardware shall meet the strength requirements of the ladder's component parts and shall be of a material that is protected against corrosion unless inherently corrosion-resistant. Metals shall be so selected as to avoid excessive galvanic action.

(i) *Other tools and personal protective equipment.*—(*1*) *Head protection.* Head protection meeting the requirements of ANSI Z89.2–1971, "Safety Requirements for Industrial Protective Helmets for Electrical Workers, Class B" shall be provided whenever there is exposure to possible high voltage electrical contact, and

the employer shall ensure that the head protection is used by employees.

(*2*) *Eye protection.* Eye protection meeting the requirements of § 1910.133 (a) (*2*) thru (a) (*6*) shall be provided and the employer shall ensure its use by employees where foreign objects may enter the eyes due to work operations such as but not limited to:

(i) Drilling or chipping stone, brick or masonry, breaking concrete or pavement, etc. by hand tools (sledgehammer, etc.) or power tools such as pneumatic drills or hammers;

(ii) Working on or around high speed emery or other grinding wheels unprotected by guards;

(iii) Cutting or chipping terra cotta ducts, tile, etc;

(iv) Working under motor vehicles requiring hammering;

(v) Cleaning operations using compressed air, steam, or sand blast;

(vi) Acetylene welding or similar operations where sparks are thrown off;

(vii) Using powder actuated stud drivers;

(viii) Tree pruning or cutting underbrush;

(ix) Handling battery cells and solutions, such as taking battery readings with a hydrometer and thermometer;

(x) Removing or rearranging strand or open wire; and

(xi) Performing lead sleeve wiping and while soldering.

(*3*) *Tent heaters.* Flame-type heaters may not be used within ground tents or on platforms within aerial tents unless:

(i) The tent covers are constructed of fire resistant materials, and

(ii) Adequate ventilation is provided to maintain safe oxygen levels and avoid harmful buildup of combustion products and combustible gases.

(*4*) *Torches.* Torches may be used on aerial splicing platforms or in buckets enclosed by tents provided the tent material is constructed of fire resistant material and the torch is turned off when not in actual use. Aerial tents shall be adequately ventilated while the torch is in operation.

(*5*) *Portable power equipment.* Nominal 120V, or less, portable generators used for providing power at work locations do not require grounding if the output circuit is completely isolated from the frame of the unit.

(*6*) *Vehicle-mounted utility generators.* Vehicle-mounted utility generators used for providing nominal 240V AC or less for powering portable tools and equipment need not be grounded to earth if all of the following conditions are met:

(i) One side of the voltage source is solidly strapped to the metallic structure of the vehicle;

(ii) Grounding-type outlets are used, with a "grounding" conductor between the outlet grounding terminal and the side of the voltage source that is strapped to the vehicle;

(iii) All metallic encased tools and equipment that are powered from this system are equipped with three-wire cords and grounding-type attachment plugs, except as designated in paragraph (i) (*7*) of this section.

(*7*) *Portable lights, tools, and appliances.* Portable lights, tools, and appliances having noncurrent-carrying external metal housing may be used with power equipment described in paragraph (i) (*5*) of this section without an equipment grounding conductor. When operated from commercial power such metal parts of these devices shall be grounded, unless these tools or appliances are protected by a system of double insulation, or its equivalent. Where such a system is employed, the equipment shall be distinctively marked to indicate double insulation.

(*8*) *Soldering devices.* Grounding shall be omitted when using soldering irons, guns or wire-wrap tools on telecommunications circuits.

(*9*) *Lead work.* The wiping of lead joints using melted solder, gas fueled torches, soldering irons or other appropriate heating devices, and the soldering of wires or other electrical connections do not constitute the welding, cutting and brazing described in Subpart Q of this part. When operated from commercial power the metal housing of electric solder pots shall be grounded. Electric solder pots may be used with the power equipment described in paragraph (i) (*5*) of this section without a grounding conductor. The employer shall ensure that wiping gloves or cloths and eye protection are used in lead wiping operations. A drip pan to catch hot lead drippings shall also be provided and used.

(j) *Vehicle-mounted material handling devices and other mechanical equipment.*—(*1*) *General.* (i) The employer shall ensure that visual inspections are made of the equipment by a competent person each day the equipment is to be used to ascertain that it is in good condition.

(ii) The employer shall ensure that tests shall be made at the beginning of each shift by a competent person to insure the vehicle brakes and operating systems are in proper working condition.

(*2*) *Scrapers, loaders, dozers, graders and tractors.* (i) All rubber-tired, self-propelled scrapers, rubber-tired front end loaders, rubber-tired dozers, agricultural and industrial tractors, crawler tractors, crawler-type loaders, and motor graders, with or without attachments, that are used in telecommunications work shall have rollover protective structures that meet the requirements of Subpart W of Part 1926 of this Title.

(ii) Eye protection shall be provided and the employer shall ensure that it is used by employees when working in areas where flying material is generated.

(*3*) *Vehicle-mounted elevating and rotating work platforms.* These devices shall not be operated with any conductive part of the equipment closer to exposed energized power lines than the clearances set forth in Table R–2 of this section.

(*4*) *Derrick trucks and similar equipment.* (i) This equipment shall not be operated with any conductive part of the equipment closer to exposed energized power lines than the clearances set forth in Table R–2 of this section.

(ii) When derricks are used to handle poles near energized power conductors, these operations shall comply with the requirements contained in paragraphs (b) (*7*) and (n) (*11*) of this section.

(iii) Moving parts of equipment and machinery carried on or mounted on telecommunications line trucks shall be guarded. This may be done with barricades as specified in paragraph (d) (*2*) of this section.

(iv) Derricks and the operation of derricks shall comply with the following requirements: (*A*) Manufacturer's specifications, load ratings and instructions for derrick operation shall be strictly observed.

(B) Rated load capacities and instructions related to derrick operation shall be conspicuously posted on a permanent weather-resistant plate or decal in a location on the derrick that is plainly visible to the derrick operator.

(C) Prior to derrick operation the parking brake must be set and the stabilizers extended if the vehicle is so equipped. When the vehicle is situated on a grade, at least two wheels must be chocked on the downgrade side.

(D) Only persons trained in the operation of the derrick shall be permitted to operate the derrick.

(E) Hand signals to derrick operators shall be those prescribed by ANSI B30.6–1969, "Safety Code for Derricks".

(F) The employer shall ensure that the derrick and its associated equipment are inspected by a competent person at intervals set by the manufacturer but in no case less than once per year. Records shall be maintained including the dates of inspections, and necessary repairs made, if corrective action was required.

(G) Modifications or additions to the derrick and its associated equipment that alter its capacity or affect its safe operation shall be made only with written certification from the manufacturer, or other equivalent entity, such as a nationally recognized testing laboratory, that the modification results in the equipment being safe for its intended use. Such changes shall require the changing and posting of revised capacity and instruction decals or plates. These new ratings or limitations shall be as provided by the manufacturer or other equivalent entity.

(H) Wire rope used with derricks shall be of improved plow steel or equivalent. Wire rope safety factors shall be in accordance with American National Standards Institute B30.6–1969.

(I) Wire rope shall be taken out of service, or the defective portion removed, when any of the following conditions exist: (*1*) The rope strength has been significantly reduced due to corrosion, pitting, or excessive heat, or

(*2*) The thickness of the outer wires of the rope has been reduced to two-thirds or less of the original thickness, or

(*3*) There are more than six broken wires in any one rope lay, or

(*4*) There is excessive permanent distortion caused by kinking, crushing, or severe twisting of the rope.

(*k*) *Materials handling and storage.*—(*1*) *Poles.*—When working with poles in piles or stacks, work shall be performed from the ends of the poles as much as possible, and precautions shall be taken for the safety of employees at the other end of the pole. During pole hauling operations, all loads shall be secured to prevent displacement. Lights, reflectors and/or flags shall be displayed on the end and sides of the load as necessary. The requirements for installation, re-

moval, or other handling of poles in pole lines are prescribed in paragraph (n) of this section which pertains to overhead lines. In the case of hoisting machinery equipped with a positive stop load-holding device, it shall be permissible for the operator to leave his position at the controls (while a load is suspended) for the sole purpose of assisting in positioning the load prior to landing it. Prior to unloading steel, poles, crossarms, and similar material, the load shall be thoroughly examined to ascertain that the load has not shifted, that binders or stakes have not broken, and that the load is not otherwise hazardous to employees.

(2) *Cable reels.* Cable reels in storage shall be checked or otherwise restrained when there is a possibility that they might accidentally roll from position.

(j) *Cable fault locating and testing.* (1) Employees involved in using high voltages to locate trouble or test cables shall be instructed in the precautions necessary for their own safety and the safety of other employees.

(2) Before the voltage is applied, cable conductors shall be isolated to the extent practicable. Employees shall be warned, by such techniques as briefing and tagging at all affected locations, to stay clear while the voltage is applied.

(m) *Grounding for employee protection—pole lines.*—(1) *Power conductors.* Electric power conductors and equipment shall be considered as energized unless the employee can visually determine that they are bonded to one of the grounds listed in paragraph (m) (4) of this section.

(2) *Nonworking open wire.* Nonworking open wire communications lines shall be bonded to one of the grounds listed in paragraph (m) (4) of this section.

(3) *Vertical power conduit, power ground wires and street light fixtures.* (i) Metal power conduit on joint use poles, exposed vertical power ground wires, and street light fixtures which are below communications attachments or less than 20 inches above these attachments, shall be considered energized and shall be tested for voltage unless the employee can visually determine that they are bonded to the communications suspension strand or cable sheath.

(ii) If no hazardous voltage is shown by the voltage test, a temporary bond shall be placed between such street light fixture, exposed vertical power grounding conductor, or metallic power conduit and the communications cable strand. Temporary bonds used for this purpose shall have sufficient conductivity to carry at least 500 amperes for a period of one second without fusing.

(4) *Suitable protective grounding.* Acceptable grounds for protective grounding are as follows:

(i) A vertical ground wire which has been tested, found safe, and is connected to a power system multigrounded neutral or the grounded neutral of a power secondary system where there are at least three services connected;

(ii) Communications cable sheath or shield and its supporting strand where the sheath or shield is:

(A) Bonded to an underground or buried cable which is connected to a central office ground, or

(B) Bonded to an underground metallic piping system, or

(C) Bonded to a power system multigrounded neutral or grounded neutral of a power secondary system which has at least three services connected;

(iii) Guys which are bonded to the grounds specified in paragraphs (m) (4) (i) and (ii) of this section and which have continuity uninterrupted by an insulator; and

(iv) If all of the preceding grounds are not available, arrays of driven ground rods where the resultant resistance to ground will be low enough to eliminate danger to personnel or permit prompt operation of protective devices.

(5) *Attaching and removing temporary bonds.* When attaching grounds (bonds), the first attachment shall be made to the protective ground. When removing bonds, the connection to the line or equipment shall be removed first. Insulating gloves shall be worn during these operations.

(6) *Temporary grounding of suspension strand.* (i) The suspension strand shall be grounded to the existing grounds listed in paragraph (m) (4) of this section when being placed on jointly used poles or during thunderstorm activity.

(ii) Where power crossings are encountered on nonjoint lines, the strand shall be bonded to an existing ground listed in paragraph (m) (4) of this section as close as possible to the crossing. This bonding is not required where crossings are made on a common crossing pole unless there is an upward change in grade at the pole.

(iii) Where roller-type bonds are used, they shall be restrained so as to avoid stressing the electrical connections.

(iv) Bonds between the suspension strand and the existing ground shall be at least No. 6AWG copper.

(v) Temporary bonds shall be left in place until the strand has been tensioned, dead-ended, and permanently grounded.

(vi) The requirements of paragraphs (m) (6) (i) through (m) (6) (v) of this section do not apply to the installation of insulated strand.

(7) *Antenna work-radio transmitting stations 3–30 MHZ.* (i) Prior to grounding a radio transmitting station antenna, the employer shall insure that the rigger in charge:

(A) Prepares a danger tag signed with his signature,

(B) Requests the transmitting technician to shutdown the transmitter and to ground the antenna with its grounding switch,

(C) Is notified by the transmitting technician that the transmitter has been shutdown, and

(D) Tags the antenna ground switch personally in the presence of the transmitting technician after the antenna has been grounded by the transmitting technician.

(ii) Power shall not be applied to the antenna, nor shall the grounding switch be opened under any circumstances while the tag is affixed.

(iii) (A) Where no grounding switches are provided, grounding sticks shall be used, one on each side of line, and tags shall be placed on the grounding sticks, antenna switch, or plate power switch in a conspicuous place.

(B) When necessary to further reduce excessive radio frequency pickup, ground sticks or short circuits shall be placed directly on the transmission lines near the transmitter in addition to the regular grounding switches.

(C) In other cases, the antenna lines may be disconnected from ground and the transmitter to reduce pickup at the point in the field.

(iv) All radio frequency line wires shall be tested for pickup with an insulated probe before they are handled either with bare hands or with metal tools.

(v) The employer shall insure that the transmitting technician warn the riggers about adjacent lines which are, or may become energized.

(vi) The employer shall insure that when antenna work has been completed, the rigger in charge of the job returns to the transmitter, notifies the transmitting technician in charge that work has been completed, and personally removes the tag from the antenna ground switch.

(n) *Overhead lines.*—(1) *Handling suspenson strand.* (i) The employer shall insure that when handling cable suspension strand which is being installed on poles carrying exposed energized power conductors, employees shall wear insulating gloves and shall avoid body contact with the strand until after it has been tensioned, dead-ended and permanently grounded.

(ii) The strand shall be restrained against upward movement during installation:

(A) On joint-use poles, where there is an upward change in grade at the pole, and

(B) On non-joint-use poles, where the line crosses under energized power conductors.

(2) *Need for testing wood poles.* Unless temporary guys or braces are attached, the following poles shall be tested in accordance with paragraph (n) (3) of this section and determined to be safe before employees are permitted to climb them:

(i) Dead-end poles, except properly braced or guyed "X" or "T" cable junction poles,

(ii) Straight line poles which are not storm guyed and where adjacent span lengths exceed 165 feet,

(iii) Poles at which there is a downward change in grade and which are not guyed or braced corner poles or cable junction poles,

(iv) Poles which support only telephone drop wire, and

(v) Poles which carry less than ten communication line wires. On joint use poles, one power line wire shall be considered as two communication wires for purposes of this paragraph (n) (2) (v).

(3) *Methods for testing wood poles.* One of the following methods or an equivalent method shall be used for testing wood poles:

(i) Rap the pole sharply with a hammer weighing about 3 pounds, starting near the ground line and continuing upwards circumferentially around the pole to a height of approximately 6 feet. The hammer will produce a clear sound and rebound sharply when striking sound wood. Decay pockets will be indicated by a dull sound and/or a less pronounced hammer rebound. When decay pockets

are indicated, the pole shall be considered unsafe. Also, prod the pole at gear the ground line as possible using a pole prod or a screwdriver with a blade at least 5 inches long. If substantial decay is encountered, the pole shall be considered unsafe.

(ii) Apply a horizontal force to the pole and attempt to rock it back and forth in a direction perpendicular to the line. Caution shall be exercised to avoid causing power wires to swing together. The force may be applied either by pushing with a pike pole or pulling with a rope. If the pole cracks during the test, it shall be considered unsafe.

(4) *Unsafe poles or structures.* Poles or structures determined to be unsafe by test or observation may not be climbed until made safe by guying, bracing or other adequate means. Poles determined to be unsafe to climb shall, until they are made safe, be tagged in a conspicuous place to alert and warn all employees of the unsafe condition.

(5) *Test requirements for cable suspension strand.* (i) Before attaching a splicing platform to a cable suspension strand, the strand shall be tested and determined to have strength sufficient to support the weight of the platform and the employee. Where the strand crosses above power wires or railroad tracks it may not be tested but shall be inspected in accordance with paragraph (n) (6) of this section.

(ii) The following method or an equivalent method shall be used for testing the strength of the strand: A rope, at least eighths inch in diameter, shall be thrown over the strand. On joint lines, the rope shall be passed over the strand using tree pruner handles or a wire raising tool. If two employees are present, both shall grip the double rope and slowly transfer their entire weight to the rope and attempt to raise themselves off the ground. If only one employee is present, one end of the rope which has been passed over the strand shall be tied to the bumper of the truck, or other equally secure anchorage. The employee then shall grasp the other end of the rope and attempt to raise himself off the ground.

(6) *Inspection of strand.* Where strand passes over electric power wires or railroad tracks, it shall be inspected from an elevated working position at each pole supporting the span in question. The strand may not be used to support any splicing platform, scaffold or cable car, if any of the following conditions exist:

(i) Corrosion so that no galvanizing can be detected,

(ii) One or more wires of the strand are broken,

(iii) Worn spots, or

(iv) Burn marks such as those caused by contact with electric power wires.

(7) *Outside work platforms.* Unless adequate railings are provided, safety straps and body belts shall be used while working on elevated work platforms such as aerial splicing platforms, pole platforms, ladder platforms and terminal balconies.

(8) *Other elevated locations.* Safety straps and body belts shall be worn when working at elevated positions on poles, towers or similar structures, which do not have adequately guarded work areas.

(9) *Installing and removing wire and cable.* Before installing or removing wire or cable, the pole or structure shall be guyed, braced, or otherwise supported, as necessary, to prevent failure of the pole or structure.

(10) *Avoiding contact with energized power conductors or equipment.* When cranes, derricks, or other mechanized equipment are used for setting, moving, ore removing poles, all necessary precautions shall be taken to avoid contact with energized power conductors or equipment.

(11) *Handling poles near energized power conductors.* (i) Joint use poles may not be set, moved, or removed where the nominal voltage of open electrical power conductors exceeds 34.5kV phase to phase (20kV to ground).

(ii) Poles that are to be placed, moved or removed during heavy rains, sleet or wet snow in joint lines carrying more than 8.7kV phase to phase voltage (5kV to ground) shall be guarded or otherwise prevented from direct contact with overhead energized power conductors.

(iii) (A) In joint lines where the power voltage is greater than 750 volts but less than 34.5kV phase to phase (20 kV to ground), wet poles being placed, moved or removed shall be insulated with either a rubber insulating blanket, a fiberglass box guide, or equivalent protective equipment.

(B) In joint lines where the power voltage is greater than 8.7 kV phase to phase (5kV to ground) but less than 34.5kV phase to phase (20 kV to ground), dry poles being placed, moved, or removed shall be insulated with either a rubber insulating blanket, a fiberglass

box guide, or equivalent protective equipment.

(C) Where wet or dry poles are being removed, insulation of the pole is not required if the pole is cut off 2 feet or more below the lowest power wire and also cut off near the ground line.

(iv) Insulating gloves shall be worn when handling the pole with either hands or tools, when there exists a possibility that the pole may contact a power conductor. Where the voltage to ground of the power conductor exceeds 15kV to ground, Class II gloves (as defined in ANSI J6.6–1971) shall be used. For voltages not exceeding 15kV to ground, insulating gloves shall have a breakdown voltage of at least 17kV.

(v) The guard or insulating material used to protect the pole shall meet the appropriate 3 minute proof test voltage requirements contained in the ANSI J6.4–1971.

(vi) When there exists a possibility of contact between the pole or the vehicle-mounted equipment used to handle the pole, and an energised power conductor, the following precautions shall be observed:

(A) When on the vehicle which carries the derrick, avoid all contact with the ground, with persons standing on the ground, and with all grounded objects such as guys, tree limbs, or metal sign posts. To the extent feasible, remain on the vehicle as long as the possibility of contact exists.

(B) When it is necessary to leave the vehicle, step onto an insulating blanket and break all contact with the vehicle before stepping off the blanket and onto the ground. As a last resort, if a blanket is not available, the employee may jump cleanly from the vehicle.

(C) When it is necessary to enter the vehicle, first step onto an insulating blanket and break all contact with the ground, grounded objects and other persons before touching the truck or derrick.

(12) *Working position on poles.* Climbing and working are prohibited above the level of the lowest electric power conducter on the pole (exclusive of vertical runs and street light wiring), except:

(i) where communications facilities are attached above the electric power conductors, and a rigid fixed barrier is installed between the electric power facility and the communications facility, or

(ii) where the electric power conductors are cabled secondary service drops carrying less than 300 volts to ground and are attached 40 inches or more below the communications conductors or cables.

(13) *Metal tapes and ropes.* (i) Metal measuring tapes, metal measuring ropes, or tapes containing conductive strands may not be used when working near exposed energized parts.

(ii) Where it is necessary to measure clearances from energized parts, only nonconductive devices shall be used.

(o) *Underground lines.* The provisions of this paragraph apply to the guarding of manholes and street openings, and to the ventilation and testing for gas in manholes and unvented vaults, where telecommunications field work is performed on or with underground lines.

(1) *Guarding manholes and street openings.* (i) When covers of manholes or vaults are removed, the opening shall be promptly guarded by a railing, temporary cover, or other suitable temporary barrier which is appropriate to prevent an accidental fall through the opening and to protect employees working in the manhole from foreign objects entering the manhole.

(ii) While work is being performed in the manhole, a person with basic first aid training shall be immediately available to render assistance if there is cause for believing that a safety hazard exists, and if the requirements contained in paragraphs (d) (1) and (o) (2) (i) of this section do not adequately protect the employee(s). Examples of manhole worksite hazards which shall be considered to constitute a safety hazard include, but are not limited to:

(A) Manhole worksites where safety hazards are created by traffic patterns that cannot be corrected by provisions of paragraph (d) (1) of this section.

(B) Manhole worksites that are subject to unusual water hazards that cannot be abated by conventional means.

(C) Manhole worksites that are occupied jointly with power utilities as described in paragraph (o) (3) of this section.

(2) *Requirements prior to entering manholes and unvented vaults.* (i) Before

an employee enters a manhole, the following steps shall be taken:

(A) The internal atmosphere shall be tested for combustible gas and, except when continuous forced ventilation is provided, the atmosphere shall also be tested for oxygen deficiency.

(B) When unsafe conditions are detected by testing or other means, the work area shall be ventilated and otherwise made safe before entry.

(ii) An adequate continuous supply of air shall be provided while work is performed in manholes under any of the following conditions:

(A) Where combustible or explosive gas vapors have been initially detected and subsequently reduced to a safe level by ventilation,

(B) Where organic solvents are used in the work procedure,

(C) Where open flame torches are used in the work procedure,

(D) Where the manhole is located in that portion of a public right of way open to vehicular traffic and/or exposed to a seepage of gas or gases, or

(E) Where a toxic gas or oxygen deficiency is found.

(iii) (A) The requirements of paragraphs (o) (2) (i) and (ii) of this section do not apply to work in central office cable vaults that are adequately ventilated.

(B) The requirements of paragraphs (o) (2) (i) and (ii) of this section apply to work in unvented vaults.

(3) *Joint power and telecommunication manholes.* While work is being performed in a manhole occupied jointly by an electric utility and a telecommunication utility, an employee with basic first aid training shall be available in the immediate vicinity to render emergency assistance as may be required. The employee whose presence is required in the immediate vicinity for the purposes of rendering emergency assistance is not to be precluded from occasionally entering a manhole to provide assistance other than in an emergency. The requirement of this paragraph (o) (3) does not preclude a qualified employee, working alone, from entering for brief periods of time, a manhole where energized cables or equipment are in service, for the purpose of inspection, housekeeping, taking readings, or similar work if such work can be performed safely.

(4) *Ladders.* Ladders shall be used to enter and exit manholes exceeding 4 feet in depth.

(5) *Flames.* When open flames are used in manholes, the following precautions shall be taken to protect against the accumulation of combustible gas:

(i) A test for combustible gas shall be made immediately before using the open flame device, and at least once per hour while using the device; and

(ii) a fuel tank (e.g., acetylene) may not be in the manhole unless in actual use.

(p) *Microwave transmission.*—(1) *Eye protection.* Employers shall insure that employees do not look into an open waveguide which is connected to an energized source of microwave radiation.

(2) *Hazardous area.* Accessible areas associated with microwave communication systems where the electromagnetic radiation level exceeds the radiation protection guide given in § 1910.97 shall be posted as described in that section. The lower half of the warning symbol shall include the following:

Radiation in this area may exceed hazard limitations and special precautions are required. Obtain specific instruction before entering.

(3) *Protective measures.* When an employee works in an area where the electromagnetic radiation exceeds the radiation protection guide, the employer shall institute measures that insure that the employee's exposure is not greater than that permitted by the radiation guide. Such measures shall include, but not be limited to those of an administrative or engineering nature or those involving personal protective equipment.

(q) *Tree trimming—electrical hazards.*—(1) *General.* (i) Employees engaged in pruning, trimming, removing, or clearing trees from lines shall be required to consider all overhead and underground electrical power conductors to be energized with potentially fatal voltages, never to be touched (contacted) either directly or indirectly.

(ii) Employees engaged in line-clearing operations shall be instructed that:

(A) A direct contact is made when any part of the body touches or contacts an energized conductor, or other energized electrical fixture or apparatus.

(B) An indirect contact is made when any part of the body touches any object in contact with an energized electrical conductor, or other energized fixture or apparatus.

(C) An indirect contact can be made through conductive tools, tree branches, trucks, equipment, or other objects, or as a result of communications wires, cables, fences, or guy wires being accidentally energized.

(D) Electric shock will occur when an employee, by either direct or indirect contact with an energized conductor, energized tree limb, tool, equipment, or other object, provides a path for the flow of electricity to a grounded object or to the ground itself. Simultaneous contact with two energized conductors will also cause electric shock which may result in serious or fatal injury.

(iii) Before any work is performed in proximity to energized conductors, the system operator/owner of the energized conductors shall be contacted to ascertain if he knows of any hazards associated with the conductors which may not be readily apparent. This rule does not apply when operations are performed by or on behalf of, the system operator/owner.

(2) *Working in proximity to electrical hazards.* (i) Employers shall ensure that a close inspection is made by the employee and by the foreman or supervisor in charge before climbing, entering, or working around any tree, to determine whether an electrical power conductor passes through the tree, or passes within reaching distance of an employee working in the tree. If any of these conditions exist either directly or indirectly, an electrical hazard shall be considered to exist unless the system operator/owner has caused the hazard to be removed by deenergizing the lines, or installing protective equipment.

(ii) Only qualified employees or trainees, familiar with the special techniques and hazards involved in line clearance, shall be permitted to perform the work if it is found that an electrical hazard exists.

(iii) During all tree working operations aloft where an electrical hazard of more than 750V exists, there shall be a second employee or trainee qualified in line clearance tree trimming within normal voice communication.

(iv) Where tree work is performed by employees qualified in line-clearance tree trimming and trainees qualified in line-clearance tree trimming, the clearances from energized conductors given in Table R–3 shall apply.

TABLE R–3—*Minimum working distances from energized conductors for line-clearance tree trimmers and line-clearance tree-trimmer trainees*

Voltage range (phase to phase) (kilovolts)	*Minimum working distance*
2.1 to 15.0	2 ft. 0 in.
15.1 to 35.0	2 ft. 4 in.
35.1 to 46.0	2 ft. 6 in.
46.1 to 72.5	3 ft. 0 in.
72.6 to 121.0	3 ft. 4 in.
138.0 to 145.0	3 ft. 6 in.
161.0 to 169.0	3 ft. 8 in.
230.0 to 242.0	5 ft. 0 in.
345.0 to 362.0	7 ft. 0 in.
500.0 to 552.0	11 ft. 0 in.
700.0 to 765.0	15 ft. 0 in.

(v) Branches hanging on an energized conductor may only be removed using appropriately insulated equipment.

(vi) Rubber footwear, including lineman's overshoes, shall not be considered as providing any measure of safety from electrical hazards.

(vii) Ladders, platforms, and aerial devices, including insulated aerial devices, may not be brought in contact with an electrical conductor. Reliance shall not be placed on their dielectric capabilities.

(viii) When an aerial lift device contacts an electrical conductor, the truck supporting the aerial lift device shall be considered as energized.

(3) *Storm work and emergency conditions.* (i) Since storm work and emergency conditions create special hazards, only authorized representatives of the electric utility system operator/owner and not telecommunication workers may perform tree work in these situations where energized electrical power conductors are involved.

(ii) When an emergency condition develops due to tree operations, work shall be suspended and the system operator/owner shall be notified immediately.

(r) *Buried facilities—Communications lines and power lines in the same trench* [Reserved]

(s) *Definitions.*—(1) *Aerial lifts* Aerial lifts include the following types of vehicle-mounted aerial devices used to elevate personnel to jobsites above ground:

(i) Extensible boom platforms,

(ii) Aerial ladders,

(iii) Articulating boom platforms,

(iv) Vertical towers,

(v) A combination of any of the above defined in ANSI A92.2–1969. These devices are made of metal, wood, fiberglass reinforced plastic (FRP), or other material; are powered or manually operated; and are deemed to be aerial lifts whether or not they are capable of rotating about a substantially vertical axis.

(2) *Aerial splicing platform.* This consists of a platform, approximately 3 ft. x 4 ft., used to perform aerial cable work. It is furnished with fiber or synthetic ropes for supporting the platform from aerial strand, detachable guy ropes for anchoring it, and a device for raising and lowering it with a handline.

(3) *Aerial tent.* A small tent usually constructed of vinyl coated canvas which is usually supported by light metal or plastic tubing. It is designed to protect employees in inclement weather while working on ladders, aerial splicing platforms, or aerial devices.

(4) *Alive or live (energized).* Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of the earth in the vicinity. The term "live" is sometimes used in the place of the term "current-carrying," where the intent is clear, to avoid repetition of the longer term.

(5) *Barricade.* A physical obstruction such as tapes, cones, or "A" frame type wood and/or metal structure intended to warn and limit access to a work area.

(6) *Barrier.* A physical obstruction which is intended to prevent contact with energized lines or equipment, or to prevent unauthorized access to work area.

(7) *Bond.* An electrical connection from one conductive element to another for the purpose of minimizing potential differences or providing suitable conductivity for fault current or for mitigation of leakage current and electrolytic action.

(8) *Cable.* A conductor with insulation, or a stranded conductor with or without insulation and other coverings (single-conductor cable), or a combination of conductors insulated from one another (multiple-conductor cable).

(9) *Cable sheath.* A protective covering applied to cables.

NOTE.—A cable sheath may consist of multiple layers of which one or more is conductive.

(10) *Circuit.* A conductor or system of conductors through which an electric current is intended to flow.

(11) *Communication lines.* The conductors and their supporting or containing structures for telephone, telegraph, railroad signal, data, clock, fire, police-alarm, community television antenna and other systems which are used for public or private signal or communication service, and which operate at potentials not exceeding 400 volts to ground or 750 volts between any two points of the circuit, and the transmitted power of which does not exceed 150 watts. When communications lines operate at less than 150 volts to ground, no limit is placed on the capacity of the system. Specifically designed communications cables may include communication circuits not complying with the preceding limitations, where such circuits are also used incidentally to supply power to communication equipment.

(12) *Conductor.* A material, usually in the form of a wire, cable, or bus bar, suitable for carrying an electric current.

(13) *Effectively grounded.* Intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the build-up of voltages which may result in undue hazard to connected equipment or to persons.

(14) *Equipment.* A general term which includes materials, fittings, devices, appliances, fixtures, apparatus, and similar items used as part of, or in connection with, a supply or communications installation.

(15) *Ground (reference).* That conductive body, usually earth, to which an electric potential is referenced.

(16) *Ground (as a noun).* A conductive connection, whether intentional or accidental, by which an electric circuit or equipment is connected to reference ground.

(17) *Ground (as a verb).* The connecting or establishment of a connection, whether by intention or accident, of an electric circuit or equipment to reference ground.

(18) *Ground tent.* A small tent usually constructed of vinyl coated canvas supported by a metal or plastic frame. Its purpose is to protect employees from inclement weather while working at buried cable pedestal sites or similar locations.

(19) *Grounded conductor.* A system or circuit conductor which is intentionally grounded.

(20) *Grounded systems.* A system of conductors in which at least one conductor or point (usually the middle wire, or the neutral point of transformer or generator windings) is intentionally grounded, either solidly or through a current-limiting device (not a current-interrupting device).

(21) *Grounding electrode conductor. (Grounding conductor).* A conductor used to connect equipment or the grounded circuit of a wiring system to a grounding electrode.

(22) *Insulated.* Separated from other conducting surfaces by a dielectric substance (including air space) offering a high resistance to the passage of current.

NOTE.—When any object is said to be insulated, it is understood to be insulated in suitable manner for the conditions to which it is subjected. Otherwise, it is, within the purpose of these rules, uninsulated. Insulating coverings of conductors is one means of making the conductor insulated.

(23) *Insulation (as applied to cable).* That which is relied upon to insulate the conductor from other conductors or conducting parts or from ground.

(24) *Joint use.* The sharing of a common facility, such as a manhole, trench or pole, by two or more different kinds of utilities (e.g., power and telecommunications).

(25) *Ladder platform.* A device designed to facilitate working aloft from an extension ladder. A typical device consists of a platform (approximately 9" x 18") hinged to a welded pipe frame. The rear edge of the platform and the bottom cross-member of the frame are equipped with latches to lock the platform to ladder rungs.

(26) *Ladder seat.* A removable seat used to facilitate work at an elevated position on rolling ladders in telecommunication centers.

(27) *Manhole.* A subsurface enclosure which personnel may enter and which is used for the purpose of installing, operating, and maintaining submersible equipment and/or cable.

(28) *Manhole platform.* A platform consisting of separate planks which are laid across steel platform supports. The ends of the supports are engaged in the manhole cable racks.

(29) *Microwave transmission.* The act of communicating or signaling utilizing a frequency between 1 GHz (gigahertz) and 300 GHz inclusively.

(30) *Nominal voltage.* The nominal voltage of a system or circuit is the value assigned to a system or circuit of a given voltage class for the purpose of convenient designation. The actual voltage may vary above or below this value.

(31) *Pole balcony or seat.* A balcony or seat used as a support for workmen at pole-mounted equipment or terminal boxes. A typical device consists of a bolted assembly of steel details and a wooden platform. Steel braces run from the pole to the underside of the balcony. A guard rail (approximately 30" high) may be provided.

(32) *Pole platform.* A platform intended for use by a workman in splicing and maintenance operations in an elevated position adjacent to a pole. It consists of a platform equipped at one end with a hinged chain binder for securing the platform to a pole. A brace from the pole to the underside of the platform is also provided.

(33) *Qualified employee.* Any worker who by reason of his training and experience has demonstrated his ability to safely perform his duties.

(34) *Qualified line-clearance tree trimmer.* A tree worker who through related training and on-the-job experience is familiar with the special techniques and hazards involved in line clearance.

(35) *Qualified line-clearance tree-trimmer trainee.* Any worker regularly

assigned to a line-clearance tree-trimming crew and undergoing on-the-job training who, in the course of such training, has demonstrated his ability to perform his duties safely at his level of training.

(36) *System operator/owner.* The person or organization that operates or controls the electrical conductors involved.

(37) *Telecommunications center.* An installation of communication equipment under the exclusive control of an organization providing telecommunications service, that is located outdoors or in a vault, chamber, or a building space used primarily for such installations.

NOTE.—Telecommunication centers are facilities established, equipped and arranged in accordance with engineered plans for the purpose of providing telecommunications service. They may be located on premises owned or leased by the organization providing telecommunication service, or on the premises owned or leased by others. This definition includes switch rooms (whether electromechanical, electronic, or computer controlled), terminal rooms, power rooms, repeater rooms, transmitter and receiver rooms, switchboard operating rooms, cable vaults, and miscellaneous communications equipment rooms. Simulation rooms of telecommunication centers for training or developmental purposes are also included.

[40 FR 13441, Mar. 26, 1975]

(38) *Telecommunications derricks.* Rotating or nonrotating derrick structures permanently mounted on vehicles for the purpose of lifting, lowering, or positioning hardware and materials used in telecommunications work.

(39) *Telecommunication line truck.* A truck used to transport men, tools, and material, and to serve as a traveling workshop for telecommunication installation and maintenance work. It is sometimes equipped with a boom and auxiliary equipment for setting poles, digging holes, and elevating material or men.

(40) *Telecommunication service.* The furnishing of a capability to signal or communicate at a distance by means such as telephone, telegraph, police and fire-alarm, community antenna television, or similar system, using wire, conventional cable, coaxial cable, wave guides, microwave transmission, or other similar means.

(41) *Unvented vault.* An enclosed vault in which the only openings are access openings.

(42) *Vault.* An enclosure above or below ground which personnel may enter, and which is used for the purpose of installing, operating, and/or maintaining equipment and/or cable which need not be of submersible design.

(43) *Vented vault.* An enclosure as described in paragraph (a)(42) of this section, with provision for air changes using exhaust flue stack(s) and low level air intake(s), operating on differentials of pressure and temperature providing for air flow.

(44) *Voltage of an effectively grounded circuit.* The voltage between any conductor and ground unless otherwise indicated.

(45) *Voltage of a circuit not effectively grounded.* The voltage between any two conductors. If one circuit is directly connected to and supplied from another circuit of higher voltage (as in the case of an autotransformer), both are considered as of the higher voltage, unless the circuit of lower voltage is effectively grounded, in which case its voltage is not determined by the circuit of higher voltage. Direct connection implies electric connection as distinguished from connection merely through electromagnetic or electrostatic induction.

[40 FR 13441, Mar. 26, 1975]

§ 1910.274 Sources of standards.

Sec.	Source
1910.261	ANSI P1.1—1960, Safety Standard for Pulp, Paper, and Paperboard Mills.
1910.264	ANSI L1.1—1956, Textile Safety Code.
1910.268	ANSI Z50.1—1947, Safety Code for Bakery Equipment.
1910.282	ANSI Z8.1—1961, Safety Code for Laundry Machinery and Operations.
1910.265	ANSI O2.1—1969, Safety Requirements for Sawmills.
1910.266	ANSI O3.1—1971, Pulpwood Logging Safety Standards.

[39 FR 23502, June 27, 1975. Redesignated at 40 FR 13449, Mar. 26, 1975]

§ 1910.275 Standards organizations.

Specific standards of the following organizations have been referenced in this subpart. Copies of the referenced standards may be obtained from the issuing organizations. The names and addresses of the issuing organizations are as follows:

American National Standards Institute (ANSI)
1430 Broadway
New York, New York 10018

National Fire Protection Association (NFPA)
470 Atlantic Avenue
Boston, Massachusetts 02210

American Society of Mechanical Engineers, Inc., United Engineering Center
345 East 47th Street
New York, New York 10017

Institute of Markers of Explosives
420 Lexington Avenue
New York, New York 10017

Underwriters' Laboratories, Inc.
207 East Ohio Street
Chicago, Illinois 60611

American Society for Testing & Materials (ASTM)
1916 Race Street
Philadelphia, Pennsylvania 19107

[40 FR 13449, Mar. 26, 1975]

Subpart S—Electrical

§ 1910.308 Application.

(a) *General.* Section 1910.309 adopts as a national consensus standard the National Electrical Code NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968), which is incorporated by reference in this subpart.

(b) *Purpose of the National Electrical Code.* (1) The purpose of the National Electrical Code is the practical safeguarding of any persons and of buildings and their contents from hazards arising from the use of electricity for light, heat, power, radio, signaling, and for other purposes. The standards contained therein are occupational safety and health standards to the extent that they safeguard any person who is an employee of an employer.

(2) The National Electrical Code contains basic minimum provisions considered necessary for safety.

(c) *Scope.*—(1) *Covered.* The provisions of this Subpart S cover electrical installations and utilization equipment installed or used within or on public and private buildings, structures and other premises including:

(i) Yards,
(ii) Carnivals,
(iii) Parking lots,
(iv) Mobile homes,
(v) Recreational vehicles,
(vi) Conductors that connect an installation to a supply of electricity, and
(vii) Other outside conductors adjacent to the premises.

(2) *Not covered.* The provisions of this subpart do not cover:

(i) Installations in ships, watercraft, railway rolling stock, aircraft or automotive vehicles,

(ii) Installations underground in mines,

(iii) Installations of railways for generation, transformation, transmission, or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communication purposes,

(iv) Installations of communication equipment under exclusive control of communication utilities, located outdoors or in building spaces used exclusively for such installation, or

(v) Installations under the exclusive control of electric utilities for the purpose of communication, metering or for the generation, control, transformation, transmission, and distribution of electric energy, located in buildings used exclusively by the utilities for such purposes or located outdoors on property owned or leased by the utilities or on public highways, streets, roads, etc., or outdoors by established rights on private property.

(d) *Definitions applicable to this Subpart S.*—(1) *Approved.* Some provisions of the National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968), which is adopted in this subpart S, require installations or equipment to be approved. In Article 100 of the Code, "approved" is defined to mean "acceptable to the authority enforcing this Code." The authority enforcing the Code under subpart S is the Assistant Secretary of Labor for Occupational Safety and Health. The definitions in this subsection indicate what is acceptable to the Assistant Secretary of Labor, and therefore approved within the meaning of the Code as incorporated in this subpart S.

(2) *Acceptable.* An installation or equipment is acceptable to the Assistant Secretary of Labor, and approved within the meaning of this Subpart S: (i) If it is accepted, or certified, or listed, or labeled, or otherwise determined to be safe by a nationally recognized testing laboratory, such as, but not limited to,

Underwriters' Laboratories, Inc. and Factory Mutual Engineering Corp.; or (ii) with respect to an installation or equipment of a kind which no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe, if it is inspected or tested by another Federal agency, or by a State, municipal, or other local authority responsible for enforcing occupational safety provisions of the National Electrical Code, and found in compliance with the provisions of the National Electrical Code as applied in § 1910.309; or (iii) with respect to custom-made equipment or related installations which are designed, fabricated for, and intended for use by, a particular customer, if it is determined to be safe for its intended use by its manufacturer on the basis of test data which the employer keeps and makes available for inspection to the Assistant Secretary and his authorized representatives.

(3) For purposes of subparagraph (2) of this paragraph:

(i) *Listed.* Equipment is "listed" if it is of a kind mentioned in a list which, (a) is published by a nationally recognized laboratory which makes periodic inspection of the production of such equipment, and (b) states such equipment meets nationally recognized standards or has been tested and found safe for use in a specified manner;

(ii) *Labeled.* Equipment is "labeled" if there is attached to it a label, symbol, or other identifying mark of a nationally recognized testing laboratory which, (a) makes periodic inspections of the production of such of equipment, and (b) whose labeling indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner;

(iii) *Accepted.* An installation is "accepted" if it has been inspected and found by a nationally recognized testing laboratory to conform to specified plans or to procedures of applicable codes;

(iv) *Certified.* Equipment is "certified" if it, (a) has been tested and found by a nationally recognized testing laboratory to meet nationally recognized standards or to be safe for use in a specified manner, or (b) is of a kind whose production is periodically inspected by a nationally recognized testing laboratory, and (c) it bears a label, tag, or other record of certification;

(v) *Utilization equipment.* Utilization equipment means equipment which utilizes electric energy for mechanical, chemical, heating, lighting, or similar useful purpose.

§ 1910.309 National Electrical Code.

(a) The requirements contained in the following articles and sections of the National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968) shall apply to all electrical installations and utilization equipment:

Articles:	
500	Hazardous Locations.
501	Class I Installations (Hazardous Locations).
502	Class II Installations (Hazardous Locations).
503	Class III Installations (Hazardous Locations).
Sections:	
250–58 (a) and (b).	Equipment on Structural Metal.
250–59 (a), (b), and (c).	Portable and/or Cord Connected and Plug Connected Equipment, Grounding Method.
400–3 (a) and (b).	Flexible Cords and Cable, Uses.
400–4	Flexible Cords and Cable Prohibited.
400–5	Flexible Cords and Cables, Splices.
400–9	Overcurrent Protection and Ampacities of Flexible Cords.
400–10	Pull at Joints and Terminals of Flexible Cords and Cables.
422–8	Installation of Appliances with Flexible Cords.
422–9	Installation of Portable Immersion Heaters.
422–10	Installation Appliances Adjacent to Combustible Material.
422–11	Stands for Portable Appliances.
422–12	Signals for Heated Appliances.
422–14	Water Heaters.
422–15 (a), (b), and (c).	Installation of Infrared Lamp and Industrial Heating Appliances.
110–14 (a) and (b).	Electric Connection.
110–17 (a), (b), and (c).	Guarding of Live Part.

Section—Continued	
110–18	Arcing Parts.
110–21	Marking.
110–22	Identification.
240–16 (a), (b), (c), and (d).	Location in Premises (for Overcurrent Protection Devices).
240–19 (a) and (b).	Guarding of Arcing or Suddenly Moving Parts of Overcurrent Protection Devices.
250–3 (a) and (b).	D.C. System Grounding.
250–5 (a), (b), and (c).	A.C. Circuits and Systems To Be Grounded.
250–7	Circuits Not To Be Grounded.
250–42 (a), (b), (c), and (d).	Fixed Equipment Grounding, General
250–43 (a), (b), (c), (d), (e), (f), (g), (h), and (i).	Fixed Equipment Grounding, Specific.
250–44 (a), (b), (c), (d), and (e).	Nonelectrical Equipment, Grounding.
250–45 (a), (b), (c), and (d).	Equipment Connected by Cord and Plug Grounding.
430–142 (a), (b), (c), and (d).	Stationary Motor Grounding.
430–143	Portable Motors Grounding.
250–30 (a) and (b).	Equipment Grounding Connections.
250–51	Effective Grounding.
250–57 (a) and (b).	Fixed Equipment Method of Grounding.
422–16	Appliance Grounding
422–17	Installation of Wall-mounted Ovens and Counter - mounted Cooking Units.

(b) Every new electrical installation and all new utilization equipment installed after March 15, 1972, and every replacement, modification, or repair or rehabilitation after March 15, 1972, of any part of any electrical installation or utilization equipment installed before March 15, 1972, shall be installed or made, and maintained, in accordance with the provisions of the 1971 National Electrical Code, NFPA 70–1971; ANSI C1–1971 (Rev. of C1–1968).

(c) *Ground-fault protection.*—(1) *General.* Notwithstanding the provisions of paragraphs (a) and (b) of this section, the requirement in section 210–7 of the 1971 National Electrical Code (NFPA 70–1971; ANSI C1–1971) that all 15- and 20-ampere receptacle outlets on single-phase circuits for construction sites have approved ground-fault circuit protection for personnel does not apply. In lieu thereof, the employer shall use either ground-fault circuit interrupters as specified in paragraph (c)(2) of this section or an assured equipment grounding conductor program as specified in paragraph (c)(3) of this section, to protect employees on construction sites. These requirements are in addition to any other requirements for equipment grounding conductors.

(2) *Ground-fault circuit interrupters.* All 120-volt, single-phase, 15- and 20-ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure and which are in use by employees, shall have approved ground-fault circuit interrupters for personnel protection. Receptacles on a two-wire, single-phase portable or vehicle-mounted generator rated not more than 5kW, where the circuit conductors of the generator are insulated from the generator frame and all other grounded surfaces, need not be protected with ground-fault circuit interrupters.

(3) *Assured equipment grounding conductor program.* The employer shall establish and implement an assured equipment grounding conductor program on construction sites covering all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and equipment connected by cord and plug, which are available for use or used by employees. This program shall comply with the following minimum requirements:

(i) A written description of the program, including the specific procedures adopted by the employer, shall be available at the jobsite for inspection and copying by the Assistant Secretary and any affected employee.

(ii) The employer shall designate one or more competent persons (as defined in 29 CFR 1926.32(f)) to implement the program.

(iii) Each cord set, attachment cap, plug and receptacle of cord sets, and any equipment connected by cord and plug, except cord sets and receptacles which are fixed and not exposed to damage, shall be visually inspected before each day's use for external defects, such as deformed or missing pins or insulation damage, and for indication of possible internal damage. Equipment found damaged or defective may not be used until repaired.

(iv) The following tests shall be performed on all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and cord- and plug-connected equipment required to be grounded:

(A) All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.

(B) Each receptacle and attachment cap or plug shall be tested for correct attachment of the equipment grounding conductor. The equipment grounding conductor shall be connected to its proper terminal.

(v) All required tests shall be performed:

(A) Before first use;

(B) Before equipment is returned to service following any repairs;

(C) Before equipment is used after any incident which can be reasonably suspected to have caused damage (for example, when a cord set is run over); and

(D) At intervals not to exceed 3 months, except that cord sets and receptacles which are fixed and not exposed to damage shall be tested at intervals not exceeding 6 months.

(vi) The employer may not make available or permit the use by employees of any equipment which has not met the requirements of this paragraph (c) (2) of this section.

(vii) Tests performed as required in this paragraph shall be recorded. This test record shall identify each receptacle, cord set, and cord- and plug-connected equipment that passed the test, and shall indicate the last date it was tested or the interval for which it was tested. This record shall be kept by means of logs, color coding, or other effective means, and shall be maintained until replaced by a more current record. The record shall be made available on the jobsite for inspection by the Assistant Secretary and any affected employee.

Subpart T—Commercial Diving Operations

General

§ 1910.401 Scope and application.

(a) *Scope.* (1) This subpart (standard) applies to every place of employment within the waters of the United States, or within any State, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, Guam, the Trust Territory of the Pacific Islands, Wake Island, Johnston Island, the Canal Zone, or within the Outer Continental Shelf lands as defined in the Outer Continental Shelf Lands Act (67 Stat. 462, 43 U.S.C. 1331), where diving and related support operations are performed.

(2) This standard applies to diving and related support operations conducted in connection with all types of work and employments, including general industry, construction, ship repairing, shipbuilding, shipbreaking and longshoring. However, this standard does not apply to any diving operation:

(i) Performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits;

(ii) Performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; or

(iii) Governed by 45 CFR Part 46 (Protection of Human Subjects, U.S. Department of Health, Education, and Welfare) or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects.

(b) *Application in emergencies.* An employer may deviate from the requirements of this standard to the extent necessary to prevent or minimize a situation which is likely to cause death, serious physical harm, or major environmental damage, provided that the employer:

(1) Notifies the Area Director, Occupational Safety and Health Administration within 48 hours of the onset of the emergency situation indicating the nature of the emergency and extent of the deviation from the prescribed regulations; and

(2) Upon request from the Area Director, submits such information in writing.

(c) *Employer obligation.* The employer shall be responsible for compliance with:

(1) All provisions of this standard of general applicability; and

(2) All requirements pertaining to specific diving modes to the extent diving operations in such modes are conducted.

§ 1910.402 Definitions.

As used in this standard, the listed terms are defined as follows:

"Acfm": Actual cubic feet per minute.

"ASME Code or equivalent": ASME (American Society of Mechanical Engineers) Boiler and Pressure Vessel Code, Section VIII, or an equivalent code which the employer can demonstrate to be equally effective.

"ATA": Atmosphere absolute.

"Bell": An enclosed compartment, pressurized (closed bell) or unpressurized (open bell), which allows the diver to be transported to and from the underwater work area and which may be used as a temporary refuge during diving operations.

"Bottom time": The total elapsed time measured in minutes from the time when the diver leaves the surface in descent to the time that the diver begins ascent.

"Bursting pressure": The pressure at which a pressure containment device would fail structurally.

"Cylinder": A pressure vessel for the storage of gases.

"Decompression chamber": A pressure vessel for human occupancy such as a surface decompression chamber, closed bell, or deep diving system used to decompress divers and to treat decompression sickness.

"Decompression sickness": A condition with a variety of symptoms which may result from gas or bubbles in the tissues of divers after pressure reduction.

"Decompression table": A profile or set of profiles of depth-time relationships for ascent rates and breathing mixtures to be followed after a specific depth-time exposure or exposures.

"Dive location": A surface or vessel from which a diving operation is conducted.

"Dive-location reserve breathing gas": A supply system of air or mixed-gas (as appropriate) at the dive location which is independent of the primary supply system and sufficient to support divers during the planned decompression.

"Dive team": Divers and support employees involved in a diving operation, including the designated person-in-charge.

"Diver": An employee working in water using underwater apparatus which supplies compressed breathing gas at the ambient pressure.

"Diver-carried reserve breathing gas": A diver-carried supply of air or mixed gas (as appropriate) sufficient under standard operating conditions to allow the diver to reach the surface, or another source of breathing gas, or to be reached by a standby diver.

"Diving mode": A type of diving requiring specific equipment, procedures and techniques (SCUBA, surface-supplied air, or mixed gas).

"Fsw": Feet of seawater (or equivalent static pressure head).

"Heavy gear": Diver-worn deep-sea dress including helmet, breastplate, dry suit, and weighted shoes.

"Hyperbaric conditions": Pressure conditions in excess of surface pressure.

"Inwater stage": A suspended underwater platform which supports a diver in the water.

"Liveboating": The practice of supporting a surfaced-supplied air or mixed gas diver from a vessel which is underway.

"Mixed-gas diving": A diving mode in which the diver is supplied in the water with a breathing gas other than air.

"No-decompression limits": The depth-time limits of the "no-decompression limits and repetitive dive group designation table for no-decompression air dives", U.S. Navy Diving Manual or equivalent limits which the employer can demonstrate to be equally effective.

"Psi(g)": Pounds per square inch (gauge).

"SCUBA diving": A diving mode independent of surface supply in which the diver uses open circuit self-contained underwater breathing apparatus.

"Standby diver": A diver at the dive location available to assist a diver in the water.

"Surface-supplied air diving": A diving mode in which the diver in the water is supplied from the dive location with compressed air for breathing.

"Treatment table": A depth-time and breathing gas profile designed to treat decompression sickness.

"Umbilical": The composite hose bundle between a dive location and a diver or bell, or between a diver and a bell, which supplies the diver or bell with breathing gas, communications, power, or heat as appropriate to the diving mode or conditions, and includes a safety line between the diver and the dive location.

"Volume tank": A pressure vessel connected to the outlet of a compressor and used as an air reservoir.

"Working pressure": The maximum pressure to which a pressure containment device may be exposed under standard operating conditions.

Personnel Requirements

§ 1910.410 Qualifications of dive team.

(a) *General.* (1) Each dive team member shall have the experience or training necessary to perform assigned tasks in a safe and healthful manner.

(2) Each dive team member shall have experience or training in the following:

(i) The use of tools, equipment and systems relevant to assigned tasks;

(ii) Techniques of the assigned diving mode; and

(iii) Diving operations and emergency procedures.

(3) All dive team members shall be trained in cardiopulmonary resuscitation and first aid (American Red Cross standard course or equivalent).

(4) Dive team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.

(b) *Assignments.* (1) Each dive team member shall be assigned tasks in accordance with the employee's experience or training, except that limited additional tasks may be assigned to an employee undergoing training provided that these tasks are performed under the direct supervision of an experienced dive team member.

(2) The employer shall not require a dive team member to be exposed to hyperbaric conditions against the employee's will, except when necessary to complete decompression or treatment procedures.

(3) The employer shall not permit a dive team member to dive or be otherwise exposed to hyperbaric conditions for the duration of any temporary physical impairment or condition which is known to the employer and is likely to affect adversely the safety or health of a dive team member.

(c) *Designated person-in-charge.* (1) The employer or an employee designated by the employer shall be at the dive location in charge of all aspects of the diving operation affecting the safety and health of dive team members.

(2) The designated person-in-charge shall have experience and training in the conduct of the assigned diving operation.

§ 1910.411 Medical requirements.

(a) *General.* (1) The employer shall determine that dive team members who are, or are likely to be, exposed to hyperbaric conditions are medically fit to perform assigned tasks in a safe and healthful manner.

(2) The employer shall provide each dive team member who is, or is likely to be, exposed to hyperbaric conditions with all medical examinations required by this standard.

(3) All medical examinations required by this standard shall be performed by, or under the direction of, a physician at no cost to the employee.

(b) *Frequency of medical examinations.* Medical examinations shall be provided:

(1) Prior to initial hyperbaric exposure with the employer, unless an equivalent medical examination has been given within the preceding 12 months and the employer has obtained the results of the examination and an opinion from the examining physician of the employee's medical fitness to dive or to be otherwise exposed to hyperbaric conditions;

(2) At one year intervals from the date of initial examination or last equivalent examination; and

(3) After an injury or illness requiring hospitalization of more than twenty-four (24) hours.

(c) *Information provided to examining physician.* The employer shall provide the following information to the examining physician:

(1) A copy of the medical requirements of this standard; and

(2) A summary of the nature and extent of hyperbaric conditions to which the dive team member will be exposed, including diving modes and types of work to be assigned.

(d) *Content of medical examinations.* (1) Medical examinations conducted initially and annually shall consist of the following:

(i) Medical history;

(ii) Diving-related work history;

(iii) Basic physical examination;

(iv) The tests required by Table 1; and

(v) Any additional tests the physician considers necessary.

(2) Medical examinations conducted after an injury or illness requiring hospitalization of more than 24 hours shall be appropriate to the nature and extent of the injury or illness as determined by the examining physician.

Table I.—*Tests for diving medical examination*

Test	Initial examination	Annual reexamination
Chest X-ray	X	
Visual acuity	X	X
Color blindness	X	
EKG: standard 12L[1]		X
Hearing test	X	X
Hematocrit or hemoglobin	X	X
Sickle cell index	X	
White blood count	X	X
Urinalysis	X	X

[1] To be given to the employee once, at age 35 or over.

(e) *Physician's written report.* (1) After any medical examination required by this standard, the employer shall obtain a written report prepared by the examining physician containing:

(i) The results of the medical examination; and

(ii) The examining physician's opinion of the employee's fitness to be exposed to hyperbaric conditions, including any recommended restrictions or limitations to such exposure (see Appendix B).

(2) The employer shall provide the employee with a copy of the physician's written report.

(f) *Determination of employee fitness.* (1) The employer shall determine the extent and nature of the dive team member's fitness to engage in diving or be otherwise exposed to hyperbaric conditions consistent with the recommendations in the examining physician's report.

(2) If the examining physician has recommended a restriction or limitation on the dive team member's exposure to hyperbaric conditions, and the affected employee does not concur, a second physician selected by the employee shall render a medical opinion on the nature and extent of the restriction or limitation, if any.

(3) If the recommendation of the second opinion differs from that of the examining (first) physician, and if the employer and employee are unable to agree on the nature and extent of the restriction or limitation, an opinion from a third physician selected by the first two physicians shall be obtained. The employer's determination of the dive team member's fitness shall be consistent with the medical opinion of the third physician, unless the employer and employee reach an agreement which is otherwise consistent with the recommendation or opinion of at least two of the physicians involved.

(4) Nothing in this procedure shall be construed to prohibit either a dive team member from accepting, or an employer from offering, an assignment which is otherwise consistent with at least one medical opinion while a final determination on the employee's fitness is pending.

General Operations Procedures

§ 1910.420 Safe practices manual.

(a) *General.* The employer shall develop and maintain a safe practices manual which shall be made available at the dive location to each dive team member.

(b) *Contents.* (1) The safe practices manual shall contain a copy of this standard and the employer's policies for implementing the requirements of this standard.

(2) For each diving mode engaged in, the safe practices manual shall include:

(i) Safety procedures and checklists for diving operations;

(ii) Assignments and responsibilities of the dive team members;

(iii) Equipment procedures and checklists; and

(iv) Emergency procedures for fire, equipment failure, adverse environmental conditions, and medical illness and injury.

§ 1910.421 Pre-dive procedures.

(a) *General.* The employer shall comply with the following requirements prior to each diving operation, unless otherwise specified.

(b) *Emergency aid.* A list shall be kept at the dive location of the telephone or call numbers of the following:

(1) An operational decompression chamber (if not at the dive location);

(2) Accessible hospitals;

(3) Available physicians;

(4) Available means of transportation; and

(5) The nearest U.S. Coast Guard Rescue Coordination Center.

(c) *First aid supplies.* (1) A first aid kit appropriate for the diving operation and approved by a physician shall be available at the dive location.

(2) When used in a decompression chamber or bell, the first aid kit shall be suitable for use under hyperbaric conditions.

(3) In addition to any other first aid supplies, an American Red Cross standard first aid handbook or equivalent, and a bag-type manual resuscitator with transparent mask and tubing shall be available at the dive location.

(d) *Planning and assessment.* Planning of a diving operation shall include an assessment of the safety and health aspects of the following:

(1) Diving mode;

(2) Surface and underwater conditions and hazards;

(3) Breathing gas supply (including reserves);

(4) Thermal protection;

(5) Diving equipment and systems;

(6) Dive team assignments and physical fitness of dive team members (including any impairment known to the employer);

(7) Repetitive dive designation or residual inert gas status of dive team members;

(8) Decompression and treatment procedures (including altitude corrections); and

(9) Emergency procedures.

(e) *Hazardous activities.* To minimize hazards to the dive team, diving operations shall be coordinated with other activities in the vicinity which are likely to interfere with the diving operation.

(f) *Employee briefing.* (1) Dive team members shall be briefed on:

(i) The tasks to be undertaken;

(ii) Safety procedures for the diving mode;

(iii) Any unusual hazards or environmental conditions likely to affect the safety of the diving operation; and

(iv) Any modifications to operating procedures necessitated by the specific diving operation.

(2) Prior to making individual dive team member assignments, the employer shall inquire into the dive team member's current state of physical fitness, and indicate to the dive team member the procedure for reporting physical problems or adverse physiological effects during and after the dive.

(g) *Equipment inspection.* The breathing gas supply system including reserve breathing gas supplies, masks, helmets, thermal protection, and bell handling mechanism (when appropriate) shall be inspected prior to each dive.

(h) *Warning signal.* When diving from surfaces other than vessels in areas capable of supporting marine traffic, a rigid replica of the international code flag "A" at least one meter in height shall be displayed at the dive location in a manner which allows all-round visibility, and shall be illuminated during night diving operations.

§ 1910.422 Procedures during dive.

(a) *General.* The employer shall comply with the following requirements which are applicable to each diving operation unless otherwise specified.

(b) *Water entry and exit.* (1) A means capable of supporting the diver shall be provided for entering and exiting the water.

(2) The means provided for exiting the water shall extend below the water surface.

(3) A means shall be provided to assist an injured diver from the water or into a bell.

(c) *Communications.* (1) An operational two-way voice communication system shall be used between:

(i) Each surface-supplied air or mixed-gas diver and a dive team member at the dive location or bell (when provided or required); and

(ii) The bell and the dive location.

(2) An operational, two-way communication system shall be available at the dive location to obtain emergency assistance.

(d) *Decompression tables.* Decompression, repetitive, and no-decompression tables (as appropriate) shall be at the dive location.

(e) *Dive profiles.* A depth-time profile, including when appropriate any breathing gas changes, shall be maintained for each diver during the dive including decompression.

(f) *Hand-held power tools and equipment.* (1) Hand-held electrical tools and equipment shall be de-energized before being placed into or retrieved from the water.

(2) Hand-held power tools shall not be supplied with power from the dive location until requested by the diver.

(g) *Welding and burning.* (1) A current supply switch to interrupt the current flow to the welding or burning electrode shall be:

(i) Tended by a dive team member in voice communication with the diver performing the welding or burning; and

(ii) Kept in the open position except when the diver is welding or burning.

(2) The welding machine frame shall be grounded.

(3) Welding and burning cables, electrode holders, and connections shall be

capable of carrying the maximum current required by the work, and shall be properly insulated.

(4) Insulated gloves shall be provided to divers performing welding and burning operations.

(5) Prior to welding or burning on closed compartments, structures or pipes, which contain a flammable vapor or in which a flammable vapor may be generated by the work, they shall be vented, flooded, or purged with a mixture of gases which will not support combustion.

(h) *Explosives.* (1) Employers shall transport, store, and use explosives in accordance with this section and the applicable provisions of § 1910.109 and § 1926.912 of Title 29 of the Code of Federal Regulations.

(2) Electrical continuity of explosive circuits shall not be tested until the diver is out of the water.

(3) Explosives shall not be detonated while the diver is in the water.

(i) *Termination of dive.* The working interval of a dive shall be terminated when:

(1) A diver requests termination;

(2) A diver fails to respond correctly to communications or signals from a dive team member;

(3) Communications are lost and can not be quickly re-established between the diver and a dive team member at the dive location, and between the designated person-in-charge and the person controlling the vessel in liveboating operations; or

(4) A diver begins to use diver-carried reserve breathing gas or the dive-location reserve breathing gas.

§ 1910.423 Post-dive procedures.

(a) *General.* The employer shall comply with the following requirements which are applicable after each diving operation, unless otherwise specified.

(b) *Precautions.* (1) After the completion of any dive, the employer shall:

(i) Check the physical condition of the diver;

(ii) Instruct the diver to report any physical problems or adverse physiological effects including symptoms of decompression sickness;

(iii) Advise the diver of the location of a decompression chamber which is ready for use; and

(iv) Alert the diver to the potential hazards of flying after diving.

(2) For any dive outside the no-decompression limits, deeper than 100 fsw or using mixed gas as a breathing mixture, the employer shall instruct the diver to remain awake and in the vicinity of the decompression chamber which is at the dive location for at least one hour after the dive (including decompression or treatment as appropriate).

(c) *Recompression capability.* (1) A decompression chamber capable of recompressing the diver at the surface to a minimum of 165 fsw (6 ATA) shall be available at the dive location for:

(i) Surface-supplied air diving to depths deeper than 100 fsw and shallower than 220 fsw;

(ii) Mixed gas diving shallower than 300 fsw; or

(iii) Diving outside the no-decompression limits shallower than 300 fsw.

(2) A decompression chamber capable of recompressing the diver at the surface to the maximum depth of the dive shall be available at the dive location for dives deeper than 300 fsw.

(3) The decompression chamber shall be:

(i) Dual-lock;

(ii) Multiplace; and

(iii) Located within 5 minutes of the dive location.

(4) The decompression chamber shall be equipped with:

(i) A pressure gauge for each pressurized compartment designed for human occupancy;

(ii) A built-in-breathing-system with a minimum of one mask per occupant;

(iii) A two-way voice communication system between occupants and a dive team member at the dive location;

(iv) A viewport; and

(v) Illumination capability to light the interior.

(4) Treatment tables, treatment gas appropriate to the diving mode, and sufficient gas to conduct treatment shall be available at the dive location.

(5) A dive team member shall be available at the dive location during and for at least one hour after the dive to operate the decompression chamber (when required or provided).

(d) *Record of dive.* (1) The following information shall be recorded and maintained for each diving operation:

(i) Names of dive team members including designated person-in-charge;

(ii) Date, time, and location;

(iii) Diving modes used;

(iv) General nature of work performed;

(v) Approximate underwater and surface conditions (visibility, water temper-

ature and current); and

(vi) Maximum depth and bottom time for each diver.

(2) For each dive outside the no-decompression limits, deeper than 100 fsw or using mixed gas, the following additional information shall be recorded and maintained:

(i) Depth-time and breathing gas profiles;

(ii) Decompression table designation (including modification); and

(iii) Elapsed time since last pressure exposure if less than 24 hours or repetitive dive designation for each diver.

(3) For each dive in which decompression sickness is suspected or symptoms are evident, the following additional information shall be recorded and maintained:

(i) Description of decompression sickness symptoms (including depth and time of onset); and

(ii) Description and results of treatment.

(e) *Decompression procedure assessment.* The employer shall:

(1) Investigate and evaluate each incident of decompression sickness based on the recorded information, consideration of the past performance of decompression table used, and individual susceptibility;

(2) Take appropriate corrective action to reduce the probability of recurrence of decompression sickness; and

(3) Prepare a written evaluation of the decompression procedure assessment, including any corrective action taken, within 45 days of the incident of decompression sickness.

SPECIFIC OPERATIONS PROCEDURES

§ 1910.424 SCUBA diving.

(a) *General.* Employers engaged in SCUBA diving shall comply with the following requirements, unless otherwise specified.

(b) *Limits.* SCUBA diving shall not be conducted:

(1) At depths deeper than 130 fsw;

(2) At depths deeper than 100 fsw or outside the no-decompression limits unless a decompression chamber is ready for use;

(3) Against currents exceeding one (1) knot unless line-tended; or

(4) In enclosed or physically confining spaces unless line-tended.

(c) *Procedures.*

(1) A standby diver shall be available while a diver is in the water.

(2) A diver shall be line-tended from the surface, or accompanied by another diver in the water in continuous visual contact during the diving operation.

(3) A diver shall be stationed at the underwater point of entry when diving is conducted in enclosed or physically confining spaces.

(4) A diver-carried reserve breathing gas supply shall be provided for each diver consisting of:

(i) A manual reserve (J valve); or

(ii) An independent reserve cylinder with a separate regulator or connected to the underwater breathing apparatus.

(5) The valve of the reserve breathing gas supply shall be in the closed position prior to the dive.

§ 1910.425 Surface-supplied air diving.

(a) *General.* Employers engaged in surface-supplied air diving shall comply with the following requirements, unless otherwise specified.

(b) *Limits.* (1) Surface-supplied air diving shall not be conducted at depths deeper than 190 fsw, except that dives with bottom times of 30 minutes or less may be conducted to depths of 220 fsw.

(2) A decompression chamber shall be ready for use at the dive location for any dive outside the no-decompression limits or deeper than 100 fsw.

(3) A bell shall be used for dives with an inwater decompression time greater than 120 minutes, except when heavy gear is worn or diving is conducted in physically confining spaces.

(c) *Procedures.* (1) Each diver shall be continuously tended while in the water.

(2) A diver shall be stationed at the underwater point of entry when diving is conducted in enclosed or physically confining spaces.

(3) Each diving operation shall have a primary breathing gas supply sufficient to support divers for the duration of the planned dive including decompression.

(4) For dives deeper than 100 fsw or outside the no-decompression limits:

(i) A separate dive team member shall tend each diver in the water;

(ii) A standby diver shall be available while a diver is in the water;

(iii) A diver-carried reserve breathing gas supply shall be provided for each diver except when heavy gear is worn; and

(iv) A dive-location reserve breathing gas supply shall be provided.

(5) For heavy-gear diving deeper than

100 fsw or outside the no-decompression limits:

(i) An extra breathing gas hose capable of supplying breathing gas to the diver in the water shall be available to the standby diver.

(ii) An inwater stage shall be provided to divers in the water.

(6) Except when heavy gear is worn or where physical space does not permit, a diver-carried reserve breathing gas supply shall be provided whenever the diver is prevented by the configuration of the dive area from ascending directly to the surface.

§ 1910.426 Mixed-gas diving.

(a) *General.* Employers engaged in mixed-gas diving shall comply with the following requirements, unless otherwise specified.

(b) *Limits.* Mixed-gas diving shall be conducted only when:

(1) A decompression chamber is ready for use at the dive location; and

(i) A bell is used at depths greater than 220 fsw or when the dive involves inwater decompression time of greater than 120 minutes, except when heavy gear is worn or when diving in physically confining spaces; or

(ii) A closed bell is used at depths greater than 300 fsw, except when diving is conducted in physically confining spaces.

(c) *Procedures.* (1) A separate dive team member shall tend each diver in the water.

(2) A standby diver shall be available while a diver is in the water.

(3) A diver shall be stationed at the underwater point of entry when diving is conducted in enclosed or physically confining spaces.

(4) Each diving operation shall have a primary breathing gas supply sufficient to support divers for the duration of the planned dive including decompression.

(5) Each diving operation shall have a dive-location reserve breathing gas supply.

(6) When heavy gear is worn:

(i) An extra breathing gas hose capable of supplying breathing gas to the diver in the water shall be available to the standby diver; and

(ii) An inwater stage shall be provided to divers in the water.

(7) An inwater stage shall be provided for divers without access to a bell for dives deeper than 100 fsw or outside the no-decompression limits.

(8) When a closed bell is used, one dive team member in the bell shall be available and tend the diver in the water.

(9) Except when heavy gear is worn or where physical space does not permit, a diver-carried reserve breathing gas supply shall be provided for each diver:

(i) Diving deeper than 100 fsw or outside the no-decompression limits; or

(ii) Prevented by the configuration of the dive area from directly ascending to the surface.

§ 1910.427 Liveboating.

(a) *General.* Employers engaged in diving operations involving liveboating shall comply with the following requirements.

(b) *Limits.* Diving operations involving liveboating shall not be conducted:

(1) With an inwater decompression time of greater than 120 minutes;

(2) Using surface-supplied air at depths deeper than 190 fsw, except that dives with bottom times of 30 minutes or less may be conducted to depths of 220 fsw;

(3) Using mixed gas at depths greater than 220 fsw;

(4) In rough seas which significantly impede diver mobility or work function; or

(5) In other than daylight hours.

(d) *Procedures.* (1) The propeller of the vessel shall be stopped before the diver enters or exits the water.

(2) A device shall be used which minimizes the possibility of entanglement of the diver's hose in the propeller of the vessel.

(3) Two-way voice communication between the designated person-in-charge and the person controlling the vessel shall be available while the diver is in the water.

(4) A standby diver shall be available while a diver is in the water.

(5) A diver-carried reserve breathing gas supply shall be carried by each diver engaged in liveboating operations.

EQUIPMENT PROCEDURES AND REQUIREMENTS

§ 1910.430 Equipment.

(a) *General.* (1) All employers shall comply with the following requirements, unless otherwise specified.

(2) Each equipment modification, repair, test, calibration or maintenance service shall be recorded by means of a tagging or logging system, and include the date and nature of work performed, and the name or initials of the person

performing the work.

(b) *Air compressor systems.* (1) Compressors used to supply air to the diver shall be equipped with a volume tank with a check valve on the inlet side, a pressure gauge, a relief valve, and a drain valve.

(2) Air compressor intakes shall be located away from areas containing exhaust or other contaminants.

(3) Respirable air supplied to a diver shall not contain:

(i) A level of carbon monoxide (CO) greater than 20 ppm;

(ii) A level of carbon dioxide (CO_2) greater than 1,000 ppm;

(iii) A level of oil mist greater than 5 milligrams per cubic meter; or

(iv) A noxious or pronounced odor.

(4) The output of air compressor systems shall be tested for air purity every six months by means of samples taken at the connection to the distribution system, except that non-oil lubricated compressors need not be tested for oil mist.

(c) *Breathing gas supply hoses.* (1) Breathing gas supply hoses shall:

(i) Have a working pressure at least equal to the working pressure of the total breathing gas system;

(ii) Have a rated bursting pressure at least equal to 4 times the working pressure;

(iii) Be tested at least annually to 1.5 times their working pressure; and

(iv) Have their open ends taped, capped or plugged when not in use.

(2) Breathing gas supply hose connectors shall:

(i) Be made of corrosion-resistant materials;

(ii) Have a working pressure at least equal to the working pressure of the hose to which they are attached; and

(iii) Be resistant to accidental disengagement.

(3) Umbilicals shall:

(i) Be marked in 10-ft. increments to 100 feet beginning at the diver's end, and in 50 ft. increments thereafter;

(ii) Be made of kink-resistant materials; and

(iii) Have a working pressure greater than the pressure equivalent to the maximum depth of the dive (relative to the supply source) plus 100 psi.

(d) *Buoyancy control.* (1) Helmets or masks connected directly to the dry suit or other buoyancy-changing equipment shall be equipped with an exhaust valve.

(2) A dry suit or other buoyancy-changing equipment not directly connected to the helmet or mask shall be equipped with an exhaust valve.

(3) When used for SCUBA diving, a buoyancy compensator shall have an inflation source separate from the breathing gas supply.

(4) An inflatable flotation device capable of maintaining the diver at the surface in a face-up position, having a manually activated inflation source independent of the breathing supply, an oral inflation device, and an exhaust valve shall be used for SCUBA diving.

(e) *Compressed gas cylinders.* Compressed gas cylinders shall:

(1) Be designed, constructed and maintained in accordance with the applicable provisions of 29 CFR § 1910.166–171;

(2) Be stored in a ventilated area and protected from excessive heat;

(3) Be secured from falling; and

(4) Have shut-off valves recessed into the cylinder or protected by a cap, except when in use or manifolded, or when used for SCUBA diving.

(f) *Decompression chambers.* (1) Each decompression chamber manufactured after the effective date of this standard, shall be built and maintained in accordance with the ASME Code or equivalent.

(2) Each decompression chamber manufactured prior to the effective date of this standard shall be maintained in conformity with the code requirements to which it was built, or equivalent.

(3) Each decompression chamber shall be equipped with:

(i) Means to maintain the atmosphere below a level of 25% oxygen by volume;

(ii) Mufflers on intake and exhaust lines, which shall be regularly inspected and maintained;

(iii) Suction guards on exhaust line openings; and

(iv) A means for extinguishing fire, and shall be maintained to minimize sources of ignition and combustible material.

(g) *Gauges and timekeeping devices.* (1) Gauges indicating diver depth which can be read at the dive location shall be used for all dives except SCUBA.

(2) Each depth gauge shall be dead-weight tested or calibrated against a master reference gauge every six months, and when there is a discrepancy greater than two percent (2%) of full scale between any two equivalent gauges.

(3) A cylinder pressure gauge capable of being monitored by the diver during the dive shall be worn by each SCUBA diver.

(4) A timekeeping device shall be available at each dive location.

(h) *Masks and helmets.* (1) Surface-supplied air and mixed-gas masks and helmets shall have:

(i) A non-return valve at the attachment point between helmet or mask and hose which shall close readily and positively; and

(ii) An exhaust valve.

(2) Surface-supplied air masks and helmets shall have a minimum ventilation rate capability of 4.5 acfm at any depth at which they are operated or the capability of maintaining the diver's inspired carbon dioxide partial pressure below 0.02 ATA when the diver is producing carbon dioxide at the rate of 1.6 standard liters per minute.

(i) *Oxygen safety.* (1) Equipment used with oxygen or mixtures containing over forty percent (40%) by volume oxygen shall be designed for oxygen service.

(2) Components (except umbilicals) exposed to oxygen or mixtures containing over forty percent (40%) by volume oxygen shall be cleaned of flammable materials before use.

(3) Oxygen systems over 125 psig and compressed air systems over 500 psig shall have slow-opening shut-off valves.

(j) *Weights and harnesses.* (1) Except when heavy gear is worn, divers shall be equipped with a weight belt or assembly capable of quick release.

(2) Except when heavy gear is worn or in SCUBA diving, each diver shall wear a safety harness with:

(i) A positive buckling device;

(ii) An attachment point for the umbilical to prevent strain on the mask or helmet; and

(iii) A lifting point to distribute the pull force of the line over the diver's body.

RECORDKEEPING

§ 1910.440 Recordkeeping requirements.

(a) *Recording and Reporting.* (1) The employer shall record and report occupational injuries and illnesses in accordance with requirements of 29 CFR Part 1904.

(2) The employer shall record the occurrence of any diving-related injury or illness which requires any dive team member to be hospitalized for 24 hours or more, specifying the circumstances of the incident and the extent of any injuries or illnesses.

(b) *Availability of records.* (1) Upon the request of the Assistant Secretary of Labor for Occupational Safety and Health, or the Director, National Institute for Occupational Safety and Health, Department of Health, Education and Welfare or their designees, the employer shall make available for inspection and copying any record or document required by this standard.

(2) Upon request of any employee, former employee or authorized representative, the employer shall make available for inspection and copying any record or document required by this standard which pertains to the individual employee or former employee.

(3) Records and documents required by this standard shall be retained by the employer for the following period:

(i) Dive team member medical records (physician's reports) (§ 1910.411)—5 years;

(ii) Safe practices manual (§ 1910.420)—current document only;

(iii) Depth–time profile (§ 1910.422)—until completion of the recording of dive, or until completion of decompression procedure assessment where there has been an incident of decompression sickness;

(iv) Recording of dive (§ 1910.423)—1 year, except 5 years where there has been an incident of decompression sickness;

(v) Decompression procedure assessment evaluations (§ 1910.423)—5 years;

(vi) Equipment inspections and testing records (§ 1910.430)—current entry or tag, or until equipment is withdrawn from service;

(vii) Records of hospitalizations (§ 1910.440)—5 years.

(4) After the expiration of the retention period of any record required to be kept for 5 years, the employer shall forward such records to the National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare.

(5) In the event the employer ceases to do business:

(i) The successor employer shall receive and retain all dive and employee medical records required by this standard; or

(ii) If there is no successor employer, dive and employee medical records shall be forwarded to the National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare.

§ 1910.441 Effective date.

This standard shall be effective on October 20, 1977, except that for provisions where decompression chambers or bells are required and such equipment is not yet available, employers shall comply as soon as possible thereafter but in no case later than 6 months after the effective date of the standard.

APPENDIX A

EXAMPLES OF CONDITIONS WHICH MAY RESTRICT OR LIMIT EXPOSURE TO HYPERBARIC CONDITIONS

The following disorders may restrict or limit occupational exposure to hyperbaric conditions depending on severity, presence of residual effects, response to therapy, number of occurrences, diving mode, or degree and duration of isolation.

History of seizure disorder other than early febrile convulsions.

Malignancies (active) unless treated and without recurrence for 5 yrs.

Chronic inability to equalize sinus and/or middle ear pressure.

Cystic or cavitary disease of the lungs.

Impaired organ function caused by alcohol or drug use.

Conditions requiring continuous medication for control (e.g., antihistamines, steroids, barbiturates, mood-altering drugs, or insulin).

Meniere's disease.

Hemoglobinopathies.

Obstructive or restrictive lung disease.

Vestibular end organ destruction.

Pneumothorax.

Cardiac abnormalities (e.g., pathological heart block, valvular disease, intraventricular conduction defects other than isolated right bundle branch block, angina pectoris, arrhythmia, coronary artery disease).

Juxta-articular osteonecrosis.

Subpart Z—Toxic and Hazardous Substances

SOURCE: 39 FR 23502, June 27, 1974, unless otherwise noted. Redesignated at 40 FR 27078, May 26, 1975.

§ 1910.1000 Air contaminants.

An employee's exposure to any material listed in table Z–1, Z–2, or Z–3 of this section shall be limited in accordance with the requirements of the following paragraphs of this section.

(a) Table Z–1:

(1) *Materials with names preceded by "C"—Ceiling Values.* An employee's exposure to any material in table Z–1, the name of which is preceded by a "C" (e.g., C Boron trifluoride), shall at no time exceed the ceiling value given for that material in the table.

(2) *Other materials—8-hour time weighted averages.* An employee's exposure to any material in table Z–1, the name of which is not preceded by "C", in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average given for that material in the table.

(b) Table Z–2:

(1) *8-hour time weighted averages.* An employee's exposure to any material listed in table Z–2, in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average limit given for that material in the table.

(2) *Acceptable ceiling concentrations.* An employee's exposure to a material listed in table Z–2 shall not exceed at any time during an 8-hour shift the acceptable ceiling concentration limit given for the material in the table, except for a time period, and up to a concentration not exceeding the maximum duration and concentration allowed in the column under "acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift".

(3) *Example.* During an 8-hour work shift, an employee may be exposed to a concentration of Benzene above 25 p.p.m. (but never above 50 p.p.m.) only for a maximum period of 10 minutes. Such exposure must be compensated by exposures to concentrations less than 10 p.p.m. so that the cumulative exposure for the entire 8-hour work shift does not exceed a weighted average of 10 p.p.m.

(c) Table Z–3: An employee's exposure to any material listed in table Z–3, in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average limit given for that material in the table.

Material	Acinal concentration of 8-hour exposure	8-hour time weighted average exposure limit
Acetone (Table Z–1)	500 p.p.m.	1,000 p.p.m.
2-Butanone (Table Z–1)	45 p.p.m.	200 p.p.m.
Toluene (Table Z–2)	40 p.p.m.	200 p.p.m.

(d) Computation formulas:

(1) (i) The cumulative exposure for an 8-hour work shift shall be computed as follows:

$$E = \frac{C_1T_1 + C_2T_2 + \ldots C_nT_n}{8}$$

Where:

E is the equivalent exposure for the working shift.

C is the concentration during any period of time *T* where the concentration remains constant.

T is the duration in hours of the exposure at the concentration *C*.

The value of *E* shall not exceed the 8-hour time weighted average limit in table Z–1, Z–2, or Z–3 for the material involved.

(ii) To illustrate the formula prescribed in subdivision (i) of this subparagraph, note that isoamyl acetate has an 8-hour time weighted average limit of 100 p.p.m. (table Z–1). Assume that an employee is subject to the following exposure:

Two hours exposure at 150 p.p.m.
Two hours exposure at 75 p.p.m.
Four hours exposure at 50 p.p.m.

Substituting this information in the formula, we have

$$\frac{2\times150 + 2\times75 + 4\times50}{8} = 81.25 \text{ p.p.m.}$$

Since 81.25 p.p.m. is less than 100 p.p.m., the 8-hour time weighted average limit, the exposure is acceptable.

(2) (i) In case of a mixture of air contaminants an employer shall compute the equivalent exposure as follows:

$$E_m = \frac{C_1}{L_1} + \frac{C_2}{L_2} + \ldots \frac{C_n}{L_n}$$

Where:

E_m is the equivalent exposure for the mixture.

C is the concentration of a particular contaminant.

L is the exposure limit for that contaminant, from table Z–1, Z–2, or Z–3.

The value of E_m shall not exceed unity (1).

(ii) To illustrate the formula prescribed in subdivision (i) of this subparagraph, consider the following exposures:

Substituting in the formula, we have:

$$E_m = \frac{500}{1{,}000} + \frac{45}{200} + \frac{40}{200}$$

$$E_m = 0.500 + 0.225 + 0.200$$

$$E_m = 0.925$$

Since E_m is less than unity (1), the exposure combination is within acceptable limits.

(e) To achieve compliance with paragraph (a) through (d) of this section, administrative or engineering controls must first be determined and implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or any other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. Any equipment and/or technical measures used for this purpose must be approved for each particular use by a competent industrial hygienist or other technically qualified person. Whenever respirators are used, their use shall comply with § 1910.134.

TABLE Z–1

Substance	p.p.m.*	mg./M³ *
Acetaldehyde	200	360
Acetic acid	10	25
Acetic anhydride	5	20
Acetone	1,000	2,400
Acetonitrile	40	70
Acetylene dichloride, see 1, 2-Dichloroethylene		
Acetylene tetrabromide	1	14
Acrolein	0.1	0.25
Acrylamide—Skin		0.3
Acrylonitrile—Skin	20	45
Aldrin—Skin		0.25
Allyl alcohol—Skin	2	5
Allyl chloride	1	3
**C Allyl glycidyl ether (AGE)	10	45
Allyl propyl disulfide	2	12
5-Aminoethanol, see Ethanolamine		
2-Aminopyridine	0.5	2
**Ammonia	50	35
Ammonium sulfamate (Ammate)		15
n-Amyl acetate	100	525
sec-Amyl acetate	125	650
Aniline—Skin	5	19
Anisidine (o, p-isomers)—Skin		0.5
Antimony and compounds (as Sb)		0.5

See footnotes at end of table.

TABLE Z-1—Continued

Substance	p.p.m.*	mg./M³ †
ANTU (alpha naphthyl thiourea)		0.3
Arsenic and compounds (as As)		0.5
Arsine	0.05	0.2
Asphalt (petroleum) fumes		5
Azinphos-methyl—Skin		0.2
Barium (soluble compounds)		0.5
p-Benzoquinone, see Quinone		
Benzoyl peroxide		5
Benzyl chloride	1	5
Biphenyl, see Diphenyl		
Bisphenol A, see Diglycidyl ether		
Boron oxide		15
Boron trifluoride	1	3
Bromine	0.1	0.7
Bromoform—Skin	0.5	5
Butadiene (1, 3-butadiene)	1,000	2,200
Butanethiol, see Butyl mercaptan		
1-Butanone	200	590
2-Butoxy ethanol (Butyl Cellosolve)—Skin	50	240
Butyl acetate (n-butyl acetate)	150	710
sec-Butyl acetate	200	950
tert-Butyl acetate	200	950
Butyl alcohol	100	300
sec-Butyl alcohol	150	450
tert-Butyl alcohol	100	300
C Butylamine—Skin	5	15
O tert-Butyl chromate (as CrO_3)—Skin		0.1
n-Butyl glycidyl ether (BGE)	50	270
*Butyl mercaptan	10	35
p-tert-Butyltoluene	10	60
Calcium arsenate		1
Calcium oxide		5
*Camphor	2	
Carbaryl (Sevin ®)		5
Carbon black		3.5
Carbon disulfide	4,000	9,000
Carbon monoxide	50	55
Chlordane—Skin		0.5
Chlorinated camphene—Skin		0.5
Chlorinated diphenyl oxide		0.5
*Chlorine	1	3
Chlorine dioxide	0.1	0.3
C Chlorine trifluoride	0.1	0.4
C Chloroacetaldehyde	1	3
α-Chloroacetophenone (phenacylchloride)	0.05	0.3
Chlorobenzene (monochlorobenzene)	75	350
o-Chlorobenzylidene malononitrile (OCBM)	0.05	0.4
Chlorobromomethane	200	1,050
2-Chloro-1, 3-butadiene, see Chloroprene		
Chlorodiphenyl (42 percent Chlorine)—Skin		1
Chlorodiphenyl (54 percent Chlorine)—Skin		0.5
1-Chloro, 2,3-epoxypropane, see Epichlorhydrin		
2-Chloroethanol, see Ethylene chlorohydrin		
Chloroethylene, see Vinyl chloride		
C Chloroform (trichloromethane)	50	240
*Chloroprene	25	100
1-Chloro-1-nitropropane	20	100
Chloropicrin	0.1	0.7
Chloroprene (2-chloro-1,3-butadiene)—Skin	25	90
Chromium, sol. chromic, chromous salts as Cr		0.5
Metal and insol. salts		1

See footnotes at end of table.

TABLE Z-1—Continued

Substance	p.p.m.*	mg./M³ †
Coal tar pitch volatiles (benzene soluble fraction) anthracene, BaP, phenanthrene, acridine, chrysene, pyrene		0.2
Cobalt, metal fume and dust		0.1
Copper fume		0.1
Dusts and Mists		1
Cotton dust (raw)		1
Crag® herbicide		15
Cresol (all isomers)—Skin	5	22
Crotonaldehyde	2	6
Cumene—Skin	50	245
Cyanide (as CN)—Skin		5
Cyclohexane	300	1,050
Cyclohexanol	50	200
Cyclohexanone	50	200
Cyclohexene	300	1,015
Cyclopentadiene	75	200
2, 4-D		10
DDT—Skin		1
DDVP, see Dichlorvos		
Decaborane—Skin	0.05	0.3
Demeton®—Skin		0.1
Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	50	240
1,3-dieminoethane, see Ethylenediamine		
Diazomethane	0.2	0.4
Diborane	0.1	0.1
Dibutylphthalate		5
O o-Dichlorobenzene	50	300
p-Dichlorobenzene	75	450
Dichlorodifluoromethane	1,000	4,950
1,3-Dichloro-5,5-dimethyl hydantoin	0.2	0.2
1,1-Dichloroethane	100	400
1,2-Dichloroethylene	200	790
C Dichloroethyl ether—Skin	15	90
Dichloromethane, see Methylenechloride		
Dichloromonofluoromethane	1,000	4,200
C 1,1-Dichloro-1-nitroethane	10	60
1,2-Dichloropropane, see Propylenedichloride		
Dichlorotetrafluoroethane	1,000	7,000
Dichlorvos (DDVP)—Skin		1
Dieldrin—Skin		0.25
Diethylamine	25	75
Diethylamino ethanol—Skin	10	50
Diethylether, see Ethyl ether		
Difluorodibromomethane	100	860
C Diglycidyl ether (DGE)	0.5	2.9
Dihydroxybenzene, see Hydroquinone		
Diisobutyl ketone	50	290
Diisopropylamine—Skin	5	20
Dimethoxymethane, see Methylal		
Dimethyl acetamide—Skin	10	35
Dimethylamine	10	18
Dimethylaminobenzene, see Xylidene		
Dimethylaniline(N-dimethylaniline)—Skin	5	25
Dimethylbenzene, see Xylene		
Dimethyl 1,2-dibromo-2,2-dichloroethyl phosphate, (Dibrom)		3
Dimethylformamide—Skin	10	30
2,6-Dimethylheptanone, see Diisobutyl ketone		
1,1-Dimethylhydrazine—Skin	0.5	1
Dimethylphthalate		5
Dimethylsulfate—Skin	1	5
Dinitrobenzene (all isomers)—Skin		1

See footnotes at end of table.

TABLE Z-1—Continued

Substance	p.p.m.*	mg./M³ †
Nickel carbonyl	0.001	0.007
Nickel, metal and soluble compds, as Ni		1
Nicotine—Skin		0.5
Nitric acid	2	5
Nitric oxide	25	30
p-Nitroaniline—Skin	1	6
Nitrobenzene—Skin	1	5
p-Nitrochlorobenzene—Skin		1
Nitroethane	100	310
Nitrogen dioxide	5	9
Nitrogen trifluoride	10	30
Nitroglycerin—Skin	0.2	2
Nitromethane	100	250
1-Nitropropane	25	90
2-Nitropropane	25	90
Nitrotoluene—Skin	5	30
Nitrotrichloromethane, see Chloropicrin		
Octachloronaphthalene—Skin		0.1
*Octane	500	2,350
*Oil mist, mineral		* 5
Osmium tetroxide		0.002
Oxalic acid		1
Oxygen difluoride	0.05	0.1
Ozone	0.1	0.2
Paraquat—Skin		0.5
Parathion—Skin		0.1
Pentaborane	0.005	0.01
Pentachloronaphthalene—Skin		0.5
Pentachlorophenol—Skin		0.5
*Pentane	1,000	2,950
2-Pentanone	200	700
Perchloromethyl mercaptan	0.1	0.8
Perchloryl fluoride	3	13.5
Petroleum distillates (naphtha)	500	2,000
Phenol—Skin	5	19
p-Phenylene diamine—Skin		0.1
Phenyl ether (vapor)	1	7
Phenyl ether-biphenyl mixture (vapor)	1	7
Phenylethylene, see Styrene		
Phenyl glycidyl ether (PGE)	10	60
Phenylhydrazine—Skin	5	22
Phosdrin (Mevinphos ®)—Skin		0.1
Phosgene (carbonyl chloride)	0.1	0.4
Phosphine	0.3	0.4
Phosphoric acid		1
Phosphorus (yellow)		0.1
Phosphorus pentachloride		1
Phosphorus pentasulfide		1
Phosphorus trichloride	0.5	3
Phthalic anhydride	2	12
Picric acid—Skin		0.1
Pival ® (2-Pivalyl-1,3-indandione)		0.1
Platinum (Soluble salts) as Pt		0.002
Propargyl alcohol—Skin	1	2
Propane	1,000	1,800
n-Propyl acetate	200	840
Propyl alcohol	200	500
n-Propyl nitrate	25	105
Propylene dichloride	75	350
Propylene imine—Skin	2	5
Propylene oxide	100	240
Pyrethrum, see Methylcyclopentenolone		
Pyr-thrum		5
Pyridine	5	15
Quinone	0.1	0.4
RDX—Skin		1.5
Rhodium, Metal fume and dusts, as Rh		0.1
Soluble salts		0.001
Rotenone		10
Rotenone (commercial)		5
Selenium compounds (as Se)		0.2
Selenium hexafluoride	0.05	0.4

See footnotes at end of table.

TABLE Z-1—Continued

Substance	p.p.m.*	mg./M³ †
Silver, metal and soluble compounds		0.01
Sodium fluoroacetate (1080)—Skin		0.05
Sodium hydroxide		2
Sulfur	0.1	0.5
*Stoddard solvent	500	2,950
Strychnine		0.15
Sulfur dioxide	5	13
Sulfur hexafluoride	1,000	6,000
Sulfuric acid		1
Sulfur monochloride	1	6
Sulfur pentafluoride	0.025	0.25
Sulfuryl fluoride	5	20
Systox, see Demeton ®		
2,4,5-T		10
Tantalum		5
TEDP—Skin		0.2
*Tellurium		0.1
*Tellurium hexafluoride	0.02	0.2
TEPP—Skin		0.05
*Terphenyls	1	9
1,1,2-Tetrachloro-2,2-difluoroethane	500	4,170
1,1,2,2-Tetrachloro-1,2-difluoroethane	500	4,170
1,1,2,2-Tetrachloroethane—Skin	5	35
Tetrachloroethylene, see Perchloroethylene		
Tetrachloromethane, see Carbon tetrachloride		
Tetrachloronaphthalene—Skin		2
Tetraethyl lead (as Pb)—Skin		0.075
Tetrahydrofuran	200	590
Tetramethyl lead (as Pb)—Skin		0.07
Tetramethyl succinonitrile—Skin	0.5	3
Tetranitromethane	1	8
Tetryl (2,4,6-trinitrophenylmethylnitramine)—Skin		1.5
Thallium (soluble compounds)—Skin as Tl		0.1
Thiram		5
Tin (inorganic cmpds, except oxides		2
Tin (organic cmpds)		0.1
O Toluene-2,4-diisocyanate	0.02	0.14
o-Tolidine—Skin	5	22
Toxaphene, see Chlorinated camphene		
Tributyl phosphate		5
1,1,1-Trichloroethane, see Methyl chloroform		
1,1,2-Trichloroethane—Skin	10	45
Titanium dioxide		15
Trichloroethane, see Chloroform		
Trichloronaphthalene—Skin		5
1,2,3-Trichloropropane	50	300
1,1,2-Trichloro-1,2,2-trifluoroethane	1,000	7,600
Trichylamine	10	200
Trifluoromonobromomethane	1,000	6,100
2,4,6-Trinitrophenol, see Picric acid		
2,4,6-Trinitrophenylmethylnitramine, see Tetryl		
Trinitrotoluene—Skin		1.5
Triorthocresyl phosphate		0.1
Triphenyl phosphate		3
Turpentine	100	560
Uranium (soluble compounds)		0.05
Uranium (insoluble compounds)		0.25
C Vanadium: V_2O_5 dust		0.5
V_2O_5 fume		0.1
Vinyl benzene, see Styrene		
Vinylcyanide, see Acrylonitrile		

See footnotes at end of table.

TABLE Z-1—Continued

Substance	p.p.m.*	mg./M³ †
Dinitro-o-cresol—Skin		0.2
Dinitrotoluene—Skin		1.5
Dioxane (Diethylene dioxide)—Skin	100	360
Diphenyl	0.2	1
Diphenylmethane diisocyanate (see Methylene bisphenyl isocyanate (MDI)		
Dipropylene glycol methyl ether—Skin	100	600
Di-sec. octyl phthalate (Di-2-ethylhexylphthalate)		5
Endrin—Skin		0.1
Epichlorhydrin—Skin	5	19
EPN—Skin		0.5
1,2-Epoxypropane, see Propylene oxide		
2,3-Epoxy-1-propanol, see Glycidol		
Ethanethiol, see Ethylmercaptan		
Ethanolamine	3	6
2-Ethoxyethanol—Skin	200	740
2-Ethoxyethyl acetate (Cellosolve acetate)—Skin	100	540
Ethyl acrylate	400	1,600
Ethyl acrylate—Skin	25	100
Ethyl alcohol (ethanol)	1,000	1,900
Ethylamine	10	18
Ethyl sec-amyl ketone (5-methyl-3-heptanone)	50	150
Ethyl benzene	100	435
Ethyl bromide	200	890
Ethyl butyl ketone (3-Heptanone)	50	230
Ethyl chloride	1,000	2,600
Ethyl ether	400	1,200
Ethyl formate	100	300
C Ethyl mercaptan	10	25
Ethyl silicate	100	850
Ethylene chlorohydrin—Skin	5	16
Ethylenediamine	10	25
Ethylene dibromide, see 1,2-Dibromoethane		
Ethylene dichloride, see 1,2-Dichloroethane		
C Ethylene glycol dinitrate and/or Nitroglycerin—Skin	0.2	1
Ethylene glycol monomethyl ether acetate, see Methyl cellosolve acetate		
Ethylene imine—Skin	0.5	1
Ethylene oxide	50	90
Ethylidine chloride, see 1,1-Dichloroethane		
N-Ethylmorpholine—Skin	20	94
Ferbam		15
Ferrovanadium dust		1
Fluorides (as F)		2.5
Fluorine	0.1	0.2
Fluorotrichloromethane	1,000	5,600
Formic acid	5	9
Furfural—Skin	5	20
Furfuryl alcohol	50	200
Glycidol (2,3-Epoxy-1-propanol)	50	150
Glycol monoethyl ether, see 2-Ethoxyethanol		
Guthion ®, see Azinphos-methyl		
Hafnium		0.5
Heptachlor—Skin		0.5
Heptane (n-heptane)	500	2,000
Hexachloroethane—Skin	1	10
Hexachloronaphthalene—Skin		0.2
Hexane (n-hexane)	500	1,800
2-Hexanone	100	410
Hexone (Methyl isobutyl ketone)	100	410
sec-Hexyl acetate	50	300

See footnote at end of table.

TABLE Z-1—Continued

Substance	p.p.m.*	mg./M³ †
Hydrazine—Skin	1	1.3
Hydrogen bromide	3	10
C Hydrogen chloride	5	7
Hydrogen cyanide—Skin	10	11
Hydrogen peroxide (90%)	1	1.4
Hydrogen selenide	0.05	0.2
Hydroquinone		2
C Iodine	0.1	1
Iron oxide fume		10
Isoamyl acetate	100	525
Isoamyl alcohol	100	360
Isobutyl acetate	150	700
Isobutyl alcohol	100	300
Isophorone	25	140
Isopropyl acetate	250	950
Isopropyl alcohol	400	980
Isopropylamine	5	12
Isopropylether	500	2,100
Isopropyl glycidyl ether (IGE)	50	240
Kelene	0.5	0.9
Lead arsenate		0.15
Lindane—Skin		0.5
Lithium hydride		0.025
L. P. G. (liquefied petroleum gas)	1,000	1,800
Magnesium oxide fume		15
Malathion—Skin		15
Maleic anhydride	0.25	1
C Manganese		5
Mesityl oxide	25	100
Methacrylonitrile, see Methyl mercaptan		
Methoxychlor		15
2-Methoxyethanol, see Methyl cellosolve		
Methyl acetate	200	610
Methyl acetylene (propyne)	1,000	1,600
Methyl acetylene-propadiene mixture (MAPP)	1,000	1,800
Methyl acrylate—Skin	10	35
Methyl (dimethoxymethane)	1,000	3,100
Methyl alcohol (methanol)	200	260
Methylamine	10	12
Methyl amyl alcohol, see Methyl isobutyl carbinol		
Methyl (n-amyl) ketone (2-Heptanone)	100	465
C Methyl bromide—Skin	20	80
Methyl butyl ketone, see 2-Hexanone		
Methyl cellosolve—Skin	25	80
Methyl cellosolve acetate—Skin	25	120
Methyl chloride	450	1,050
Methylcyclohexane	500	2,000
Methylcyclohexanol	100	470
o-Methylcyclohexanone—Skin	100	460
Methyl ethyl ketone (MEK), see 2-Butanone		
Methyl formate	100	250
Methyl iodide—Skin	5	28
Methyl isobutyl carbinol—Skin	25	100
Methyl isobutyl ketone, see Hexone		
Methyl isocyanate—Skin	0.02	0.05
C Methyl mercaptan	10	20
Methyl methacrylate	100	410
Methyl propyl ketone, see 2-Pentanone		
C α Methyl styrene	100	480
C Methylene bisphenyl isocyanate (MDI)	0.02	0.2
Molybdenum: Soluble compounds		5
Insoluble compounds		15
Monomethyl aniline—Skin	2	9
C Monomethyl hydrazine—Skin	0.2	0.38
Morpholine—Skin	20	70
Naphtha (coal tar)	100	400
Naphthalene	10	50

See footnotes at end of table.

TABLE Z-1—Continued

Substance	p.p.m.*	mg./M³ †
Vinyl toluene	100	480
Warfarin		0.1
Xylene (xylol)	100	435
Xylidine—Skin	5	25

TABLE Z-1—Continued

Substance	p.p.m.*	mg./M³ †
Yttrium		1
Zinc chloride fume		1
Zinc oxide fume		5
Zirconium compounds (as Zr)		5

*1970 Addition.

* Parts of vapor or gas per million parts of contaminated air by volume at 25° C. and 760 mm. Hg pressure.

† Approximate milligrams of particulate per cubic meter of air.

(No footnote "s" is used to avoid confusion with ceiling value notations.)

‡ An atmospheric concentration of not more than 0.02 p.p.m., or personal protection may be necessary to avoid headache.

§ As sampled by method that does not collect vapor.

¶ For control of general room air, biologic monitoring is essential for personnel control.

TABLE Z-2

Material	8-hour time weighted average	Acceptable ceiling concentration	Acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift. Concentration	Maximum duration
Benzene (Z37.4-1969)	10 p.p.m.	25 p.p.m.	50 p.p.m.	10 minutes.
Beryllium and beryllium compounds (Z37.29-1970)	2 mg./M³	25 mg./M³	125 mg./M³	30 minutes
Cadmium fume (Z37.5-1970)	0.1 mg./M³	0.3 mg./M³		
Cadmium dust (Z37.5-1970)	0.2 mg./M³	0.6 mg./M³		
Carbon disulfide (Z37.3-1968)	20 p.p.m.	30 p.p.m.	100 p.p.m.	Do.
Carbon tetrachloride (Z37.17-1967)	10 p.p.m.	25 p.p.m.	200 p.p.m.	5 minutes in any 4 hours.
Ethylene dibromide (Z37.31-1970)	20 p.p.m.	30 p.p.m.	50 p.p.m.	5 minutes in any 3 hours.
Ethylene dichloride (Z37.21-1969)	50 p.p.m.	100 p.p.m.	200 p.p.m.	5 minutes in any 3 hours.
Formaldehyde (Z37.16-1967)	3 p.p.m.	5 p.p.m.	10 p.p.m.	30 minutes.
Hydrogen fluoride (Z37.28-1969)	do.	do.	do.	
Fluoride as dust (Z37.28-1969)	2.5 mg./M³			
Lead and its inorganic compounds (Z37.11-1969)	0.2 mg./M³			
Methyl chloride (Z37.18-1969)	100 p.p.m.	200 p.p.m.	300 p.p.m.	5 minutes in any 3 hours.
Methylene chloride (Z37.3-1968)	500 p.p.m.	1,000 p.p.m.	2,000 p.p.m.	5 minutes in any 3 hours.
Organo (alkyl) mercury (Z37.30-1969)	0.01 mg./M³	0.04 mg./M³		
Styrene (Z37.15-1969)	200 p.p.m.	600 p.p.m.	600 p.p.m.	5 minutes in any 3 hours.
Trichloroethylene (Z37.19-1969)	do.	do.	300 p.p.m.	5 minutes in any 2 hours.
Tetrachloroethylene (Z37.22-1967)	do.	do.	do.	5 minutes in any 3 hours.
Toluene (Z37.12-1967)	200 p.p.m.	300 p.p.m.	500 p.p.m.	10 minutes.
Hydrogen sulfide (Z37.2-1966)		20 p.p.m.	50 p.p.m.	10 minutes once only if no other measurable exposure occurs.
Mercury (Z37.8-1971)	1 mg./M³			
Chromic acid and chromates (Z37.7-1971)	do.			

TABLE 2-3—MINERAL DUSTS

Substances	Mppcf *	Mg/M³
Silica:		
Crystalline:		
Quartz (respirable)	250 ‡	10mg/M³ ÷
		%SiO₂+2
Quartz (total dust)		%SiO₂+2
		30mg/M³
		%SiO₂+2
Cristobalite: Use ½ the value calculated from the count or mass formulae for quartz.		
Tridymite: Use ½ the value calculated from the formulae for quartz.		
Amorphous, including natural diatomaceous earth	20	80mg/M³
		%SiO₂
Silicates (less than 1% crystalline silica):		
Mica	20	
Soapstone	20	
Talc (non-asbestos form)	20*	
Talc (fibrous). Use asbestos limit.		
Tremolite (non-talc, fibrous)		
Portland cement	50	
Graphite (natural)	15	
Coal dust (respirable fraction less than 5% SiO₂)		2.4mg/M³ or 80mg/M³
For more than 5% SiO₂		%SiO₂+2
Inert or Nuisance Dust:		
Respirable fraction	15	5mg/M³
Total dust	50	15mg/M³

NOTE: Conversion factors—
mppcf×38.6=million particles per cubic meter
=particles per c.c.

* Millions of particles per cubic foot of air, based on impinger samples counted by light-field technics.

† The percentage of crystalline silica in the formula is the amount determined from air-borne samples, except in those instances in which other methods have been shown to be applicable.

‡ As determined by the membrane filter method at 430× (phase contrast magnification).

* Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a size-selector with the following characteristics: Containing < 1% quartz; if > 1% quartz, use quartz limit.

Aerodynamic diameter (unit density sphere)	Percent passing selector
2	90
2.5	75
3.5	50
5.0	25
10	0

The measurements under this note refer to the use of an AEC instrument.[7 the respirable fraction of coal dust is determined with a MRE the figure corresponding to that of 2.4 Mg/M³ in the table for coal dust is 4.5 Mg/M³.

[39 FR 23502, June 27, 1974. Redesignated and amended at 40 FR 23073, May 26, 1975]

§ 1910.1001 Asbestos.

(a) *Definitions.* For the purpose of this section, (1) "Asbestos" includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite.

(2) "Asbestos fibers" means asbestos fibers longer than 5 micrometers.

(b) *Permissible exposure to airborne concentrations of asbestos fibers.*—(1) *Standard effective July 7, 1972.* The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed five fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(2) *Standard effective July 1, 1976.* The 8-hour time-weighted average airborne concentrations of asbestos fibers to which any employee may be exposed shall not exceed two fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(3) *Ceiling concentration.* No employee shall be exposed at any time to airborne concentrations of asbestos fibers in excess of 10 fibers, longer than 5 micrometers, per cubic centimeter of air, as determined by the method prescribed in paragraph (e) of this section.

(c) *Methods of compliance.*—(1) *Engineering methods.* (i) *Engineering controls.* Engineering controls, such as, but not limited to, isolation, enclosure, exhaust ventilation, and dust collection, shall be used to meet the exposure limits prescribed in paragraph (b) of this section.

(ii) *Local exhaust ventilation.* (a) Local exhaust ventilation and dust collection systems shall be designed, constructed, installed, and maintained in accordance with the American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, ANSI Z9.2–1971, which is incorporated by reference herein.

(b) See § 1910.6 concerning the availability of ANSI Z9.2–1971, and the maintenance of a historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(iii) *Particular tools.* All hand-operated and power-operated tools which may produce or release asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, such as, but not limited to, saws, scorers, abrasive wheels, and drills, shall be provided with local exhaust ventilation systems in accordance with subdivision (ii) of this subparagraph.

(2) *Work practices.*—(i) *Wet methods.* Insofar as practicable, asbestos shall be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet state sufficient to prevent the emission of airborne fibers in excess of the exposure limits prescribed in paragraph (b) of this section, unless the usefulness of the product would be diminished thereby.

(ii) *Particular products and operations.* No asbestos cement, mortar, coating, grout, plaster, or similar material containing asbestos shall be removed from bags, cartons, or other containers in which they are shipped, without being either wetted, or enclosed, or ventilated so as to prevent effectively the release of airborne asbestos fibers in excess of the limits prescribed in paragraph (b) of this section.

(iii) *Spraying, demolition, or removal.* Employees engaged in the spraying of asbestos, the removal, or demolition of pipes, structures, or equipment covered or insulated with asbestos, and in the removal or demolition of asbestos insulation or coverings shall be provided with respiratory equipment in accordance with paragraph (d)(2)(iii) of this section and with special clothing in accordance with paragraph (d)(3) of this section.

(d) *Personal protective equipment.*—(1) Compliance with the exposure limits prescribed by paragraph (b) of this section may not be achieved by the use of respirators or shift rotation of employees, except:

(i) During the time period necessary to install the engineering controls and to institute the work practices required by paragraph (c) of this section;

(ii) In work situations in which the methods prescribed in paragraph (c) of this section are either technically not feasible or feasible to an extent insufficient to reduce the airborne concentrations of asbestos fibers below the limits prescribed by paragraph (b) of this section; or

(iii) In emergencies.

(iv) Where both respirators and personnel rotation are allowed by subdivisions (i), (ii), or (iii) of this subparagraph, and both are practicable, personnel rotation shall be preferred and used.

(2) Where a respirator is permitted by subparagraph (1) of this paragraph, it shall be selected from among those approved by the Bureau of Mines, Department of the Interior, or the National Institute for Occupational Safety and Health, Department of Health, Education, and Welfare, under the provisions of 30 CFR Part 11 (37 F.R. 8244, Mar. 25, 1972), and shall be used in accordance with subdivisions (i), (ii), (iii), and (iv) of this subparagraph.

(i) *Air purifying respirators.* A reusable or single use air purifying respirator, or a respirator described in subdivision (ii) or (iii) of this subparagraph, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed no more than 10 times those limits.

(ii) *Powered air purifying respirators.* A full facepiece powered air purifying respirator, or a powered air purifying respirator, or a respirator described in subdivision (iii) of this subparagraph, shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average concentrations of asbestos fibers are reasonably expected to exceed 10 times, but not 100 times, those limits.

(iii) *Type "C" supplied-air respirators, continuous flow or pressure-demand class.* A type "C" continuous flow or pressure-demand, supplied-air respirator shall be used to reduce the concentrations of airborne asbestos fibers in the respirator below the exposure limits prescribed in paragraph (b) of this section, when the ceiling or the 8-hour time-weighted average airborne concentrations of asbestos fibers are reasonably expected to exceed 100 times those limits.

(iv) *Establishment of a respirator program.* (a) The employer shall establish a respirator program in accordance with the requirements of the American National Standards Practices for Respiratory Protection, ANSI Z88.2–1969, which is incorporated by reference herein.

(b) See § 1910.6 concerning the availability of ANSI Z88.2–1969 and the maintenance of an historic file in connection therewith. The address of the American National Standards Institute is given in § 1910.100.

(c) No employee shall be assigned to tasks requiring the use of respirators if, based upon his most recent examination, an examining physician determines that the employee will be unable to function normally wearing a respirator, or that the safety or health of the employee or other employees will be impaired by his use of a respirator. Such employee shall be rotated to another job or given the opportunity to transfer to a different position whose duties he is able to perform with the same employer, in the same geographical area and with the same seniority, status, and rate of pay he had just prior to such transfer, if such a different position is available.

(3) Special clothing: The employer shall provide, and require the use of, special clothing, such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos fibers, which exceed the ceiling level prescribed in paragraph (b) of this section.

(4) Change rooms: (i) At any fixed place of employment exposed to airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, the employer shall provide change rooms for employees working regularly at the place.

(ii) Clothes lockers: The employer shall provide two separate lockers or containers for each employee, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes.

(iii) Laundering: (a) Laundering of asbestos contaminated clothing shall be done so as to prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(b) Any employer who gives asbestos-contaminated clothing to another person for laundering shall inform such person of the requirement in (a) of this subdivision to effectively prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(c) Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and labeled in accordance with paragraph (g) of this section.

(e) *Method of measurement.* All determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 400–450 × (magnification) (4 millimeter objective) with phase contrast illumination.

(f) *Monitoring.*—(1) *Initial determinations.* Within 6 months of the publication of this section, every employer shall cause every place of employment where asbestos fibers are released to be monitored in such a way as to determine whether every employee's exposure to asbestos fibers is below the limits prescribed in paragraph (b) of this section. If the limits are exceeded, the employer shall immediately undertake a compliance program in accordance with paragraph (c) of this section.

(2) *Personal monitoring.*—(i) Samples shall be collected from within the breathing zone of the employees, on membrane filters of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) Sampling frequency and patterns. After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of employees. In no case shall the sampling be done at intervals greater than 6 months for employees whose exposure to asbestos may reasonably be foreseen to exceed the limits prescribed by paragraph (b) of this section.

(3) *Environmental monitoring.*—(i) samples shall be collected from areas of a work environment which are representative of the airborne concentrations of asbestos fibers which may reach the breathing zone of employees. Samples shall be collected on a membrane filter of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) *Sampling frequency and patterns.* After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees. In no case shall sampling be at intervals greater than 6 months for employees whose exposures to asbestos may reasonably be foreseen to exceed the exposure limits prescribed in paragraph (b) of this section.

(4) *Employee observation of monitoring.* Affected employees, or their representatives, shall be given a reasonable opportunity to observe any monitoring required by this paragraph and shall have access to the records thereof.

(g) *Caution signs and labels.* (1) *Caution signs.* (i) *Posting.* Caution signs shall be provided and displayed at each location where airborne concentrations of asbestos fibers may be in excess of the exposure limits prescribed in paragraph (b) of this section. Signs shall be posted at such a distance from such a location so that an employee may read the signs and take necessary protective steps before entering the area marked by the signs. Signs shall be posted at all approaches to areas containing excessive concentrations of airborne asbestos fibers.

(ii) *Sign specifications.* The warning signs required by subdivision (i) of this subparagraph shall conform to the requirements of 29" x 14" vertical format signs specified in § 1910.145(d)(4), and to this subdivision. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to that specified in this subdivision.

Legend	Notation
Asbestos	1" Sans Serif, Gothic or Block.
Dust Hazard	¾" Sans Serif, Gothic or Block.
Avoid Breathing Dust	¼" Gothic.
Wear Assigned Protective Equipment.	¼" Gothic.
Do Not Remain In Area Unless Your Work Requires It.	¼" Gothic.
Breathing Asbestos Dust May Be Hazardous To Your Health.	14 point Gothic.

Spacing between lines shall be at least equal to the height of the upper of any two lines.

(2) *Caution labels.*—(i) *Labeling.* Caution labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers, except that no label is required where asbestos fibers have been modified by a bonding agent, coating, binder, or other material so that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section will be released.

(ii) *Label specifications.* The caution labels required by subdivision (i) of this subparagraph shall be printed in letters of sufficient size and contrast as to be readily visible and legible. The label shall state:

CAUTION

Contains Asbestos Fibers

Avoid Creating Dust

Breathing Asbestos Dust May Cause Serious Bodily Harm

(h) *Housekeeping.*—(1) *Cleaning.* All external surfaces in any place of employment shall be maintained free of accumulations of asbestos fibers if, with their dispersion, there would be an excessive concentration.

(2) *Waste disposal.* Asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing, consigned for disposal, which may produce in any reasonably foreseeable use, handling, storage, processing, disposal, or transportation airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section shall be collected and disposed of in sealed impermeable bags, or other closed, impermeable containers.

(i) *Recordkeeping.*—(1) *Exposure records.* Every employer shall maintain records of any personal or environmental monitoring required by this section. Records shall be maintained for a period of at least 20 years and shall be made available upon request to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of the National Institute for Occupational Safety and Health, and to authorized representatives of either.

(2) *Employee access.* Every employee and former employee shall have reasonable access to any record required to be maintained by subparagraph (1) of this paragraph, which indicates the employee's own exposure to asbestos fibers.

(3) *Employee notification.* Any employee found to have been exposed at any time to airborne concentrations of asbestos fibers in excess of the limits prescribed in paragraph (b) of this section shall be notified in writing of the exposure as soon as practicable but not later

than 5 days of the finding. The employee shall also be timely notified of the corrective action being taken.

(j) *Medical examinations*—(1) *General.* The employer shall provide or make available at his cost, medical examinations relative to exposure to asbestos required by this paragraph.

(2) *Preplacement.* The employer shall provide or make available to each of his employees, within 30 calendar days following his first employment in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination, which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second ($FEV_{1.0}$).

(3) *Annual examinations.* On or before January 31, 1973, and at least annually thereafter, every employer shall provide, or make available, comprehensive medical examinations to each of his employees engaged in occupations exposed to airborne concentrations of asbestos fibers. Such annual examination shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second ($FEV_{1.0}$).

(4) *Termination of employment.* The employer shall provide, or make available, within 30 calendar days before or after the termination of employment of any employee engaged in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second ($FEV_{1.0}$).

(5) *Recent examinations.* No medical examination is required of any employee, if adequate records show that the employee has been examined in accordance with this paragraph within the past 1-year period.

(6) *Medical records*—(i) *Maintenance.* Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be retained by employers for at least 20 years.

(ii) *Access.* The contents of the records of the medical examinations required by this paragraph shall be made available, for inspection and copying, to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of NIOSH, to authorized physicians and medical consultants of either of them, and, upon the request of an employee or former employee, to his physician. Any physician who conducts a medical examination required by this paragraph shall furnish to the employer of the examined employee all the information specifically required by this paragraph, and any other medical information related to occupational exposure to asbestos fibers.

§ 1910.1002 Coal tar pitch volatiles; interpretation of term.

As used in § 1910.1000 (Table Z-1), coal tar pitch volatiles include the fused polycyclic hydrocarbons which volatilize from the distillation residues of coal, petroleum, wood, and other organic matter.

(Sec. 8(g), 84 Stat. 1600, 29 U.S.C. 657) [39 FR 23502, June 27, 1974. Redesignated and amended at 40 FR 23072, May 28, 1975]

§ 1910.1003 4-Nitrobiphenyl.

(a) *Scope and application.* (1) This section applies to any area in which 4-Nitrobiphenyl, Chemical Abstracts Service Registry Number 92933 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of 4-Nitrobiphenyl.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of 4-Nitrobiphenyl. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room

facilities are otherwise required in this section.

(4) "Closed system" means an operation involving 4-Nitrobiphenyl where containment prevents the release of 4-Nitrobiphenyl into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of 4-Nitrobiphenyl or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of 4-Nitrobiphenyl from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of 4-Nitrobiphenyl which may result in exposure to or contact with 4-Nitrobiphenyl.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of 4-Nitrobiphenyl, which is impervious to the passage of 4-Nitrobiphenyl, and which would prevent the entry of 4-Nitrobiphenyl into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving 4-Nitrobiphenyl within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving 4-Nitrobiphenyl in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of 4-Nitrobiphenyl into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to 4-Nitrobiphenyl.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) "Requirements for areas containing 4-Nitrobiphenyl." A regulated area shall be established by an employer where 4-Nitrobiphenyl is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with 4-Nitrobiphenyl within an isolated system such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where 4-Nitrobiphenyl is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while 4-Nitrobiphenyl is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where 4-Nitrobiphenyl is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontami-

nated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in 4-Nitrobiphenyl handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e) (2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with 4-Nitrobiphenyl could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(d) *General regulated area requirements*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a known contact with 4-Nitrobiphenyl such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f) (2) of this section.

(3) *Hygiene facilities and practices* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d) (1) and (2) (ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d) (3).

(iv) Where employees wear protective clothing and equipment, clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove 4-Nitrobiphenyl from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) *Signs, information and training*—(1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT

AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c) (5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.* (i) Containers of 4-Nitrobiphenyl and containers required under paragraphs (c) (4) (v) and (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of 4-Nitrobiphenyl and containers required under paragraphs (c) (4) (v), (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible to, or handled by employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a) (1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have 4-Nitrobiphenyl contents with corrosive or irritating properties shall have label statements warning of such hazards, noting if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than ½ the size of the largest lettering on the package, and not less than 8 point type in any instance. *Provided,* That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of 4-Nitrobiphenyl, including local and systemic toxicity;

(b) The specific nature of the operation involving 4-Nitrobiphenyl which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 4-Nitrobiphenyl;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports*—(1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area.

(ii) The name(s) and other identifying information as to the presence of 4-Nitrobiphenyl in each regulated area.

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which 4-Nitrobiphenyl is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of 4-Nitrobiphenyl into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph.

(i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented, and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.1004 alpha-Naphthylamine.

(a) *Scope and application.* (1) This section applies to any area in which alpha-Naphthylamine, Chemical Abstracts Service Registry Number 134327 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e)(2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1.0 percent by weight or volume of alpha-Naphthylamine.

(3) This section will not apply to operations involving the destructive distillation of carbonaceous materials, such as occurs in coke ovens.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of alpha-Naphthylamine. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving alpha-Naphthylamine where containment prevents the release of alpha-Naphthylamine into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of alpha-Naphthylamine or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of alpha-Naphthylamine from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of alpha-Naphthylamine which may result in exposure to or contact with alpha-Naphthylamine.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of alpha-Naphthylamine, which is impervious to the passage of alpha-Naphthylamine, and which would prevent the entry of alpha-Naphthylamine into regulate areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving alpha-Naphthylamine within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving alpha-Naphthylamine in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of alpha-Naphthylamine into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to alpha-Naphthylamine.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing alpha-Naphthylamine.* A regulated area shall be established by an employer where alpha-Naphthylamine is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with alpha-Naphthylamine within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where alpha-Naphthylamine is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while alpha-Naphthylamine is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b)(13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where alpha-Naphthylamine is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply.

(i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), and shoe covers and gloves prior to entering a regulated area.

(iv) Employees engaged in alpha-Naphthylamine handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exist of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (c)(2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with alpha-Naphthylamine could result, each authorized employee entering that area shall:

(i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(d) *General regulated area requirements.*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected areas shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f)(2) of this section.

(iv) Where an employee has a known contact with alpha-Naphthylamine, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f)(2) of this section.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d)(1) and (2)(ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove alpha-Naphthylamine from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) *Signs, information and training.*—(1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c)(5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA
IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES
AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.* (i) Containers of alpha-Naphthylamine and containers required under paragraphs (c)(4)(v) and (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of alpha-Naphthylamine and containers required under paragraphs (c)(4)(v), (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible to, or handled by, employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a)(1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have alpha-Naphthylamine contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than ½ the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of alpha-Naphthylamine, including local and systemic toxicity;

(b) The specific nature of the operation involving alpha-Naphthylamine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of alpha-Naphthylamine;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports*—(1) *Operations.* Not later than March 1, 1974, the informaton required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and inplant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of alpha-Naphthylamine in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which alpha-Naphthylamine is present in each regulated area; e.g., whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of alpha-Naphthylamine into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include:

(a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure

§ 1910.1005 [Reserved]

§ 1910.1006 Methyl chloromethyl ether.

(a) *Scope and application.* (1) This section applies to any area in which methyl chloromethyl ether, Chemical Abstracts Service Registry Number 107302 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e)(2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of methyl chloromethyl ether.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of methyl chloromethyl ether. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving methyl chloromethyl ether where containment prevents the release of methyl chloromethyl ether into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of methyl chloromethyl ether or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of methyl chloromethyl ether from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of methyl chloromethyl ether which may result in exposure to or contact with methyl chloromethyl ether.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of methyl chloromethyl ether, which is impervious to the passage of methyl chloromethyl ether, and which would prevent the entry of methyl chloromethyl ether into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving methyl chloromethyl ether within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving methyl chloromethyl ether in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of methyl chloromethyl ether into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to methyl chloromethyl ether.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing methyl chloromethyl ether.* A regulated area shall be established by an employer where methyl chloromethyl ether is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with methyl chloromethyl ether within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where methyl chloromethyl ether is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while methyl chloromethyl ether is contained within. Access shall be restricted to authorized employees only.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b)(13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where methyl chloromethyl ether is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply.

(i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), and gloves prior to entering the regulated area.

(iv) Employees engaged in methyl chloromethyl ether handling operations shall be provided with and required to wear and use a full-face, supplied air respirator, of the continuous flow or pressure-demand type, in accordance with § 1910.134.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e)(2), (3), and (4) of this section.

(vi) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with methyl chloromethyl ether could result, each authorized employee entering that area shall:

(i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(d) *General regulated area requirements.*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f)(2) of this section.

(iv) Where an employee has a known contact with methyl chloromethyl ether, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f)(2) of this section.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(iii) Where toilets are in regulated areas, such toilets shall be in a separate room.

(iv) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(1) and (2)(ii) through (vii).

(v) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regu-

lated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove methyl chloromethyl ether from the surfaces of materials, equipment and the decontamination facility.

(e) *Signs, information and training*—(1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c) (5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.* (i) Containers of methyl chloromethyl ether and containers required under paragraphs (c) (4) (v) and (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary" identification, of the carcinogen and percent.

(ii) Containers of methyl chloromethyl ether and containers required under paragraphs (c) (4) (v), (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible to, or handled by, employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a) (1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have methyl chloromethyl ether contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than ½ the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of methyl chloromethyl ether, including local and systemic toxicity;

(b) The specific nature of the operation involving methyl chloromethyl ether which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of methyl chloromethyl ether;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports*—(1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of methyl chloromethyl ether in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which methyl chloromethyl ether is present in each regulated area; e.g., whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of methyl chloromethyl ether into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph.

(i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances be taken, with specific completion dates, of the incident, and measures taken or to to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.1007 3,3'-Dichlorobenzidine (and its salts).

(a) *Scope and application.* (1) This section applies to any area in which 3,3'-Dichlorobenzidine (or its salts), Chemical Abstracts Service Registry Number 91941 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1 percent by weight or volume of 3,3'-Dichlorobenzidine (or its salts).

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of 3,3'-Dichlorobenzidine (or its salts). The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving 3,3'-Dichlorobenzidine (or its salts) where containment prevents the release of 3,3'-Dichlorobenzidine (or its salts) into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of 3,3'-Dichlorobenzidine or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of 3,3'-Dichlorobenzidine (or its salts) from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of 3,3'-Dichlorobenzidine (or its salts) which may result in exposure to or contact with 3,3'-Dichlorobenzidine (or its salts).

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment, of 3,3'-Dichlorobenzidine (or its salts), which is impervious to the passage of 3,3'-Dichlorobenzidine (or its salts) and which would prevent the entry of 3,3'-Dichlorobenzidine (or its salts) into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving 3,3'-Dichlorobenzidine (or its salts) within the hood does not require the insertion of any portion of any employee's body other than his hands and arms

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving 3,3'-Dichlorobenzidine (or its salts) in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of 3,3'-Dichlorobenzidine (or its salts) into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to 3,3'-Dichlorobenzidine (or its salts).

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing 3,3'-Dichlorobenzidine (or its salts).* A regulated area shall be established by an employer where 3,3'-Dichlorobenzidine (or its salts) is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with 3,3' Dichlorobenzidine (or its salts) within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where 3,3'-Dichlorobenzidine (or its salts) is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while 3,3'-Dichlorobenzidine (or its salts) is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where 3,3'-Dichlorobenzidine (or its salts) is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in 3,3'-Dichlorobenzidine (or its salts) handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e) (2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with 3,3'-Dichlorobenzidine (or its salts) could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(d) *General regulated area requirements*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be

evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f)(2) of this section.

(iv) Where an employee has a known contact with 3,3'-Dichlorobenzidine (or its salts), such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f)(2) of this section.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d)(1) and (2)(ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean make-up air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove 3,3'-Dichlorobenzidine (or its salts) from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) *Signs, information and training.*— (1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT

AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c)(5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.* (i) Containers of 3,3'-Dichlorobenzidine (or its salts) and containers required under paragraphs (c)(4)(v) and (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of 3,3'-Dichlorobenzidine (or its salts) and containers required under paragraphs (c)(4)(v), (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible to, or handled by, employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a)(1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have 3,3'-Dichlorobenzidine (or its salts) contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than ½ the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of 3,3'-Dichlorobenzidine (or its salts), including local and systemic toxicity;

(b) The specific nature of the operation involving 3,3'-Dichlorobenzidine (or its salts) which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 3,3'-Dichlorobenzidine (or its salts);

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports.*—(1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of 3,3'-Dichlorobenzidine (or its salts) in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which 3,3'-Dichlorobenzidine (or its salts) is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of 3,3'-Dichlorobenzidine (or its salts) into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination, and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees.

(1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids of cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.1008 bis-Chloromethyl ether.

(a) *Scope and application.* (1) This section applies to any area in which bis-chloromethyl ether, Chemical Abstracts Service Registry Number 542881 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e)(2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of bis-chloromethyl ether.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of bis-chloromethyl ether. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving bis-chloromethyl ether where containment prevents the release of bis-chloromethyl ether into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of bis-chloromethyl ether or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of bis-chloromethyl ether from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of bis-chloromethyl ether which may result in exposure to or contact with bis-chloromethyl ether.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment, of bis-chloromethyl ether, which is impervious to the passage of, bis-chloromethyl ether and which would prevent the entry of bis-chloromethyl ether into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving bis-chloromethyl ether within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving bis-chloromethyl ether in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of bis-chloromethyl ether into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to bis-chloromethyl ether.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing bis-chloromethyl ether.* A regulated area shall be established by an employer where bis-chloromethyl ether is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with bis-chloromethyl ether within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where bis-chloromethyl ether is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while bis-chloromethyl ether is contained within. Access shall be restricted to authorized employees only.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b)(13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where bis-chloromethyl ether is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), and gloves prior to entering the regulated area.

(iv) Employees engaged in bis-chloromethyl ether handling operations shall be provided with and required to wear and use a full-face, supplied air respirator, of the continuous flow or pressure-demand type, in accordance with § 1910.134.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e)(2), (3), and (4) of this section.

(vi) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with bis-chloromethyl ether could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(d) *General regulated area requirements.*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a known contact with bis-choromethyl ether such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f) (2) of this section.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(iii) Where toilets are in regulated areas, such toilets shall be in a separate room.

(iv) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d) (1) and (2) (ii) through (vii).

(v) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d) (3).

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove bis-chloromethyl ether from the surfaces of materials, equipment and the decontamination facility.

(e) *Signs, information and training.*—(1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c) (5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.* (i) Containers of bis-chloromethyl ether and containers required under paragraphs (c) (4) (v) and (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of bis-chloromethyl ether and containers required under paragraphs (c) (4) (v), (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible to, or handled by, employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a) (1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have bis-chloromethyl ether contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than ½ the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of bis-chloromethyl ether, including local and systemic toxicity;

(b) The specific nature of the operation involving bis-chloromethyl ether which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontaminaiion practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of bis-chloromethyl ether;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports.*—(1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and

(iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of bis-chloromethyl ether in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which bis-chloromethyl ether is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of bis-chloromethyl ether into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include:

(a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steriods or cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examniations. Records shall be maintained for the duration of the employee's employmcnt. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretray or the Director; and upon request of an employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.1009 beta-Naphthylamine.

(a) *Scope and application.* (1) This section applies to any area in which beta-Naphthylamine, Chemical Abstracts Service Registry Number 91598 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of beta-Naphthylamine.

(3) This section will not apply to operations involving the destructive distillation of carbonaceous materials, such as occurs in coke ovens.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of beta-Naphthylamine. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving beta-Naphthylamine where containment prevents the release of beta-Naphthylamine into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of beta-Naphthylamine or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of beta-Naphthylamine from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of beta-Naphthylamine which may result in exposure to or contact with beta-Naphthylamine.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of beta-Naphthylamine, which is impervious to the passage of beta-Naphthylamine, and which would prevent the entry of beta-Naphthylamine into regulated areas nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving beta-Naphthylamine within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving beta-Naphthylamine in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of beta-Naphthylamine into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to beta-Naphthylamine.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing beta-Naphthylamine.* A regulated area shall be established by an employer where beta-Naphthylamine is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with beta-Naphthylamine within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where beta-Naphthylamine is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while beta-Napthylamine is contained within (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where beta-Naphthylamine is contained in an otherwise "closed system," but is transferred, charged or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only.

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in beta-Naphthylamine handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e)(2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, where direct contact with beta-Naphthylamine could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(d) *General regulated area requirements.*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f)(2) of this section.

(iv) Where an employee has a known contact with beta-Napththylamine, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f)(2) of this section.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d)(1) and (2)(ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(iv) Where employees wear protective clothing and equipment, clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove beta-Naphthylamine from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) *Signs, information and training.*—(1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT

AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c)(5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.* (i) Containers of beta-Naphthylamine and containers required under paragraphs (c)(4)(v) and (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of beta-Naphthylamine and containers required under paragraphs (c)(4)(v), (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible to, or handled by employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a)(1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have beta-Naphthylamine contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than ½ the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of beta-Naphthylamine, including local and systemic toxicity;

(b) The specific nature of the operation involving beta-Naphthylamine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of beta-Naphthylamine;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports.*—(1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of beta-Naphthylamine in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which beta-Naphthylamine is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of beta-Naphthylamine into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination;

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.1010 Benzidine.

(a) *Scope and application.* (1) This section applies to any area in which Benzidine, Chemical Abstracts Service Registry Number 92875 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to transshipment in sealed containers, except for the labeling requirements under paragraphs (e)(2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume in Benzidine.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono dispense aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of Benzidine. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving Benzidine where containment prevents the release of Benzidine into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of Benzidine or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of Benzidine from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of Benzidine which may result in exposure to or contact with Benzidine.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of Benzidine, which is impervious to the passage of Benzidine, and which would prevent the entry of Benzidine into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving Benzidine within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving Benzidine in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of Benzidine into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to Benzidine.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(e) *Requirements for areas containing Benzidine.* A regulated area shall be established by an employer where Benzidine is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with Benzidine within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where Benzidine is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while Benzidine is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b)(13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where Benzidine is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in Benzidine handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e)(2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, where direct contact with Benzidine could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(d) *General regulated area requirements*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f)(2) of this section.

(iv) Where an employee has a known contact with Benzidine such employee shall be required to shower as soon as possible unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f)(2) of this section.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d)(1) and (2)(ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove Benzidine from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(v) *Signs, information and training.*—(1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c)(5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.* (i) Containers of Benzidine and containers required under paragraphs (c)(4)(v) and (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of Benzidine and containers required under paragraphs (c)(4)(v), (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible

to, or handled by employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a)(1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have Benzidine contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than ½ the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of Benzidine, including local and systemic toxicity;

(b) The specific nature of the operation involving Benzidine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of Benzidine;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports.*—(1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of Benzidine in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which Benzidine is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of Benzidine into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.1011 4-Aminodiphenyl.

(a) *Scope and application.* (1) This section applies to any area in which 4-Aminodiphenyl, Chemical Abstracts Service Registry Number 92671 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e)(2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of 4-Aminodiphenyl.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of 4-Aminodiphenyl. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving 4-Aminodiphenyl where containment prevents the release of 4-Aminodiphenyl into regulated areas, nonregulated area, or the external environment.

(5) "Decontamination" means the inactivation of 4-Aminodiphenyl or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of 4-Aminodiphenyl from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of 4-Aminodiphenyl which may result in exposure to or contact with 4-Aminodiphenyl.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of 4-Aminodiphenyl, which is impervious to the passage of 4-Aminodiphenyl, and which would prevent the entry of 4-Aminodiphenyl into regulated areas, nonregulated areas, or the external environment, should leakage

or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving 4-Aminodiphenyl within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving 4-Aminodiphenyl in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of 4-Aminodiphenyl into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to 4-Aminodiphenyl.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing 4-Aminodiphenyl.* A regulated area shall be established by an employer where 4-Aminodiphenyl is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with 4-Aminodiphenyl within an isolated system, such as a "glove box' shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where 4-Aminodiphenyl is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while 4-Aminodiphenyl is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b)(13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where 4-Aminodiphenyl is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in 4-Aminodiphenyl handling operations shall be provided with and required to wear and use a half-face, fliter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e)(2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, where direct contact with 4-Aminodiphenyl could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(d) *General regulated area requirements*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters, or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f)(2) of this section.

(iv) Where an employee has a known contact with 4-Aminodiphenyl such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f)(2) of this section.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d)(1) and (2)(ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove 4-Aminodiphenyl from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) *Signs, information and training*—(1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c)(5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.* (i) Containers of 4-Aminodiphenyl and containers required under paragraphs (c)(4)(v) and (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of 4-Aminodiphenyl and containers required under paragraphs (c)(4)(v), (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible to, or handled by, employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a)(1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have 4-Aminodiphenyl contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than ½ the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive including, but not necessarily limited to:

a training and indoctrination program (a) The nature of the carcinogenic hazards of 4-Aminodiphenyl, including local and systemic toxicity;

(b) The specific nature of the operation involving 4-Aminodiphenyl which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 4-Aminodiphenyl;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in this application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports*—(1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of 4-Aminodiphenyl in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which 4-Aminodiphenyl is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of 4-Aminodiphenyl into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.1012 Ethyleneimine.

(a) *Scope and application.* (1) This section applies to any area in which Ethyleneimine, Chemical Abstracts Service Registry Number 151564 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e)(2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1.0 percent by weight or volume of Ethyleneimine.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of Ethyleneimine. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving Ethyleneimine where containment prevents the release of Ethyleneimine into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of Ethyleneimine or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of Ethyleneimine from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of Ethyleneimine which may result in exposure to or contact with Ethyleneimine.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of Ethyleneimine, which is impervious to the passage of Ethyleneimine, and which would prevent the entry of Ethyleneimine into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving Ethyleneimine within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving Ethyleneimine in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of Ethyleneimine into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to Ethyleneimine.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing Ethyleneimine.* A regulated area shall be established by an employer where Ethyleneimine is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with Ethyleneimine within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where Ethyleneimine is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while Ethyleneimine is contained within: Access shall be restricted to authorized employees only.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b)(13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where Ethyleneimine is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), and gloves prior to entering the regulated area.

(iv) Employees engaged in Ethyleneimine handling operations shall be provided with and required to wear and use a full-face, supplied air respirator, of the continuous flow or pressure-demand type, in accordance with § 1910.134.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e)(2), (3), and (4) of this section.

(vi) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, where direct contact with Ethyleneimine could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(d) *General regulated area requirements.*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f)(2) of this section.

(iv) Where an employee has a known contact with Ethyleneimine, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f)(2) of this section.

(vi) Emergency deluge showers and eyewash fountains supplied with running potable water shall be located near, within sight of, and on the same level with locations where a direct exposure of Ethyleneimine would be most likely as a result of equipment failure, or improper work practice.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(iii) Where toilets are in regulated areas, such toilets shall be in a separate room.

(iv) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d)(1) and (2)(ii) through (vii).

(v) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove Ethyleneimine from the surfaces of materials, equipment and the decontamination facility.

(e) *Signs, information and training.*—(1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c)(5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA
IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES
AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.* (i) Containers of Ethyleneimine and containers required under paragraphs (c)(4)(v) and (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of Ethyleneimine and containers required under paragraphs (c)(4)(v), (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible to, or handled by employees other than authorized employees or employees trained in accordance with subparagraph 5 of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a)(1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have Ethyleneimine contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than ½ the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of Ethyleneimine, including local and systemic toxicity;

(b) The specific nature of the operation involving Ethyleneimine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of Ethyleneimine;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports* — (1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of Ethyleneimine in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which Ethyleneimine is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of Ethyleneimine into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.1013 beta-Propiolactone.

(a) *Scope and application.* (1) This section applies to any area in which beta-Propiolactone, Chemical Abstracts Service Registry Number 57578 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e) (2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1.0 percent by weight or volume of beta-Propiolactone.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of beta-Propiolactone. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving beta-Propiolactone where containment prevents the release of beta-Propiolactone into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of beta-Propiolactone or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of beta-Propiolactone from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of beta-Propiolactone which may result in exposure to or contact with beta-Propiolactone.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of beta-Propiolactone, which is impervious to the passage of beta-Propiolactone, and which would prevent the entry of beta-Propiolactone into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving beta-Propiolactone within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving beta-Propiolactone in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of beta-Propiolactone into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to beta-Propiolactone.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing beta-Propiolactone.* A regulated area shall be established by an employer where beta-Propiolactone is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with beta-Propiolactone within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where beta-Propiolactone is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while beta-Propiolactone is contained within. Access shall be restricted to authorized employees only.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b) (13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where beta-Propiolactone is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in beta-Propiolactone handling operations shall be provided with and required to wear and use a full-face, supplied air respirator, of the continuous flow or pressure-demand type, in accordance with § 1910.134.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e)(2), (3), and (4) of this section.

(vi) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, where direct contact with beta-Propiolactone could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(d) *General regulated area requirements*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f) (2) of this section.

(iv) Where an employee has a known contact with beta-Propiolactone, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f) (2) of this section.

(vi) Emergency deluge showers and eyewash fountains supplied with running potable water shall be located near, within sight of, and on the same level with locations where a direct exposure to beta-Propiolactone would be most likely as a result of equipment failure, or improper work practice.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(iii) Where toilets are in regulated areas, such toilets shall be in a separate room.

(iv) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d) (1) and (2) (ii) through (vii).

(v) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove beta-Propiolactone from the surfaces of materials, equipment and the decontamination facility.

(e) *Signs, information and training*—(1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT

AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c) (5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.* (i) Containers of beta-Propiolactone and containers required under paragraphs (c) (4) (v) and (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of beta-Propiolactone and containers required under paragraphs (c) (4) (v), (c) (6) (vii) (b), and (c) (6) (viii) (b) of this section which are accessible to, or handled by, employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a) (1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have beta-Propiolactone contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than ½ the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of beta-Propiolactone, including local and systemic toxicity;

(b) The specific nature of the operation involving beta-Propiolactone which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of beta-Propiolactone;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports*—(1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and inplant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of beta-Propiolatcone in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which beta-Propiolactone is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of beta-Propiolactone into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident

and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agent, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.1014 2-Acetylaminofluorene.

(a) *Scope and application.* (1) This section applies to any area in which 2-Acetylaminofluorene, Chemical Abstracts Service Registry Number 53963 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labelling requirements under paragraphs (e)(2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1.0 percent by weight or volume of 2-Acetylamino fluorene.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee who duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of 2-Acetylaminofluorene. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving 2-Acetylaminofluorene where containment prevents the release of 2-Acetylaminofluorene into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of 2-Acetylaminofluorene or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of 2-Acetylaminofluorene from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of 2-Acetylaminofluorene which may result in exposure to or contact with 2-Acetylaminofluorene.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of 2-Acetylaminofluorene, which is impervious to the passage of 2-Acetylaminofluorene, and which would prevent the entry of 2-Acetylaminofluorene into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving 2-Acetylaminofluorene within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving 2-Acetylaminofluorene in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of 2-Acetylaminofluorene into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to 2-Acetylaminofluorene.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing 2-Acetylaminofluorene.* A regulated area shall be established by an employer where 2-Acetylaminofluorene is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with 2-Acetylaminofluorene within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where 2-Acetylaminofluorene is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while 2-Acetylaminofluorene is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b)(13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where 2-Acetylaminofluorene is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in 2-Acetylaminofluorene handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e)(2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, where direct contact with 2-Acetylaminofluorene could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(d) *General regulated area requirements.*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f)(2) of this section.

(iv) Where an employee has a known contact with 2-Acetylaminofluorene, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f)(2) of this section.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d)(1) and (2)(ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove 2-Acetylaminofluorene from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) *Signs, information and training.*—(1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT
AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c)(5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.* (i) Containers of 2-Acetylaminofluorene and containers required under paragraphs (c)(4)(v) and (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of 2-Acetylaminofluorene and containers required under paragraphs (c)(4)(v), (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible to, or handled by, employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a)(1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have 2-Acetylaminofluorene contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than ½ the size of the largest lettering on the package, and not less than 8 point type in any instance; *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of 2-Acetylaminofluorene, including local and systemic toxicity;

(b) The specific nature of the operation involving 2-Acetylaminofluorene which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 2-Acetylaminofluorene;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees, shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports*—(1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of 2-Acetylaminofluorene in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which 2-Acetylaminofluorene is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of 2-Acetylaminofluorene into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include:

(a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy, and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.1015 4 - Dimethylaminoazobenzene.

(a) *Scope and application.* (1) This section applies to any area in which 4-Dimethylaminoazobenzene, Chemical Abstracts Service Registry Number 60117 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e)(2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1.0 percent by weight or volume of 4-Dimethylaminoazobenzene.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of 4-Dimethylaminoazobenzene. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving 4-Dimethylaminoazobenzene where containment prevents the release of 4-Dimethylaminoazobenzene into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of 4-Dimethylaminoazobenzene or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of 4-Dimethylaminoazobenzene from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of 4-Dimethylaminoazobenzene which may result in exposure to or contact with 4-Dimethylaminoazobenzene.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of 4-Dimethylaminoazobenzene, which is impervious to the passage of 4-Dimethylaminoabenzene which would prevent the entry of 4-Dimethylaminoazobenzene into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving 4-Dimethylaminoazobenzene within the hood does not require the insertion of any portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving 4-Dimethylaminoazobenzene in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of 4-Dimethylaminoazobenzene into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to 4-Dimethylaminoazobenzene.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing 4-Dimethylaminoazobenzene.* A regulated area shall be established by an employer where 4-Dimethylaminoazobenzene is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with 4-Dimethylaminoazobenzene within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where 4-Dimethylaminoazobenzene is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while 4-Dimethylaminoazobenzene is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b)(13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where 4-Dimethylaminoazobenzene is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers, and gloves prior to entering the regulated area.

(iv) Employees engaged in 4-Dimethylaminoazobenzene handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e)(2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exist of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, where direct contact with 4-Dimethylaminoazobenzene could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clear, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(d) *General regulated area requirements*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters, shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (i), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f)(2) of this section.

(iv) Where an employee has a known contact with 4-Dimethylaminoazobenzene, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f)(2) of this section.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d)(1) and (2)(ii) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove 4-Dimethylaminoazobenzene from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) *Signs, information and training*—(1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT

AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c)(5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.* (i) Containers of 4-Dimethylaminoazobenzene and containers required under paragraph (c)(4)(v) and (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of 4-Dimethylaminoazobenzene and containers required under paragraphs (c)(4)(v), (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible to, or handled by employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a)(1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT"

displayed immediately under or adjacent to the contents identification.

(iv) Containers which have 4-Dimethylaminoazobenzene contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than ½ the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to: (a) The nature of the carcinogenic hazards of 4-Dimethylaminoazobenzene, including local and systemic toxicity;

(b) The specific nature of the operation involving 4-Dimethylaminoazobenzene which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose for and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of 4-Dimethylaminoazobenzene;

(h) The purpose for and application of specific first aid procedures and practices;

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports*—(1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this subparagraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change. (i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of 4-Dimethylaminoazobenzene in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which 4-Dimethylaminoazobenzene is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of 4-Dimethylaminoazobenzene into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph. (i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include: (a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of the employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director; and upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.1016 N-Nitrosodimethylamine.

(a) *Scope and application.* (1) This section applies to any area in which N-Nitrosodimethylamine, Chemical Abstracts Service Registry Number 62759 is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to trans-shipment in sealed containers, except for the labeling requirements under paragraphs (e)(2), (3), and (4) of this section.

(2) This section shall not apply to solid or liquid mixtures containing less than 1.0% by weight or volume of N-Nitrosodimethylamine.

(b) *Definitions.* For the purposes of this section: (1) "Absolute filter" is one capable of retaining 99.97 percent of a mono disperse aerosol of 0.3 μm particles.

(2) "Authorized employee" means an employee whose duties require him to be in the regulated area and who has been specifically assigned by the employer.

(3) "Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of N-Nitrosodimethylamine. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this section.

(4) "Closed system" means an operation involving N-Nitrosodimethylamine where containment prevents the release of N-Nitrosodimethylamine into regulated areas, nonregulated areas, or the external environment.

(5) "Decontamination" means the inactivation of N-Nitrosodimethylamine or its safe disposal.

(6) "Director" means the Director, National Institute for Occupational Safety and Health, or any person directed by him or the Secretary of Health, Education, and Welfare to act for the Director.

(7) "Disposal" means the safe removal of N-Nitrosodimethylamine from the work environment.

(8) "Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of N-Nitrosodimethylamine which may result in exposure to or contact with N-Nitrosodimethylamine.

(9) "External environment" means any environment external to regulated and nonregulated areas.

(10) "Isolated system" means a fully enclosed structure other than the vessel of containment of N-Nitrosodimethylamine, which is impervious to the passage of N-Nitrosodimethylamine, and which would prevent the entry of N-Nitrosodimethylamine into regulated areas, nonregulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

(11) "Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of \50 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving N-Nitrosodimethylamine within the hood does not require the insertion of any

portion of any employee's body other than his hands and arms.

(12) "Nonregulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

(13) "Open-vessel system" means an operation involving N-Nitrosodimethylamine in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of N-Nitrosodimethylamine into regulated areas, nonregulated areas, or the external environment.

(14) "Protective clothing" means clothing designed to protect an employee against contact with or exposure to N-Nitrosodimethylamine.

(15) "Regulated area" means an area where entry and exit is restricted and controlled.

(c) *Requirements for areas containing N-Nitrosodimethylamine.* A regulated area shall be established by an employer where N-Nitrosodimethylamine is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved: (1) *Isolated systems.* Employees working with N-Nitrosodimethylamine within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(2) *Closed system operation.* Within regulated areas where N-Nitrosodimethylamine is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while N-Nitrosodimethylamine is contained within: (i) Access shall be restricted to authorized employees only;

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(3) *Open vessel system operations.* Open vessel system operations as defined in paragraph (b)(13) of this section are prohibited.

(4) *Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system.* In operations involving "laboratory type hoods," or in locations where N-Nitrosodimethylamine is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this subparagraph shall apply. (i) Access shall be restricted to authorized employees only;

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, nonregulated areas or the external environment unless decontaminated. Clean makeup air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers, and gloves prior to entering the regulated area.

(iv) Employees engaged in N-Nitrosodimethylamine handling operations shall be provided with and required to wear and use a half-face, filter-type respirator for dusts, mists, and fumes, in accordance with § 1910.134. A respirator affording higher levels of protection may be substituted.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under paragraphs (e)(2), (3), and (4) of this section.

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(5) *Maintenance and decontamination activities.* In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, where direct contact with N-Nitrosodimethylamine could result, each authorized employee entering that area shall: (i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with § 1910.134.

(ii) Be decontaminated before removing the protective garments and hood;

(iii) Be required to shower upon removing the protective garments and hood.

(d) *General regulated area requirements*—(1) *Employee identification.* A daily roster of employees entering regulated areas shall be established and maintained. The rosters or a summary of the rosters shall be retained for a period of 20 years. The rosters and/or summaries shall be provided upon request to authorized representatives of the Assistant Secretary and the Director. In the event that the employer ceases business without a successor, rosters shall be forwarded by registered mail to the Director.

(2) *Emergencies.* In an emergency, immediate measures including, but not limited to, the requirements of subdivisions (1), (ii), (iii), (iv), and (v) of this subparagraph shall be implemented. (i) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(ii) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(iii) Special medical surveillance by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with paragraph (f)(2) of this section.

(iv) Where an employee has a known contact with N-Nitrosodimethylamine, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(v) An incident report on the emergency shall be reported as provided in paragraph (f)(2) of this section.

(3) *Hygiene facilities and practices.* (i) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(ii) Where employees are required by this section to wash, washing facilities shall be provided in accordance with § 1910.141(d)(1) and (2)(i) through (vii).

(iii) Where employees are required by this section to shower, shower facilities shall be provided in accordance with § 1910.141(d)(3).

(iv) Where employees wear protective clothing and equipment clean change rooms shall be provided, in accordance with § 1910.141(e), for the number of such employees required to change clothes.

(v) Where toilets are in regulated areas, such toilets shall be in a separate room.

(4) *Contamination control.* (i) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to nonregulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean makeup air in equal volume shall replace air removed.

(ii) Any equipment, material, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in nonregulated areas or the external environment.

(iii) Decontamination procedures shall be established and implemented to remove N-Nitrosodimethylamine from the surfaces of materials, equipment and the decontamination facility.

(iv) Dry sweeping and dry mopping are prohibited.

(e) *Signs, information and training*—(1) *Signs.* (i) Entrances to regulated areas shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT

AUTHORIZED PERSONNEL ONLY

(ii) Entrances to regulated areas containing operations covered in paragraph (c)(5) of this section shall be posted with signs bearing the legend:

CANCER-SUSPECT AGENT EXPOSED IN THIS AREA

IMPERVIOUS SUIT INCLUDING GLOVES, BOOTS, AND AIR-SUPPLIED HOOD REQUIRED AT ALL TIMES

AUTHORIZED PERSONNEL ONLY

(iii) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(2) *Container contents identification.* (i) Containers of N-Nitrosodimethylamine and containers required under paragraphs (c)(4)(v) and (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible only to, and handled only by, authorized employees, or by other employees trained in accordance with subparagraph (5) of this paragraph, may have contents identification limited to a generic or proprietary name, or other proprietary identification, of the carcinogen and percent.

(ii) Containers of N-Nitrosodimethylamine and containers required under paragraphs (c)(4)(v), (c)(6)(vii)(b), and (c)(6)(viii)(b) of this section which are accessible to, or handled by employees other than authorized employees or employees trained in accordance with subparagraph (5) of this paragraph shall have contents identification which includes the full chemical name and Chemical Abstracts Service Registry number as listed in paragraph (a)(1) of this section.

(iii) Containers shall have the warning words "CANCER-SUSPECT AGENT" displayed immediately under or adjacent to the contents identification.

(iv) Containers which have N-Nitrosodimethylamine contents with corrosive or irritating properties shall have label statements warning of such hazards, noting, if appropriate, particularly sensitive or affected portions of the body.

(3) *Lettering.* Lettering on signs and instructions required by subparagraph (1) of this paragraph shall be a minimum letter height of 2 inches. Labels on containers required under this section shall not be less than ½ the size of the largest lettering on the package, and not less than 8 point type in any instance: *Provided*, That no such required lettering need be more than 1 inch in height.

(4) *Prohibited statements.* No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(5) *Training and indoctrination.* (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(a) The nature of the carcinogenic hazards of N-Nitrosodimethylamine, including local and systemic toxicity;

(b) The specific nature of the operation involving N-Nitrosodimethylamine which could result in exposure;

(c) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(d) The purpose of and application of decontamination practices and purposes;

(e) The purpose for and significance of emergency practices and procedures;

(f) The employee's specific role in emergency procedures;

(g) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of N-Nitrosodimethylamine;

(h) The purpose for and application of specific first aid procedures and practices.

(i) A review of this section at the employee's first training and indoctrination program and annually thereafter.

(ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(iii) All materials relating to the program shall be provided upon request to authorized representatives of the Assistant Secretary and the Director.

(f) *Reports*—(1) *Operations.* Not later than March 1, 1974, the information required in subdivisions (i), (ii), (iii), and (iv) of this paragraph shall be reported in writing to the nearest OSHA Area Director. Any changes in such information shall be similarly reported in writing within 15 calendar days of such change.

(i) A brief description and in-plant location of the area(s) regulated and the address of each regulated area;

(ii) The name(s) and other identifying information as to the presence of N-Nitrosodimethylamine in each regulated area;

(iii) The number of employees in each regulated area, during normal operations including maintenance activities; and

(iv) The manner in which N-Nitrosodimethylamine is present in each regulated area; e.g. whether it is manufactured, processed, used, repackaged, released, stored, or otherwise handled.

(2) *Incidents.* Incidents which result in the release of N-Nitrosodimethylamine into any area where employees may be potentially exposed shall be reported in accordance with this subparagraph.

(i) A report of the occurrence of the incident and the facts obtainable at that time including a report on any medical treatment of affected employees shall be made within 24 hours to the nearest OSHA Area Director.

(ii) A written report shall be filed with the nearest OSHA Area Director within 15 calendar days thereafter and shall include:

(a) A specification of the amount of material released, the amount of time involved, and an explanation of the procedure used in determining this figure;

(b) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(c) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(d) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(g) *Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees. (1) *Examinations.* (i) Before an employee is assigned to enter a regulated aera, a preassignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(ii) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

(iii) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(2) *Records.* (i) Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. Upon termination of an employee's employment, including retirement or death, or in the event that the employer ceases business without a successor, records, or notarized true copies thereof, shall be forwarded by registered mail to the Director.

(ii) Records required by this paragraph shall be provided upon request to authorized representatives of the Assistant Secretary or the Director, and, upon request of an employee or former employee, to a physician designated by the employee or to a new employer.

(iii) Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

§ 1910.1017 Vinyl chloride.

(a) *Scope and application.* (1) This section includes requirements for the control of employee exposure to vinyl chloride (chloroethene), Chemical Abstracts Service Registry No. 75014.

(2) This section applies to the manufacture, reaction, packaging, repackaging, storage, handling or use of vinyl chloride or polyvinyl chloride, but does not apply to the handling or use of fabricated products made of polyvinyl chloride.

(3) This section applies to the transportation of vinyl chloride or polyvinyl chloride except to the extent that the Department of Transportation may regulate the hazards covered by this section.

(b) *Definitions.* (1) "Action level" means a concentration of vinyl chloride of 0.5 ppm averaged over an 8-hour work day.

(2) "Assistant Secretary" means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or his designee.

(3) "Authorized person" means any person specifically authorized by the employer whose duties require him to enter a regulated area or any person entering such an area as a designated representative of employees for the purpose of exercising an opportunity to observe monitoring and measuring procedures.

(4) "Director" means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health, Education, and Welfare, or his designee.

(5) "Emergency" means any occurrence such as, but not limited to, equipment failure, or operation of a relief device which is likely to, or does, result in massive release of vinyl chloride.

(6) "Fabricated product" means a product made wholly or partly from polyvinyl chloride, and which does not require further processing at temperatures, and for times, sufficient to cause mass melting of the polyvinyl chloride resulting in the release of vinyl chloride.

(7) "Hazardous operation" means any operation, procedure, or activity where a release of either vinyl chloride liquid or gas might be expected as a consequence of the operation or because of an accident in the operation, which would result in an employee exposure in excess of the permissible exposure limit.

(8) "OSHA Area Director" means the Director for the Occupational Safety and Health Administration Area Office having jurisdiction over the geographic area in which the employer's establishment is located.

(9) "Polyvinyl chloride" means polyvinyl chloride homopolymer or copolymer before such is converted to a fabricated product.

(10) "Vinyl chloride" means vinyl chloride monomer.

(c) *Permissible exposure limit.* (1) No employee may be exposed to vinyl chloride at concentrations greater than 1 ppm averaged over any 8-hour period, and

(2) No employee may be exposed to vinyl chloride at concentrations greater than 5 ppm averaged over any period not exceeding 15 minutes.

(3) No employee may be exposed to vinyl chloride by direct contact with liquid vinyl chloride.

(d) *Monitoring.* (1) A program of initial monitoring and measurement shall be undertaken in each establishment to determine if there is any employee exposed, without regard to the use of respirators, in excess of the action level.

(2) Where a determination conducted under paragraph (d)(1) of this section shows any employee exposures, without regard to the use of respirators, in excess of the action level, a program for determining exposures for each such employee shall be established. Such a program:

(i) Shall be repeated at least monthly where any employee is exposed, without regard to the use of respirators, in excess of the permissible exposure limit.

(ii) Shall be repeated not less than quarterly where any employee is exposed, without regard to the use of respirators, in excess of the action level.

(iii) May be discontinued for any employee only when at least two consecutive monitoring determinations, made not less than 5 working days apart, show exposures for that employee at or below the action level.

(3) Whenever there has been a production, process or control change which may result in an increase in the release of vinyl chloride, or the employer has any other reason to suspect that any employee may be exposed in excess of the action level, a determination of employee exposure under paragraph (d)(1) of this section shall be performed.

(4) The method of monitoring and measurement shall have an accuracy (with a confidence level of 95 percent) of not less than plus or minus 50 percent from 0.25 through 0.5 ppm, plus or minus 35 percent from over 0.5 ppm through 1.0 ppm, and plus or minus 25 percent over 1.0 ppm. (Methods meeting these accuracy requirements are available in the "NIOSH Manual of Analytical Methods").

(5) Employees or their designated representatives shall be afforded reasonable opportunity to observe the monitoring and measuring required by this paragraph.

(e) *Regulated area.* (1) A regulated area shall be established where:

(i) Vinyl chloride or polyvinyl chloride is manufactured, reacted, repackaged, stored, handled or used; and

(ii) Vinyl chloride concentrations are in excess of the permissible exposure limit.

(2) Access to regulated areas shall be limited to authorized persons. A daily roster shall be made of authorized persons who enter.

(f) *Methods of compliance.* Employee exposures to vinyl chloride shall be controlled to at or below the permissible exposure limit provided in paragraph (c) of this section by engineering, work practice, and personal protective controls as follows:

(1) Feasible engineering and work practice controls shall immediately be used to reduce exposures to at or below the permissible exposure limit.

(2) Wherever feasible engineering and work practice controls which can be instituted immediately are not sufficient to reduce exposures to at or below the permissible exposure limit, they shall nonetheless be used to reduce exposures to the lowest practicable level, and shall be supplemented by respiratory protection in accordance with paragraph (g) of this section. A program shall be established and implemented to reduce exposures to at or below the permissible exposure limit, or to the greatest extent feasible, solely by means of engineering and work practice controls, as soon as feasible.

(3) Written plans for such a program shall be developed and furnished upon request for examination and copying to authorized representatives of the Assistant Secretary and the Director. Such plans shall be updated at least every six months.

(g) *Respiratory protection.* Where respiratory protection is required under this section:

(1) The employer shall provide a respirator which meets the requirements of this paragraph and shall assure that the employee uses such respirator, except that until April 1, 1976, wearing of respirators shall be at the discretion of each employee for exposures not in excess of 25 ppm, measured over any 15-minute period. Until April 1, 1976, each employee who chooses not to wear an appropriate respirator shall be informed at least quarterly of the hazards of vinyl chloride and the purpose, proper use, and limitations of respiratory devices.

(2) Respirators shall be selected from among those jointly approved by the Mining Enforcement and Safety Administration, Department of the Interior, and the National Institute for Occupational Safety and Health under the provisions of 30 CFR Part 11.

(3) A respiratory protection program meeting the requirements of § 1910.134 shall be established and maintained.

(4) Selection of respirators for vinyl chloride shall be as follows:

(i) Entry into unkown concentrations or concentrations greater than 36,000 ppm (lower explosive limit) may be made only for purposes of life rescue; and

(ii) Entry into concentrations of less than 36,000 ppm, but greater than 3,600 ppm may be made only for purposes of life rescue, firefighting, or securing equipment so as to prevent a greater hazard from release of vinyl chloride.

(5) Where air-purifying respirators are used:

(i) Air-purifying cannisters or cartridges shall be replaced prior to the expiration of their service life or the end of the shift in which they are first used, whichever occurs first, and

(ii) A continuous monitoring and alarm system shall be provided where concentrations of vinyl chloride could reasonably exceed the allowable concentrations for the devices in use. Such system shall be used to alert employees when vinyl chloride concentrations exceed the allowable concentrations for the devices in use.

(7) Apparatus prescribed for higher concentrations may be used for any lower concentration.

(h) *Hazardous operations.* (1) Employees engaged in hazardous operations, including entry of vessels to clean polyvinyl chloride residue from vessel walls, shall be provided and required to wear and use:

(i) Respiratory protection in accordance with paragraphs (c) and (g) of this section; and

(ii) Protective garments to prevent skin contact with liquid vinyl chloride or with polyvinyl chloride residue from vessel walls. The protective garments shall be selected for the operation and its possible exposure conditions.

(2) Protective garments shall be provided clean and dry for each use.

Atmospheric concentration of vinyl chloride	*Required apparatus*
(I) Unknown, or above 3,600 ppm	Open-circuit, self-contained breathing apparatus, pressure demand type, with full facepiece.
(II) Not over 3,600 ppm	(A) Combination type C supplied air respirator, pressure demand type, with full or half facepiece, and auxiliary self-contained air supply; or
(III) Not over 1,000 ppm	(B) Combination type, supplied air respirator continuous flow type, with full or half facepiece, and auxiliary self-contained air supply. Type C, supplied air respirator, continuous flow type, with full or half facepiece, helmet or hood.
(IV) Not over 100 ppm	(A) Combination type C supplied air respirator demand type, with full facepiece, and auxiliary self-contained air supply; or (B) Open-circuit self-contained breathing apparatus with full facepiece, in demand mode; or (C) Type C supplied air respirator, demand type, with full facepiece.
(V) Not over 25 ppm	(A) A powered air-purifying respirator with hood, helmet, full or half facepiece, and a canister which provides a service life of at least 4 hours for concentrations of vinyl chloride up to 25 ppm, or (B) Gas mask, front- or back-mounted canister which provides a service life of at least 4 hours for concentrations of vinyl chloride up to 25 ppm.
(VI) Not over 10 ppm	(A) Combination type C supplied-air respirator, demand type, with half facepiece, and auxiliary self-contained air supply; or (B) Type C supplied-air respirator, demand type, with half facepiece; or (C) Any chemical cartridge respirator with an organic vapor cartridge which provides a service life of at least 1 hour for concentrations of vinyl chloride up to 10 ppm.

(l) *Emergency situations.* A written operational plan for emergency situations shall be developed for each facility storing, handling, or otherwise using vinyl chloride as a liquid or compressed gas. Appropriate portions of the plan shall be implemented in the event of an emergency. The plan shall specifically provide that:

(1) Employees engaged in hazardous operations or correcting situations of existing hazardous releases shall be equipped as required in paragraph (h) of this section;

(2) Other employees not so equipped shall evacuate the area and not return until conditions are controlled by the methods required in paragraph (f) of this section and the emergency is abated.

(j) *Training.* Each employee engaged in vinyl chloride or polyvinyl chloride operations shall be provided training in a program relating to the hazards of vinyl chloride and precautions for its safe use.

(1) The program shall include:

(i) The nature of the health hazard from chronic exposure to vinyl chloride including specifically the carcinogenic hazard;

(ii) The specific nature of operations which could result in exposure to vinyl chloride in excess of the permissible limit and necessary protective steps;

(iii) The purpose for, proper use, and limitations of respiratory protective devices;

(iv) The fire hazard and acute toxicity of vinyl chloride, and the necessary protective steps;

(v) The purpose for and a description of the monitoring program;

(vi) The purpose for, and a description of, the medical surveillance program;

(vii) Emergency procedures;

(viii) Specific information to aid the employee in recognition of conditions which may result in the release of vinyl chloride; and

(ix) A review of this standard at the employee's first training and indoctrination program, and annually thereafter.

(2) All materials relating to the program shall be provided upon request to the Assistant Secretary and the Director.

(k) *Medical surveillance.* A program of medical surveillance shall be instituted for each employee exposed, without regard to the use of respirators, to vinyl chloride in excess of the action level. The program shall provide each such employee with an opportunity for examinations and tests in accordance with this paragraph. All medical examinations and procedures shall be performed by or under the supervision of a licensed physician, and shall be provided without cost to the employee.

(1) At the time of initial assignment, or upon institution of medical surveillance;

(i) A general physical examination shall be performed, with specific attention to detecting enlargement of liver, spleen or kidneys, or dysfunction in these organs, and for abnormalities in skin, connective tissues and the pulmonary system (See Appendix A).

(ii) A medical history shall be taken, including the following topics:

(A) Alcohol intake;

(B) Past history of hepatitis;

(C) Work history and past exposure to potential hepatotoxic agents, including drugs and chemicals;

(D) Past history of blood transfusions; and

(E) Past history of hospitalizations.

(iii) A serum specimen shall be obtained and determinations made of:

(A) Total bilirubin;

(B) Alkaline phosphatase;

(C) Serum glutamic oxalacetic transaminase (SGOT); and

(D) Serum glutamic pyruvic transaminase (SGPT); and

(E) Gamma glustamyl transpeptidase.

(2) Examinations provided in accordance with this paragraph shall be performed at least:

(i) Every 6 months for each employee who has been employed in vinyl chloride or polyvinyl chloride manufacturing for 10 years or longer; and

(ii) Annually for all other employees.

(3) Each employee exposed to an emergency shall be afforded appropriate medical surveillance.

(4) A statement of each employee's suitability for continued exposure to vinyl chloride including use of protective equipment and respirators, shall be obtained from the examining physician promptly after any examination. A copy of the physician's statement shall be provided each employee.

(5) If any employee's health would be materially impaired by continued exposure, such employee shall be withdrawn from possible contact with vinyl chloride.

(6) Laboratory analyses for all biological specimens included in medical examinations shall be performed in laboratories licensed under 42 CFR Part 74.

(7) If the examining physician determines that alternative medical examinations to those required by paragraph (k)(1) of this section will provide at least equal assurance of detecting medical conditions pertinent to the exposure to vinyl chloride, the employer may accept such alternative examinations as meeting the requirements of paragraph (k)(1) of this section, if the employer obtains a statement from the examining physician setting forth the alternative examinations and the rationale for substitution. This statement shall be available upon request for examination and copying to authorized representatives of the Assistant Secretary and the Director.

(l) *Signs and labels.* (1) Entrances to regulated areas shall be posted with legible signs bearing the legend:

CANCER-SUSPECT AGENT AREA AUTHORIZED PERSONNEL ONLY

(2) Areas containing hazardous operations or where an emergency currently exists shall be posted with legible signs bearing the legend:

CANCER-SUSPECT AGENT IN THIS AREA PROTECTIVE EQUIPMENT REQUIRED AUTHORIZED PERSONNEL ONLY

(3) Containers of polyvinyl chloride resin waste from reactors or other waste contaminated with vinyl chloride shall be legibly labeled:

CONTAMINATED WITH VINYL CHLORIDE CANCER-SUSPECT AGENT

(4) Containers of polyvinyl chloride shall be legibly labeled:

POLYVINYL CHLORIDE (OR TRADE NAME) Contains VINYL CHLORIDE VINYL CHLORIDE IS A CANCER-SUSPECT AGENT

(5) Containers of vinyl chloride shall be legibly labeled either:

(I)

VINYL CHLORIDE
EXTREMELY FLAMMABLE GAS UNDER PRESSURE
CANCER-SUSPECT AGENT

or (II) In accordance with 49 CFR Parts 170–189, with the additional legend:

CANCER-SUSPECT AGENT

applied near the label or placard.

(6) No statement shall appear on or near any required sign, label or instruction which contradicts or detracts from the effect of, any required warning, information or instruction.

(m) *Records.* (1) All records maintained in accordance with this section shall include the name and social security number of each employee where relevant.

(2) Records of required monitoring and measuring, medical records, and authorized personnel rosters, shall be made and shall be available upon request for examination and copying to authorized representatives of the Assistant Secretary and the Director.

(i) Monitoring and measuring records shall:

(A) State the date of such monitoring and measuring and the concentrations determined and identify the instruments and methods used;

(B) Include any additional information necessary to determine individual employee exposures where such exposures are determined by means other than individual monitoring of employees; and

(C) Be maintained for not less than 30 years.

(ii) Authorized personnel rosters shall be maintained for not less than 30 years.

(iii) Medical records shall be maintained for the duration of the employment of each employee plus 20 years, or 30 years, whichever is longer.

(3) In the event that the employer ceases to do business and there is no successor to receive and retain his records for the prescribed period, these records shall be transmitted by registered mail to the Director, and each employee individually notified in writing of this transfer.

(4) Employees or their designated representatives shall be provided access to examine and copy records of required monitoring and measuring.

(5) Former employees shall be provided access to examine and copy required monitoring and measuring records reflecting their own exposures.

(6) Upon written request of any employee, a copy of the medical record of that employee shall be furnished to any physician designated by the employee.

(n) *Reports.* (1) Not later than 1 month after the establishment of a regulated area, the following information shall be reported to the OSHA Area Director. Any changes to such information shall be reported within 15 days.

(i) The address and location of each establishment which has one or more regulated areas; and

(ii) The number of employees in each regulated area during normal operations, including maintenance.

(2) Emergencies, and the facts obtainable at that time, shall be reported within 24 hours to the OSHA Area Director. Upon request of the Area Director, the employer shall submit additional information in writing relevant to the nature and extent of employee exposures and measures taken to prevent future emergencies of similar nature.

(3) Within 10 working days following any monitoring and measuring which discloses that any employee has been exposed, without regard to the use of respirators, in excess of the permissible exposure limit, each such employee shall be notified in writing of the results of the exposure measurement and the steps being taken to reduce the exposure to within the permissible exposure limit.

(o) *Effective dates.* (1) Until April 1, 1978, the provisions currently set forth in § 1910.93q of this Part shall apply.

(2) Effective April 1, 1978, the provisions set forth in § 1910.93q of this Part shall apply.

APPENDIX A—SUPPLEMENTARY MEDICAL INFORMATION

When required tests under paragraph (k)(1) of this section show abnormalities, the tests should be repeated as soon as practicable, preferably within 3 to 4 weeks. If tests remain abnormal, consideration should be given to withdrawal of the employee from contact with vinyl chloride, while a more comprehensive examination is made.

Additional tests which may be useful:

A. For kidney dysfunction: urine examination for albumin, red blood cells, and exfoliative abnormal cells.

B. Pulmonary system: Forced vital capacity, Forced expiratory volume at 1 second, and chest roentgenogram (posterior-anterior, 14 x 17 inches).

C. Additional serum tests: Lactic acid dehydrogenase, lactic acid dehydrogenase isoenzyme, protein determination, and protein electrophoresis.

D. For a more comprehensive examination on repeated abnormal serum tests: Hepatitis B antigen, and liver scanning.

(Secs. 6 and 8, 84 Stat. 1596, 1599 (29 U.S.C. 655, 657); Secretary of Labor's Order No. 12-71, 36 FR 8754) [39 FR 35896, Oct. 4, 1974; 39 FR 41848, Dec. 3, 1974, as amended at 40 FR 13211, Mar. 25, 1975. Redesignated at 40 FR 23073, May 28, 1975]

§ 1910.1029 **Coke oven emissions.**

(a) *Scope and application.* This section applies to the control of employee exposure to coke oven emissions, except that this section shall not apply to working conditions with regard to which other Federal agencies exercise statutory authority to prescribe or enforce standards affecting occupational safety and health.

(b) *Definitions.* For the purpose of this section: "Authorized person" means any person specifically authorized by the employer whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees for the purpose of exercising the opportunity to observe monitoring and measuring procedures under paragraph (n) of this section.

"Beehive oven" means a coke oven in which the products of carbonization other than coke are not recovered, but are released into the ambient air.

"Coke oven" means a retort in which coke is produced by the destructive distillation or carbonization of coal.

"Coke oven battery" means a structure containing a number of slot-type coke ovens.

"Coke oven emissions" means the benzene-soluble fraction of total particulate matter present during the destructive distillation or carbonization of coal for the production of coke.

"Director" means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health, Education, and Welfare, or his or her designee.

"Emergency" means any occurrence such as, but not limited to, equipment failure which is likely to, or does, result in any massive release of coke oven emissions.

"Existing coke oven battery" means a battery in operation or under construction on January 20, 1977, and which is not a rehabilitated coke oven battery.

"Rehabilitated coke oven battery" means a battery which is rebuilt, overhauled, renovated, or restored such as from the pad up, after January 20, 1977.

"Secretary" means the Secretary of Labor, U.S. Department of Labor, or his or her designee.

"Stage charging" means a procedure by which a predetermined volume of coal in each larry car hopper is introduced into an oven such that no more than two hoppers are discharging simultaneously.

"Sequential charging" means a procedure, usually automatically timed, by which a predetermined volume of coal in each larry car hopper is introduced into an oven such that no more than two hoppers commence or finish discharging simultaneously although, at some point, all hoppers are discharging simultaneously.

"Pipeline charging" means any apparatus used to introduce coal into an oven which uses a pipe or duct permanently mounted onto an oven and through which coal is charged.

"Green push" means coke which when removed from the oven results in emissions due to the presence of unvolatilized coal.

(c) *Permissible exposure limit.* The employer shall assure that no employee in the regulated area is exposed to coke oven emissions at concentrations greater than 150 micrograms per cubic meter of air (150 $\mu g/m^3$), averaged over any 8-hour period.

(d) *Regulated areas.* (1) The employer shall establish regulated areas and shall limit access to them to authorized persons.

(2) The employer shall establish the following as regulated areas:

(i) The coke oven battery including topside and its machinery, pushside and its machinery, coke side and its machinery, and the battery ends; the wharf; and the screening station;

(ii) The beehive oven and its machinery.

(e) *Exposure monitoring and measurement*—(1) *Monitoring program.* (i) Each employer who has a place of employment where coke oven emissions are present shall monitor employees employed in the regulated area to measure their exposure to coke oven emissions.

(ii) The employer shall obtain measurements which are representative of each employee's exposure to coke oven emissions over an eight-hour period. All measurements shall determine exposure without regard to the use of respiratory protection.

(iii) The employer shall collect full-shift (for at least seven continuous hours) personal samples, including at least one sample during each shift for each battery and each job classification within the regulated areas including at least the following job classifications:

(*a*) Lidman;
(*b*) Tar chaser;
(*c*) Larry car operator;
(*d*) Luterman;
(*e*) Machine operator, coke side;
(*f*) Benchman, coke side;
(*g*) Benchman, pusher side;
(*h*) Heater;
(*i*) Quenching car operator;
(*j*) Pusher machine operator;
(*k*) Screening station operator;
(*l*) Wharfman;
(*m*) Oven patcher;
(*n*) Oven repairman;
(*o*) Spellman; and
(*p*) Maintenance personnel.

(iv) The employer shall repeat the monitoring and measurements required by this paragraph (e) (1) at least every three months.

(2) *Redetermination.* Whenever there has been a production, process, or control change which may result in new or additional exposure to coke oven emissions, or whenever the employer has any other reason to suspect an increase in employee exposure, the employer shall repeat the monitoring and measurements required by paragraph (e) (1) of this section for those employees affected by such change or increase.

(3) *Employee notification.* (i) The employer shall notify each employee in writing of the exposure measurements which represent that employee's exposure within five working days after the receipt of the results of measurements required by paragraphs (e) (1) and (e) (2) of this section.

(ii) Whenever such results indicate that the representative employee exposure exceeds the permissible exposure limit, the employer shall, in such notification, inform each employee of that fact and of the corrective action being taken to reduce exposure to or below the permissible exposure limit.

(4) *Accuracy of measurement.* The employer shall use a method of monitoring and measurement which has an accuracy (with a confidence level of 95%) of not less than plus or minus 35% for concentrations of coke oven emissions greater than or equal to 150 $\mu g/m^3$.

(f) *Methods of compliance.* The employer shall control employee exposure to coke oven emissions by the use of engineering controls, work practices and respiratory protection as follows:

(1) *Priority of compliance methods*—(i) *Existing coke oven batteries.* (*a*) The employer shall institute the engineering and work practice controls listed in paragraphs (f) (2), (f) (3) and (f) (4) of this section in existing coke oven batteries at the earliest possible time, but not later than January 20, 1980, except to the extent that the employer can establish that such controls are not feasible. In determining the earliest possible time for institution of engineering and work practice controls, the requirement, effective August 27, 1971, to implement feasible administrative or engineering controls to reduce exposures to coal tar pitch volatiles, shall be considered. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of paragraph (g) of this section.

(*b*) If after implementing all the engineering and work practice controls required by paragraph (f) (1) (i) (*a*) of this section, employee exposures still exceed the permissible exposure limit, the employer shall research, develop and implement any other engineering and work practice controls necessary to reduce exposure to or below the permissible exposure limit except to the extent that the employer can establish that such controls are not feasible. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of paragraph (g) of this section.

[Section 1910.1029(f)(1)(i)(*b*) added at 42 FR 2304, January 18, 1977]

(ii) *Beehive ovens.* (*a*) The employer shall institute engineering and work practice controls on all beehive ovens at the earliest possible time to reduce and maintain employee exposures at or below the permissible exposure limit, except to the extent that the employer can establish that such controls are not feasible. In determining the earliest possible time for institution of engineering and work practice controls, the requirement, effective August 27, 1971, to implement feasible administrative or engineering controls to reduce exposures to coal tar pitch volatiles, shall be considered. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of paragraph (g) of this section.

(*b*) If, after implementing all engineering and work practice controls required by paragraph (f) (1) (ii) (*a*) of this section, employee exposures still exceed the permissible exposure limit, the employer shall research, develop, and implement any other engineering and work practice

controls necessary to reduce exposures to or below the permissible exposure limit except to the extent that the employer can establish that such controls are not feasible. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of paragraph (g) of this section.

[Section 1910.1029(f)(1)(iii)(*b*) added at 42 FR 3304, January 18, 1977]

(2) *Engineering controls.* (i) *Charging.* The employer shall equip and operate existing coke oven batteries with all of the following engineering controls to control coke oven emissions during charging operations:

(*a*) One of the following methods of charging:

(*1*) Stage charging as described in paragraph (f) (3) (i) (*b*) of this section; or,

(*2*) Sequential charging as described in paragraph (f) (3) (i) (*b*) of this section except that paragraph (f) (3) (i) (*b*) (*3*) (*iii*) of this section does not apply to sequential charging; or

(*3*) Pipeline charging or other forms of enclosed charging in accordance with paragraph (f) (2) (i) of this section, except that paragraphs (f) (2) (i) (*b*), (*d*), (*e*), (*f*) and (*h*) of this section do not apply;

(*b*) Drafting from two or more points in the oven being charged, through the use of double collector mains, or a fixed or moveable jumper pipe system to another oven, to effectively remove the gases from the oven to the collector mains;

(*c*) Aspiration systems designed and operated to provide sufficient negative pressure and flow volume to effectively move the gases evolved during charging into the collector mains, including sufficient steam pressure, and steam jets of sufficient diameter;

(*d*) Mechanical volumetric controls on each larry car hopper to provide the proper amount of coal to be charged through each charging hole so that the tunnel head will be sufficient to permit the gases to move from the oven into the collector mains;

(*e*) Devices to facilitate the rapid and continuous flow of coal into the oven being charged, such as stainless steel liners, coal vibrators or pneumatic shells;

(*f*) Individually operated larry car drop sleeves and slide gates designed and maintained so that the gases are effectively removed from the oven into the collector mains;

(*g*) Mechanized gooseneck and standpipe cleaners;

(*h*) Air seals on the pusher machine leveler bars to control air infiltration during charging; and

(*i*) Roof carbon cutters or a compressed air system or both on the pusher machine rams to remove roof carbon.

(ii) *Coking.* The employer shall equip and operate existing coke oven batteries with all of the following engineering controls to control coke oven emissions during coking operations:

(*a*) A pressure control system on each battery to obtain uniform collector main pressure;

(*b*) Ready access to door repair facilities capable of prompt and efficient repair of doors, door sealing edges and all door parts;

(*c*) An adequate number of spare doors available for replacement purposes;

(*d*) Chuck door gaskets to control chuck door emissions until such door is repaired, or replaced; and

(*e*) Heat shields on door machines.

(3) *Work practice controls.* (i) *Charging.* The employer shall operate existing coke oven batteries with all of the following work practices to control coke oven emissions during the charging operation:

(*a*) Establishment and implementation of a detailed, written inspection and cleaning procedure for each battery consisting of at least the following elements:

(*1*) Prompt and effective repair or replacement of all engineering controls;

(*2*) Inspection and cleaning of goosenecks and standpipes prior to each charge to a specified minimum diameter sufficient to effectively move the evolved gases from the oven to the collector mains;

(*3*) Inspection for roof carbon build-up prior to each charge and removal of roof carbon as necessary to provide an adequate gas channel so that the gases are effectively moved from the oven into the collector mains;

(*4*) Inspection of the steam aspiration system prior to each charge so that sufficient pressure and volume is maintained to effectively move the gases from the oven to the collector mains;

(*5*) Inspection of steam nozzles and liquor sprays prior to each charge and cleaning as necessary so that the steam nozzles and liquor sprays are clean;

(*6*) Inspection of standpipe caps prior to each charge and cleaning and luting or both as necessary so that the gases are effectively moved from the oven to the collector mains; and

(*7*) Inspection of charging holes and lids for cracks, warpage and other defects prior to each charge and removal of carbon to prevent emissions, and application of luting material to standpipe and charging hole lids where necessary to obtain a proper seal.

(*b*) Establishment and implementation of a detailed written charging procedure, designed and operated to eliminate emissions during charging for each battery, consisting of at least the following elements:

(*1*) Larry car hoppers filled with coal to a predetermined level in accordance with the mechanical volumetric controls required under paragraph (f) (2) (i) (*d*) of this section so as to maintain a sufficient gas passage in the oven to be charged;

(*2*) The larry car aligned over the oven to be charged, so that the drop sleeves fit tightly over the charging holes; and

(*3*) The oven charged in accordance with the following sequence of requirements:

(*i*) The aspiration system turned on;

(*ii*) Coal charged through the outermost hoppers, either individually or together, depending on the capacity of the aspiration system to collect the gases involved;

(*iii*) The charging holes used under paragraph (f) (3) (i) (*b*) (*3*) (*ii*) of this section relidded or otherwise sealed off to prevent leakage of coke oven emissions;

(*iv*) If four hoppers are used, the third hopper discharged and relidded or otherwise sealed off to prevent leakage of coke oven emissions;

(*v*) The final hopper discharged until the gas channel at the top of the oven is blocked and then the chuck door opened and the coal leveled;

(*vi*) When the coal from the final hopper is discharged and the leveling operation complete, the charging hole relidded or otherwise sealed off to prevent leakage of coke oven emissions; and

(*vii*) The aspiration system turned off only after the charging holes have been closed.

(*c*) Establishment and implementation of a detailed written charging procedure, designed and operated to eliminate emissions during charging of each pipeline or enclosed charged battery.

(ii) *Coking.* The employer shall operate existing coke oven batteries pursuant to a detailed written procedure established and implemented for the control of coke oven emissions during coking, consisting of at least the following elements:

(*a*) Checking oven back pressure controls to maintain uniform pressure conditions in the collecting main;

(*b*) Repair, replacement and adjustment of oven doors and chuck doors and replacement of door jambs so as to provide a continuous metal-to-metal fit;

(*c*) Cleaning of oven doors, chuck doors and door jambs each coking cycle so as to provide an effective seal;

(*d*) An inspection system and corrective action program to control door emissions to the maximum extent possible; and

(*e*) Luting of doors that are sealed by luting each coking cycle and reluting, replacing or adjusting as necessary to control leakage.

(iii) *Pushing.* The employer shall operate existing coke oven batteries with the following work practices to control coke oven emissions during pushing operations:

(*a*) Coke and coal spillage quenched as soon as practicable and not shoveled into a heated oven; and

(b) A detailed written procedure for each battery established and implemented for the control of emissions during pushing consisting of the following elements:

(1) Dampering off the ovens and removal of charging hole lids to effectively control coke oven emissions during the push;

(2) Heating of the coal charge uniformly for a sufficient period so as to obtain proper coking including preventing green pushes;

(3) Prevention of green pushes to the maximum extent possible;

(4) Inspection, adjustment and correction of heating flue temperatures and defective flues at least weekly and after any green push, so as to prevent green pushes;

(5) Cleaning of heating flues and related equipment to prevent green pushes, at least weekly and after any green push.

(iv) *Maintenance and repair.* The employer shall operate existing coke oven batteries pursuant to a detailed written procedure of maintenance and repair established and implemented for the effective control of coke oven emissions consisting of the following elements:

(a) Regular inspection of all controls, including goosenecks, standpipes, standpipe caps, charging hole lids and castings, jumper pipes and air seals for cracks, misalignment or other defects and prompt implementation of the necessary repairs as soon as possible;

(b) Maintaining the regulated area in a neat, orderly condition free of coal and coke spillage and debris;

(c) Regular inspection of the damper system, aspiration system and collector main for cracks or leakage, and prompt implementation of the necessary repairs;

(d) Regular inspection of the heating system and prompt implementation of the necessary repairs;

(e) Prevention of miscellaneous fugitive topside emissions;

(f) Regular inspection and patching of oven brickwork;

(g) Maintenance of battery equipment and controls in good working order;

(h) Maintenance and repair of coke oven doors, chuck doors, door jambs and seals; and

(i) Repairs instituted and completed as soon as possible, including temporary repair measures instituted and completed where necessary, including but not limited to:

(1) Prevention of miscellaneous fugitive topside emissions; and

(2) Chuck door gaskets, which shall be installed prior to the start of the next coking cycle.

(4) *Filtered air.* (i) The employer shall provide positive-pressure, temperature controlled filtered air for larry car, pusher machine, door machine, and quench car cabs.

(ii) The employer shall provide standby pulpits on the battery topside, at the wharf, and at the screening station, equipped with positive-pressure, temperature controlled filtered air.

(5) *Emergencies.* Whenever an emergency occurs, the next coking cycle may not begin until the cause of the emergency is determined and corrected, unless the employer can establish that it is necessary to initiate the next coking cycle in order to determine the cause of the emergency.

(6) *Compliance program.* (i) Each employer shall establish and implement a written program to reduce exposures solely by means of the engineering and work practice controls required in paragraph (f) of this section.

(ii) The written program shall include at least the following:

(a) A description of each coke oven operation by battery, including work force and operating crew, coking time, operating procedures and maintenance practices;

(b) Engineering plans and other studies used to determine the controls for the coke battery;

(c) A report of the technology considered in meeting the permissible exposure limit;

(d) Monitoring data obtained in accordance with paragraph (e) of this section;

(e) A detailed schedule for the implementation of the engineering and work practice controls required in paragraph (f) of this section; and,

(f) Other relevant information.

(iii) If, after implementing all controls required by paragraphs (f) (2)–(f) (4) of this section, or after January 20, 1980, whichever is sooner, or after completion of a new or rehabilitated battery, the permissible exposure limit is still exceeded, the employer shall develop a detailed written program and schedule for the development and implementation of any additional engineering controls and work practices necessary to reduce exposure to or below the permissible exposure limit.

(iv) Written plans for such programs shall be submitted, upon request, to the Secretary and the Director, and shall be available at the worksite for examination and copying by the Secretary, the Director, and the authorized employee representative. The plans required under paragraph (f) (6) of this section shall be revised and updated at least every six months to reflect the current status of the program.

(7) *Training in compliance procedures.* The employer shall incorporate all written procedures and schedules required under this paragraph (f) in the information and training program required under paragraph (k) of this section and, where appropriate, post in the regulated area.

(g) *Respiratory protection*—(1) *General.* (i) Where respiratory protection is required under this section, the employer shall provide and assure the use of respirators which comply with the requirements of this paragraph (g). Compliance with the permissible exposure limit may not be achieved by the use of respirators except:

(a) During the time period necessary to install or implement feasible engineering and work practice controls; or

(b) In work operations such as maintenance and repair activity in which engineering and work practice controls are technologically not feasible; or

(c) In work situations where feasible engineering and work practice controls are not yet sufficient to reduce exposure to or below the permissible exposure limit; or

(d) In emergencies.

(ii) Notwithstanding any other requirement of this section, until January 20, 1978, the wearing of respirators shall be at the discretion of each employee where the employee is not in the vicinity of visible emissions.

(2) *Selection.* (i) Where respirators are required under this section, the employer shall select, provide and assure the use of the appropriate respirator or combination of respirators from Table I below.

TABLE I

RESPIRATORY PROTECTION FOR COKE OVEN EMISSIONS

Airborne concentration of coke oven emissions	*Required respirator*
(a) Any concentration.	(1) A Type C supplied air respirator operated in pressure demand or other positive pressure or continuous flow mode; or
	(2) A powered air-purifying particulate filter respirator for dust and mist; or
	(3) A powered air-purifying particulate filter respirator or combination chemical cartridge and particulate filter respirator for coke oven emissions.
(b) Concentrations not greater than 1500 $\mu g/m^3$.	(1) Any particulate filter respirator for dust and mist, except single-use respirator; or
	(2) Any particulate filter respirator or combination chemical cartridge and particulate filter respirator for coke oven emissions; or
	(3) Any respirator listed in paragraph (g) (2) (i) (a) of this section.

(ii) Not later than January 20, 1978, whenever respirators are required by this section for concentrations not greater than 1500 $\mu g/m^3$, the employer shall provide, at the option of each affected employee, either a particulate filter respirator as provided in paragraph (g) (2) (i) (b) of this section, or a powered air purifying respirator as provided in paragraph (g) (2) (i) (a) of this section.

(iii) The employer shall select respirators from among those approved for protection against dust and mist by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part 11, except that not later than January 20, 1979, the employer shall select respirators from among those approved by NIOSH for protection against coke oven emissions.

(3) *Respirator program.* The employer shall institute a respiratory protection program in accordance with § 1910.134 of this part.

(4) *Respirator usage.* (i) The employer shall assure that the respirator issued to the employee exhibits minimum facepiece leakage and that the respirator is fitted properly. The employer shall perform quantitative fit tests annually for each employee who uses a non-powered, particulate filter respirator.

(ii) The employer shall allow each employee who uses a filter respirator to change the filter elements whenever an increase in breathing resistance is detected and shall maintain an adequate supply of filter elements for this purpose.

(iii) The employer shall allow employees who wear respirators to wash their face and respirator facepiece to prevent skin irritation associated with respirator use.

(h) *Protective clothing and equipment*—(1) *Provision and use.* The employer shall provide and assure the use of appropriate protective clothing and equipment, such as but not limited to:

(i) Flame resistant jacket and pants;

(ii) Flame resistant gloves;

(iii) Face shields or vented goggles which comply with § 1910.133(a) (2) of this part;

(iv) Insulation from hot surfaces for footwear;

(v) Safety shoes which comply with § 1910.136 of this part; and

(vi) Protective helmets which comply with § 1910.135 of this part.

(2) *Cleaning and replacement.* (i) The employer shall provide the protective clothing required by paragraphs (h) (1) (i) and (ii) of this section in a clean and dry condition at least weekly.

(ii) The employer shall clean, launder, or dispose of protective clothing required by paragraphs (h) (1) (i) and (ii) of this section.

(iii) The employer shall repair or replace the protective clothing and equipment as needed to maintain their effectiveness.

(iv) The employer shall assure that all protective clothing is removed at the completion of a work shift only in change rooms prescribed in paragraph (i) (1) of this section.

(v) The employer shall assure that contaminated protective clothing which is to be cleaned, laundered, or disposed of, is placed in a closable container in the change room.

(vi) The employer shall inform any person who cleans or launders protective clothing required by this section, of the potentially harmful effects of exposure to coke oven emissions.

(i) *Hygiene facilities and practices.* (1) *Change rooms.* The employer shall provide clean change rooms equipped with storage facilities for street clothes and separate storage facilities for protective clothing and equipment whenever employees are required to wear protective clothing and equipment in accordance with paragraph (h) (1) of this section.

(2) *Showers.* (i) The employer shall assure that employees working in the regulated area shower at the end of the work shift.

(ii) The employer shall provide shower facilities in accordance with § 1910.141 (d) (3) of this Part.

(3) *Lunchrooms.* The employer shall provide lunchroom facilities which have a temperature controlled, positive pressure, filtered air supply, and which are readily accessible to employees working in the regulated area.

(4) *Lavatories.* (i) The employer shall assure that employees working in the regulated area wash their hands and face prior to eating.

(ii) The employer shall provide lavatory facilities in accordance with § 1910.-141(d) (1) and (2) of this Part.

(5) *Prohibition of activities in the regulated area.* (i) The employer shall assure that in the regulated area, food or beverages are not present or consumed, smoking products are not present or used, and cosmetics are not applied, except that these activities may be conducted in the lunchrooms, change rooms, and showers required under paragraphs (i) (1)–(i) (3) of this section.

(ii) Drinking water may be consumed in the regulated area.

(j) *Medical surveillance.* (1) *General requirements.* (i) Each employer shall institute a medical surveillance program for all employees who are employed in a regulated area at least 30 days per year.

(ii) This program shall provide each employee covered under paragraph (j) (1) (i) of this section with an opportunity for medical examinations in accordance with this paragraph (j).

(iii) The employer shall inform any employee who refuses any required medical examination of the possible health consequences of such refusal and shall obtain a signed statement from the employee indicating that the employee understands the risk involved in the refusal to be examined.

(iv) The employer shall assure that all medical examinations and procedures are performed by or under the supervision of a licensed physician, and are provided without cost to the employee.

(2) *Initial examinations.* At the time of initial assignment to a regulated area or upon the institution of the medical surveillance program, the employer shall provide a medical examination for employees covered under paragraph (j)(1)(i) of this section, including at least the following elements:

(i) A work history and medical history which shall include smoking history and the presence and degree of respiratory symptoms, such as breathlessness, cough, sputum production, and wheezing;

(ii) A 14"x17" posterior-anterior chest x-ray and International Labour Office UICC/Cincinnati (ILO U/C) rating;

(iii) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at one second (FEV 1.0) with recording of type of equipment used;

(iv) Weight;

(v) A skin examination;

(vi) Urinalysis for sugar, albumin, and hematuria;

(vii) A sputum cytology examination; and

(viii) A urinary cytology examination.

(3) *Periodic examinations.* (i) The employer shall provide the examinations specified in paragraphs (j) (2) (i)–(vi) of this section at least annually for employees covered under paragraph (j) (1) (i) of this section.

(ii) The employer shall provide the examinations specified in paragraphs (j) (2) (i)–(viii) of this section at least semi-annually for employees 45 years of age or older or with five (5) or more years employment in the regulated area.

(iii) Whenever an employee who is 45 years of age or older or with five (5) or more years employment in the regulated area transfers or is transferred from employment in a regulated area, the employer shall continue to provide the examinations specified in paragraphs (j) (2) (i)–(viii) of this section semi-annually, as long as that employee is employed by the same employer or a successor employer.

(iv) Whenever an employee has not taken the examinations specified in paragraphs (j) (3) (i)–(iii) of this section within the six (6) months preceding the termination of employment, the employer shall provide such examinations to the employee upon termination of employment.

(4) *Information provided to the physician.* The employer shall provide the following information to the examining physician:

(i) A copy of this regulation and its Appendixes;

(ii) A description of the affected employee's duties as they relate to the employee's exposure;

(iii) The employee's exposure level or estimated exposure level;

(iv) A description of any personal protective equipment used or to be used; and

(v) Information from previous medical examinations of the affected employee which is not readily available to the examining physician.

(5) *Physician's written opinion.* (i) The employer shall obtain a written opinion from the examining physician which shall include:

(a) The results of the medical examinations;

(b) The physician's opinion as to whether the employee has any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health from exposure to coke oven emissions;

(c) Any recommended limitations upon the employee's exposure to coke oven emissions or upon the use of protective clothing or equipment such as respirators; and

(d) A statement that the employee has been informed by the physician of the results of the medical examination and any medical conditions which require further explanation or treatment.

(ii) The employer shall instruct the physician not to reveal in the written opinion specific findings or diagnoses unrelated to occupational exposure.

(iii) The employer shall provide a copy of the written opinion to the affected employee.

(k) *Employee information and training.*—(1) *Training program.* (i) The employer shall institute a training program for employees who are employed in the regulated area and shall assure their participation.

(ii) The training program shall be provided as of January 27, 1977 for employees who are employed in the regulated area at that time or at the time of initial assignment to a regulated area.

(iii) The training program shall be provided at least annually for all employees who are employed in the regulated area, except that training regarding the occupational safety and health hazards associated with exposure to coke oven emissions and the purpose, proper use, and limitations of respiratory protective devices shall be provided at least quarterly until January 20, 1978.

(iv) The training program shall include informing each employee of:

(a) The information contained in the substance information sheet for coke oven emissions (Appendix A);

(b) The purpose, proper use, and limitations of respiratory protective devices required in accordance with paragraph (g) of this section;

(c) The purpose for and a description of the medical surveillance program required by paragraph (j) of this section including information on the occupational safety and health hazards associated with exposure to coke oven emissions;

(d) A review of all written procedures and schedules required under paragraph (f) of this section; and

(e) A review of this standard.

(2) *Access to training materials.* (i) The employer shall make a copy of this standard and its appendixes readily available to all employees who are employed in the regulated area.

(ii) The employer shall provide upon request all materials relating to the employee information and training program to the Secretary and the Director.

(l) *Precautionary signs and labels.*—(1) *General.* (i) The employer may use labels or signs required by other statutes, regulations or ordinances in addition to, or in combination with, signs and labels required by this paragraph.

(ii) The employer shall assure that no statement appears on or near any sign required by this paragraph which contradicts or detracts from the effects of the required sign.

(iii) The employer shall assure that signs required by this paragraph are illuminated and cleaned as necessary so that the legend is readily visible.

(2) *Signs.* (i) The employer shall post signs in the regulated area bearing the legends:

DANGER

CANCER HAZARD

AUTHORIZED PERSONNEL ONLY

NO SMOKING OR EATING

(ii) In addition, not later than January 20, 1978, the employer shall post signs in the areas where the permissible exposure limit is exceeded bearing the legend:

DANGER

RESPIRATOR REQUIRED

(3) *Labels.* The employer shall apply precautionary labels to all containers of protective clothing contaminated with coke oven emissions bearing the legend:

CAUTION

CLOTHING CONTAMINATED WITH COKE EMISSIONS

DO NOT REMOVE DUST BY BLOWING OR SHAKING

(m) *Recordkeeping.*—(1) *Exposure measurements.* The employer shall establish and maintain an accurate record of all measurements taken to monitor employee exposure to coke oven emissions required in paragraph (e) of this section.

(i) This record shall include:

(a) Name, social security number, and job classification of the employees monitored;

(b) The date(s), number, duration and results of each of the samples taken, including a description of the sampling procedure used to determine representative employee exposure where applicable;

(c) The type of respiratory protective devices worn, if any;

(d) A description of the sampling and analytical methods used and evidence of their accuracy; and

(e) The environmental variables that could affect the measurement of employee exposure.

(ii) The employer shall maintain this record for at least 40 years or for the duration of employment plus 20 years, whichever is longer.

(2) *Medical surveillance.* The employer shall establish and maintain an accurate record for each employee subject to medical surveillance as required by paragraph (j) of this section.

(i) The record shall include:

(a) The name, social security number, and description of duties of the employee;

(b) A copy of the physician's written opinion;

(c) The signed statement of any refusal to take a medical examination under paragraph (j)(1)(ii) of this section; and

(d) Any employee medical complaints related to exposure to coke oven emissions.

(ii) The employer shall keep, or assure that the examining physician keeps, the following medical records:

(a) A copy of the medical examination results including medical and work history required under paragraph (j)(2) of this section;

(b) A description of the laboratory procedures used and a copy of any standards or guidelines used to interpret the test results;

(c) The initial x-ray;

(d) The x-rays for the most recent 5 years;

(e) Any x-ray with a demonstrated abnormality and all subsequent x-rays;

(f) The initial cytologic examination slide and written description;

(g) The cytologic examination slide and written description for the most recent 10 years; and

(h) Any cytologic examination slides with demonstrated atypia, if such atypia persists for 3 years, and all subsequent slides and written descriptions.

(iii) The employer shall maintain medical records required under paragraph (m)(2) of this section for at least 40 years, or for the duration of employment plus 20 years, whichever is longer.

(3) *Availability.* (i) The employer shall make available upon request all records required to be maintained by paragraph (m) of this section to the Secretary and the Director for examination and copying.

(ii) The employer shall make available upon request records of employee exposure measurements required by paragraph (m)(1) of this section for inspection and copying to affected employees and their designated representatives.

(iii) The employer shall make available upon request employee medical records required to be maintained by paragraph (m)(2) of this section to a physician designated by the affected employee or former employee.

(iv) The employer shall make available upon request records of employee exposure measurements required by paragraph (m)(1) of this section for inspection and copying to former employees and their designated representatives which indicate the former employees own exposures.

[Section 1910.1029(m)(3)(iv) added at 42 FR 3304, January 18, 1977]

(4) *Transfer of records.* (i) Whenever the employer ceases to do business, the successor employer shall receive and retain all records required to be maintained by paragraph (m) of this section.

(ii) Whenever the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, these records shall be transmitted by registered mail to the Director.

(iii) At the expiration of the retention period for the records required to be maintained under paragraphs (m)(1) and (m)(2) of this section, the employer shall transmit these records by registered mail to the Director or shall continue to retain such records.

(n) *Observation of monitoring.*—(1) *Employee observation.* The employer shall provide affected employees or their representatives an opportunity to observe any measuring or monitoring of employee exposure to coke oven emissions conducted pursuant to paragraph (e) of this section.

(2) *Observation procedures.* (i) Whenever observation of the measuring or monitoring of employee exposure to coke oven emissions requires entry into an area where the use of protective clothing or equipment is required, the employer shall provide the observer with and assure the use of such equipment and shall require the observer to comply with all other applicable safety and health procedures.

(ii) Without interfering with the measurement, observers shall be entitled to:

(a) An explanation of the measurement procedures;

(b) Observe all steps related to the measurement of coke oven emissions performed at the place of exposure; and

(c) Record the results obtained.

(o) *Effective date.* This standard shall become effective January 20, 1977.

(p) *Appendixes.* The information contained in the appendixes to this section is not intended, by itself, to create any additional obligations not otherwise imposed or to detract from any existing obligation.

APPENDIX A—COKE OVEN EMISSIONS SUBSTANCE INFORMATION SHEET

I. SUBSTANCE IDENTIFICATION

A. *Substance:* Coke Oven Emissions

B. *Definition:* The benzene-soluble fraction of total particulate matter present during the destructive distillation or carbonization of coal for the production of coke.

C. *Permissible Exposure Limit:* 150 micrograms per cubic meter of air determined as an average over an 8-hour period.

D. *Regulated areas:* Only employees authorized by your employer should enter a regulated area. The employer is required to designate the following areas as regulated areas; the coke oven battery, including topside and its machinery, rushside and its machinery, cokeside and its machinery, and the battery ends; the screening station; the wharf; and the beehive ovens and their machinery.

II. HEALTH HAZARD DATA

Exposure to coke oven emissions is a cause of lung cancer, and kidney cancer, in humans. Although there have not been an excess number of skin cancer cases in humans, repeated skin contact with coke oven emissions should be avoided.

III. PROTECTIVE CLOTHING AND EQUIPMENT

A. *Respirators:* Respirators will be provided by your employer for routine use if your employer is in the process of implementing engineering and work practice controls or where engineering and work practice controls are not feasible or insufficient to reduce exposure to or below the PEL. You must wear respirators for non-routine activities or in emergency situations where you are likely to be exposed to levels of coke oven emissions in excess of the permissible exposure limit. Until January 20, 1978, the routine wearing of respirators is voluntary. Until that date, if you choose not to wear a respirator you do not have to do so. You must still have your respirator with you and you must still wear it if you are near visible emissions. Since how well your respirator fits your face is very important, your employer is required to conduct fit tests to make sure the respirator seals properly when you wear it. These tests are simple and rapid and will be explained to you during your training sessions.

B. *Protective clothing:* Your employer is required to provide, and you must wear, appropriate, clean, protective clothing and equipment to protect your body from repeated skin contact with coke oven emissions and from the heat generated during the coking process. This clothing should include such items as jacket and pants and flame resistant gloves. Protective equipment should include face shield or vented goggles, protective hetmets and safety shoes, insulated from hot surfaces where appropriate.

IV. HYGIENE FACILITIES AND PRACTICES

You must not eat, drink, smoke, chew gum or tobacco, or apply cosmetics in the regulated area, except that drinking water is permitted. Your employer is required to provide lunchrooms and other areas for those purposes.

Your employer is required to provide showers, washing facilities, and change rooms. If you work in a regulated area, you must wash your face, and hands before eating. You must shower at the end of the work shift. Do not take used protective clothing out of the change rooms without your employer's permission. Your employer is required to provide for laundering or cleaning of your protective clothing.

V. SIGNS AND LABELS

Your employer is required to post warning signs and labels for your protection. Signs must be posted in regulated areas. The signs must warn that a cancer hazard is present, that only authorized employees may enter the area, and that no smoking or eating is allowed. In regulated areas where coke oven emissions are above the permissible exposure limit, the signs should also warn that respirators must be worn.

VI. MEDICAL EXAMINATIONS

If you work in a regulated area at least 30 days per year, your employer is required to provide you with a medical examination every year. The medical examination must include a medical history, a chest x-ray; pulmonary function test; weight comparison; skin examination; a urinalysis and a urine and sputum cytology exam for the early detection of urinary or lung cancer. The cytology exams are only included in the initial exam until you are either 45 years or older or have 5 or more years employment in the regulated areas when the medical exams including these tests are to be given every 6 months. The examining physician will provide a written opinion to your employer containing the results of the medical exams. You should also receive a copy of this opinion.

VII. OBSERVATION OF MONITORING

Your employer is required to monitor your exposure to coke oven emissions and you are entitled to observe the monitoring procedure. You are entitled to receive an explanation of the measurement procedure, observe the steps taken in the measurement procedure, and to record the results obtained. When the monitoring procedure is taking place in an area where respirators or personal protective clothing and equipment are required to be worn, you must also be provided with and must wear the protective clothing and equipment.

VIII. ACCESS TO RECORDS

You or your representative are entitled to records of your exposure to coke oven emissions upon request to your employer. Your medical examination records can be furnished to your physician upon request to your employer.

IX. TRAINING AND EDUCATION

Additional information on all of these items plus training as to hazards of coke oven emissions and the engineering and work practice controls associated with your job will also be provided by your employer.

APPENDIX B INDUSTRIAL HYGIENE AND MEDICAL SURVEILLANCE GUIDELINES

I. INDUSTRIAL HYGIENE GUIDELINES

A. *Sampling* (Benzene-Soluble Fraction Total Particulate Matter).

Samples collected should be full shift (at least 7-hour) samples. Sampling should be done using a personal sampling pump with pulsation dampers at a flow rate of 2 liters per minute. Samples should be collected on 0.8 micrometer pore size silver membrane filters (37 mm diameter) preceded by Gelman glass fiber type A/E filters encased in three-piece plastic (polystyrene) field monitor cassettes. The cassette face cap should be on and the plug removed. The rotameter should be checked every hour to ensure that proper flow rates are maintained.

A minimum of three full-shift samples should be collected for each job classification on each battery, at least one from each shift. If disparate results are obtained for particular job classification, sampling should be repeated. It is advisable to sample each shift on more than one day to account for environmental variables (wind, precipitation, etc.) which may affect sampling. Differences in exposures among different work shifts may indicate a need to improve work practices on a particular shift. Sampling results from different shifts for each job classification should not be averaged. Multiple samples from the same shift on each battery may be used to calculate an average exposure for a particular job classification.

B. *Analysis.*

1. All extraction glassware is cleaned with dichromic acid cleaning solution, rinsed with tap water, then dionized water, acetone, and allowed to dry completely. The glassware is rinsed with nanograde benzene before use. The Teflon cups are cleaned with benzene then with acetone.

2. Pre-weigh the 2 ml Teflon cups to one hundredth of a milligram (0.01 mg) on an autobalance AD 2 Tare weight of the cups is about 50 mg.

3. Place the silver membrane filter and glass fiber filter into a 15 ml test tube.

4. Extract with 5 ml of benzene for five minutes in an ultrasonic cleaner.

5. Filter the extract in 15 ml medium glass fritted funnels.

6. Rinse test tube and filters with two 1.5 ml aliquots of benzene and filter through the fritted glass funnel.

7. Collect the extract and two rinses in a 10 ml Kontes graduated evaporative concentrator.

8. Evaporate down to 1 ml while rinsing the sides with benzene.

9. Pipet 0.5 ml into the Teflon cup and evaporate to dryness in a vacuum oven at 40 ° C for 3 hours.

10. Weigh the Teflon cup and the weight gain is due to the benzene solubls residue in half the Sample.

II. MEDICAL SURVEILLANCE GUIDELINES

A. *General.*

The minimum requirements for the medical examination for coke oven workers are given in paragraph (j) of the standard.

The initial examination is to be provided to all coke oven workers who work at least 30 days in the regulated area. The examination includes at 14" x 17"

The examination includes at 14" X 17" posterior-anterior chest x-ray and a ILO/UC rating to assure some standardization of x-ray reading, pulmonary function tests (FVC and FEV 1.0), weight, urinalysis, skin examination and a sputum and urinary cytologic examination. These tests are to serve as the baseline for comparing the employee's future test results. Periodic exams include all the elements of the initial exams except that the cytologic tests need be performed only on those employees who are 45 years of age or older or who have worked for 5 or more years in the regulated area; periodic exams are to be performed semiannually for this group instead of annually. The examination contents are minimum requirements, additional tests such as lateral and oblique x-rays or additional pulmonary function tests may be performed if deemed necessary.

B. *Pulmonary function tests.*

Pulmonary function tests should be performed in a manner which minimizes subject and operator bias. There has been shown to be learning effects with regard to the results obtained from certain tests, such as FEV 1.0. Best results can be obtained by multiple trials for each subject. The best of three trials or the average of the last three of five trials may be used in obtaining reliable results. The type of equipment used (manufacturer, model, etc.) should be recorded with the results as reliability and accuracy varies and such information may be important in the evaluation of test results. Care should be exercised to obtain the best possible testing equipment.

C. *Sputum cytology.*

Sputum can be collected by aerosol inhalation during the medical exam or by spontaneous early morning cough at home. Sputum is induced by transoral inhalation of an aerosolized solution of eight per cent (8%) sodium chloride in water. After inhaling as few as three to five breaths the subject usually yields an adequate sputum specimen. A minimum of three samples should be collected by the subject at home. All sputum should be collected directly into sixty percent (60%) alcohol.

Scientific evidence suggests that chest x-rays and sputum cytology should be used together as screening tests for lung cancer in high risk populations, such as coke oven workers. The tests are to be performed every six months on workers who are 45 years of age or older or have worked in the regulated area for 5 or more years. Since the tests seem to be complementary, it may be advantageous to alternate the test procedures. For instance, chest x-rays could be obtained in June and December and sputum cytologys could be obtained in March and September. Facilities for providing necessary diagnostic investigation should be readily available as well as chest physicians, surgeons, radiologists, pathologists and immunotherapists to provide any necessary treatment services.

(Secs. 6, 8, 84 Stat. 1593, 1599 (29 U.S.C. 655, 657); Secretary of Labor's Order 8-76 (41 FR 25059); 29 CFR Part 1911.)

[FR Doc.76-31507 Filed 10-20-76;11:30 am]

§ 1910.1499 Source of standards.

Section 1910.1000... 41 CFR 50-204.50, except for Table Z-2, the source of which is American National Standards Institute, Z37 series.

[40 FR 23073, May 28, 1975]

§ 1910.1500 Standards organizations.

Specific standards of the following organizations have been referred to in this subpart. Copies of the standards may be obtained from the issuing organization.

American Conference of Governmental Industrial Hygienists
1014 Broadway
Cincinnati, Ohio 45202

American National Standards Institute
1430 Broadway
New York, New York 10018

National Fire Protection Association
470 Atlantic Avenue
Boston, Massachusetts 02210

[40 FR 23073, May 28, 1975]

[FR Doc.77-35156 Filed 12-12-77;8:45 am]

federal register

TUESDAY, DECEMBER 13, 1977

PART V

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

■

SPECIAL INDUSTRY SAFETY AND HEALTH STANDARDS

Proposed Revocation

[4510-26]

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

[29 CFR Part 1910]

[Docket No. S-251]

SPECIAL INDUSTRY SAFETY AND HEALTH STANDARDS

Proposed Revocation

AGENCY: Occupational Safety and Health Administration, Department of Labor.

ACTION: Proposed revocation of standards.

SUMMARY: The Occupational Safety and Health Administration (OSHA) proposes to revoke the sections of the agency's standards concerning cooperage machinery (29 CFR 1910.214), bakery equipment (29 CFR 1910.263), and laundry machinery and operations (29 CFR 1910.264). The majority of these provisions cover situations where employee safety and health can be protected by using other existing OSHA standards of general applicability. In addition, many of the provisions cover specifications dealing with machinery or operations which have become obsolete.

DATE: Written comments, objections and requests for a hearing must be postmarked by March 3, 1978.

ADDRESS: Submit written comments, objections, and requests to OSHA Docket Office, Docket No. S-251, Room S6212, U.S. Department of Labor, Third Street and Constitution Avenue NW., Washington, D.C. 20210.

FOR FURTHER INFORMATION CONTACT:

John Proctor, Office of Safety Standards, OSHA, Third Street and Constitution Avenue NW., Room N3463, Washington, D.C. 20210, telephone 202-523-7216.

SUPPLEMENTARY INFORMATION: Under Section 6(a) of the Occupational Safety and Health Act of 1970 (the Act) (84 Stat. 1593, 29 U.S.C. 655) OSHA was directed to adopt existing national consensus standards and established Federal standards in order to ensure that the nation's employees would be guaranteed at least a minimum level of occupational safety and health protection as soon as possible after passage of the Act. The usual procedural requirements for public comments and a public hearing were suspended under section 6(a).

Following this Congressional direction, OSHA published it initial occupational safety and health standards on May 29, 1971, as part of 29 CFR Part 1910 (36 FR 10466). These standards were derived primarily from national consensus standards developed by the American National Standards Institute (ANSI) and the National Fire Protection Association (NFPA). In addition, OSHA adopted as established Federal standards those standards previously issued under the Walsh-Healey Act (41 U.S.C. 35), the Construction Safety Act (40 U.S.C. 333), and the Longshoremen's and Harbor Workers' Compensation Act, as amended (33 U.S.C. 941).

For reasons stated in detail in the companion proposal published today in the FEDERAL REGISTER (42 FR 62734), both the Secretary of Labor and the Assistant Secretary for Occupational Safety and Health have indicated their commitment to undertake a thorough review of the agency's regulatory policy and to redirect its enforcement efforts towards more significant safety and health hazards. To implement this commitment, OSHA proposes to revoke, as expeditiously as possible under the Act, those regulations which most clearly have no direct or immediate relationship to employee safety and health protection. Some special industry regulations are considered by OSHA to be in this category. The great detail of these regulations causes a disproportionate allocation of the agency's critical enforcement resources which could be better used to focus on higher hazard industries. Thus, the agency is proposing this revocation as an initial step in the continuing effort to set standards that effectively achieve the goals and purposes of the Occupational Safety and Health Act. The companion proposal published today in the FEDERAL REGISTER (42 FR 62734), and OSHA's comprehensive reevaluation and revision of its standards which is underway, are also part of this effort.

Although this notice proposes to delete the affected sections in their entirety from the Code of Federal Regulations, OSHA may decide, based on the public comments received and any hearing which is held on this proposal, to retain certain portions of the affected sections.

Employers and employees in the affected industries, who are most familiar with the operations involved and the need for these standards, are encouraged to provide additional evidence to OSHA as to whether revocation of certain of these provisions would result in a reduction of employee safety and health protection. If appropriate, OSHA may issue a supplementary notice reflecting public comments concerning the retention or modification of the affected sections.

RATIONALE AND CRITERIA FOR STANDARDS COVERED IN PROPOSED REVOCATION

The proposed revocation of the entire sections for cooperage (§ 1910.214), bakery (§ 1910.263) and laundry machinery (§ 1910.264), is based on an evaluation of six years of enforcement activity. Neither incidence rates nor the number of violations in these industries justify the enforcement forcus which these special industry standards create.

Existing OSHA standards of general applicability, such as machine guarding (§ 1910.212) and mechanical power-transmission apparatus (§ 1910.219), can be substituted for a large majority of the provisions proposed for deletion without reducing employee safety or health protection. Currently, some of the outdated provisions in the specific industry standards are being applied to new machinery, and may be inhibiting the development of new and safer technology. With respect to provisions proposed for revocation which are not covered by other existing standards, employers would still be required to maintain their workplaces in a manner which is "free from recognized hazards that are causing or are likely to cause death or serious physical harm." Section 5(a)(1).

1. *Cooperage Machinery: 29 CFR 1910.214.* The existing general machine guarding rules of § 1910.212, § 1910.213 for woodworking machinery, and mechanical power-transmission apparatus requirements in § 1910.219, adequately cover the working conditions presently regulated by the cooperage standard (§ 1910.214). In addition, the use of cooperage machinery has declined in recent years. Therefore, employee protection will not be diminished if the cooperage standard is deleted.

2. *Bakery Machinery: 29 CFR 1910.263.* The current OSHA section specifically applicable to bakery machinery is based on a national consensus standard established 30 years ago. This original consensus standard has been revised and updated in response to newer and more advanced technologies. The OSHA standard has not been modified to reflect these revisions in the consensus standard. Moreover, most of the working conditions presently covered by the detailed specifications in § 1910.263 would be covered by general industry standards currently in force. This conclusion is further supported by a review of the agency's enforcement record under § 1910.263. Nearly all the bakery violations classified as serious, willful or repeat involved the failure to properly guard machinery at the point of operation, unsafe mechanical power transmission apparatus, or conveyors. These conditions are adequately covered by existing general industry standards. Therefore, the deletion of the bakery machinery standard will not diminish employee safety or health.

3. *Laundry Machinery and Operations: 29 CFR 1910.264.* The conditions in the laundry industry which result in the most injuries involve machine guarding and walking and working surfaces. These conditions are already adequately covered by existing general industry standards, including § 1910.212 and §§ 1910.21-1910.32. Therefore, the deletion of this specific standard on laundry machinery and operations (§ 1910.264) will not diminish employee safety and health.

The revocation of the detailed specification standards for these three industries will enable OSHA to concentrate

its enforcement activities on industries with higher injury and illness incidence rates and on specific workplace conditions with the highest potential for causing serious illness and injury. In addition, the revocation of these complex specification standards for those industries will provide increased flexibility in the selection of specific methods to achieve workplace safety and health without diminishing employee protection.

ECONOMIC IMPACT

In accordance with Executive Order 11821 (39 FR 41501, November 29, 1974), Executive Order 11949 (42 FR 1017, January 5, 1977) and OMB Circular No. A–107 (January 28, 1975), OSHA has assessed the potential economic impact of this proposal. Based on the six economic thresholds, OSHA has concluded that the subject matter of this proposal is not a "major" action which would necessitate further economic impact evaluation or the preparation of an Economic Impact Statemnet, and so certifies.

Evaluation of the economic impact of the final revocations will be based on the entire record of the rulemaking proceeding, including all oral and written comments made part of the record.

PUBLIC PARTICIPATION

Interested persons are invited to submit written data, views and arguments on the specific provisions and issues raised in this proposed revocation. These comments must be postmarked no later than March 3, 1978, and submitted to OSHA Docket Office, Docket No. S–251, Room S6212, U.S. Department of Labor, Third Street and Constitution Avenue NW., Washington, D.C. 20210, where they will be available for public inspection and copying. Written submissions must clearly identify the standards or portions of standards which are addressed and the position taken with respect to each issue.

Interested parties may, in addition to submitting written comments, file objections to the proposal and request an informal hearing on the objections. Objections and requests for an informal, addressed as above, must be postmarked no later than March 3, 1978, and must comply with the following conditions:

1. The objections must include the name and address of the objector;

2. The objections must specify with partcularity the provison of the proposed revocaton to which objection is taken, and must state the grounds therefor;

3. Each objecton must be separately stated and numbered; and

4. The objections must be accompanied by a detailed summary of the evidence proposed to be adduced at the requested hearing.

In addition to comments and objections concerning the proposed revocations contained herein, OSHA is interested in receiving comments on other provisions in 29 CFR Part 1910 which could also be proposed for revocation under the criteria set forth above. If warranted, OSHA may propose to revoke additional provisions in a separate FEDERAL REGISTER notice.

Accordingly, pursuant to section 6(b) of the Act, 29 U.S.C. 655, Secretary of Labor's Order No. 8–76 (41 FR 25059), and 29 CFR Part 1911, it is proposed to amend 29 CFR Part 1910 by revoking §§ 1910.214, 1910.263, and 1910.264.

This document was prepared under the direction of Eula Bingham, Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, Third Street and Constitution Avenue NW., Washington, D.C. 20210.

Signed at Washington, D.C. this 5th day of December 1977.

EULA BINGHAM,
Assistant Secretary of Labor.

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