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CLEAN AIR ACT AMENDMENTS

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HEARINGS

BEFORE THE

SUBCOMMITTEE ON PUBLIC HEALTH AND WELFARE

OF THE

COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE

HOUSE OF REPRESENTATIVES

EIGHTY-NINTH CONGRESS

FIRST SESSION

ON

H.R. 463, H.R. 2105, H.R. 4001, H.R. 7065, H.R. 7394, H.R. 7429, H.R. 8007, H.R. 8398, H.R. 8723, H.R. 8800, and S. 306

BILLS RELATING TO AIR POLLUTION CONTROL

JUNE 10, 11, 15, 16, AND 29, 1965

Serial No. 89-19

Printed for the use of the Committee on Interstate and Foreign Commerce

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CLEAN AIR ACT AMENDMENTS

THURSDAY, JUNE 10, 1965

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON PUBLIC HEALTH AND WELFARE OF THE
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10 a.m., in room 2123, Rayburn House Office Building, Hon. Oren Harris (chairman) presiding.

The CHAIRMAN. The committee will come to order.

Today, the committee is meeting for the purpose of hearings on various bills dealing with the subject of air pollution. There are several bills, along with a bill that has already passed the Senate, S. 306, which will be included in the record.

(H.R. 7429, H.R. 463, H.R. 2105, H.R. 4001, H.R. 7065, H.R. 7394, H.R. 8007, H.R. 8398, H.R. 8723, H.R. 8800, and S. 306 are as follows:)

[H.R. 463, 89th Cong., 1st sess.]

A BILL To authorize the Secretary of Health, Education, and Welfare to prescribe safe standards for the discharge of substances into the air by motor vehicles

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) the Secretary of Health, Education, and Welfare (hereafter in this Act referred to as the "Secretary"), shall, after conducting such research as he may deem necessary, prescribe and publish in the Federal Register, standards as to the amounts of substances which he considers to be safe, from the standpoint of human health, for a motor vehicle to discharge into the atmosphere under the various conditions under which such vehicle may operate.

(b) Standards prescribed pursuant to subsection (a) of this section may be revised from time to time by the Secretary. Such revised standards shall be published in the Federal Register.

SEC. 2. (a) The manufacture for sale in commerce, the sale in commerce, the offering for sale in commerce, the use in commerce, or the importation into the United States of any motor vehicle which discharges into the atmosphere substances in amounts in excess of the standards prescribed by the Secretary pursuant to the first section of this Act, shall be unlawful.

(b) Whoever violates this section shall be fined not more than $1,000 or imprisoned not more than one year, or both.

SEC. 3. The Secretary is authorized to prescribe such rules and regulations as may be necessary to carry out the purposes of this Act, and to take such action as may be necessary to insure compliance with this Act.

SEC. 4. As used in this Act—

(1) The term "commerce" means (A) commerce between any place in a State, the District of Columbia, the Commonwealth of Puerto Rico, or a territory or possession of the United States and any place outside thereof, and (B) commerce wholly within the District of Columbia or any such territory or possession; and

(2) The term "motor vehicle" means—

(A) any vehicle which is propelled by gasoline power, used for transporting passengers or freight whether on a fixed track or on a highway, and manufactured on or after the effective date of standards first prescribed and

published for such vehicles as provided in subsection (a) of section 5 of this Act, and

(B) any vehicle which is propelled by diesel power, used for transporting passengers or freight whether on a fixed track or on a highway, and manufactured on or after the effective date of standards first prescribed and published for such vehicles as provided in subsection (b) of section 5 of this Act.

SEC. 5. (a) The standards first prescribed and published pursuant to the first section of this Act which are to be applicable to motor vehicles propelled by gasoline power shall be prescribed and published not later than six months after the date of enactment of this Act and such standards shall take effect one year after the date of such publication.

(b) The standards first prescribed and published pursuant to the first section of this Act which are to be applicable to motor vehicles propelled by diesel power shall be prescribed and published at such time as the Secretary determines necessary and such standards shall take effect one year after the date of such publication.

(c) Any standards which are prescribed pursuant to subsection (b) of the first section of this Act shall take effect one year after the date on which they are published in the Federal Register.

[H.R. 2105, 89th Cong., 1st sess.]

A BILL To require that new motor vehicles transported in interstate commerce be equipped with a device to control or prevent the discharge of air pollutants

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That as used in this Act—

(1) the term "commerce" means (A) commerce between any place in a State, the District of Columbia, the Commonwealth of Puerto Rico, or a possession of the United States and any place outside thereof, and (B) commerce wholly within the District of Columbia or any such possession;

(2) the term "motor vehicle" means any vehicle propelled by mechanical power from an internal combustion engine and used for transporting passengers or freight on a highway; and

(3) the term "manufacturer" shall mean any person engaged in the manufacturing or assembling of new motor vehicles, including any person importing new motor vehicles for resale, and any person who acts for and is under the control of such manufacturer, assembler, or importer in connection with the distribution of new automobiles.

SEC. 2. (a) It shall be unlawful for a manufacturer to introduce or deliver for introduction into commerce any motor vehicle which is manufactured after the date this section takes effect if it is not equipped with a device or method to control or prevent the discharge of air pollutants in accordance with the standards prescribed by he Surgeon General under section 3 of this Act.

(b) Any manufacturer who willfully fails to equip a motor vehicle with a device or method to control or prevent the discharge of air pollutants in violation of subsection (a) of this section shall be fined not more than $25. Such failure with respect to each motor vehicle shall constitute a separate offense.

SEC. 3. (a) The Surgeon General of the Public Health Service (otherwise referred to in this Act as the "Surgeon General"), shall, after conducting such research as he may deem necessary but not later than ninety days after the date of enactment of this Act, prescribe and publish in the Federal Register standards for devices or methods to control and, to the extent possible, prevent the discharge of air pollutants by motor vehicles.

(b) Standards prescribed pursuant to subsection (a) of this section may be revised from time to time by the Surgeon General as he determines to be necessary. Such revised standards shall be published in the Federal Register.

[H.R. 4001, 89th Cong., 1st sess.]

A BILL To amend the Clean Air Act to require standards for controlling the emission of pollutants from gasoline-powered or diesel-powered vehicles, to establish a Federal Air Pollution Control Laboratory, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 3 of the Clean Air Act (which relates to research, investigations, and training) is amended—

(1) by striking out the word "and" at the end of paragraph (3) of subsection (a) thereof;

(2) by striking out the period at the end of paragraph (4) of subsection (a) thereof and inserting in lieu thereof "; and";

(3) by adding after paragraph (4) of subsection (2) thereof the following new paragraph (5):

"(5) conduct and accelerate research programs relating to the means of controlling hydrocarbon emissions resulting from the evaporation of gasoline in carburetors and fuel tanks, and the means of controlling emissions of oxides of nitrogen and aldehydes from gasoline-powered or diesel-powered vehicles. To carry out such research the Secretary shall consult with the technical committee established under section 6 of this Act and for research concerning diesel-powered vehicles, he may add to such committee such representatives from the diesel-powered vehicle industry as he deems appropriate."; and

(4) by adding at the end thereof the following new subsections:

"(d) The Secretary shall establish a Federal Air Pollution Control Laboratory within the Department of Health, Education, and Welfare and shall staff and equip such laboratory as necessary to conduct such phases of the national research and development program for the prevention and control of air pollution as he deems appropriate.

"(e) The Secretary shall appoint a technical committee whose membership shall consist of representatives from the Department of Health, Education, and Welfare, the Bureau of Mines of the Department of the Interior, the Federal Power Commission, and the coal, petroleum, and electric power industries, for the purpose of encouraging the development of improved low-cost techniques designed to reduce emissions of oxides of sulfur produced by the combustion of sulfur-containing fuels. The Committee shall meet from time to time at the call of the Secretary to evaluate progress in the development of such techniques and to recommend additional research programs for the development of such techniques. One year after enactment of this section and semiannually thereafter, the Secretary shall report to the Congress on the progress of the development of such techniques and his recommendations, if any, for additional legislation."

SEC. 2. (a) Section 4 of the Clean Air Act (which relates to grants for support of air pollution control programs) is amended by redesignating subsection (c) as subsection (d) and by inserting immediately after subsection (b) the following subsection (c):

"(c) The Secretary is authorized to make grants to municipalities in an amount up to two-thirds of the cost of the construction of facilities which are designed to eliminate air pollution resulting from the disposal of solid wastes. No grant shall be made under this subsection to any municipality that has not enacted an ordinance or other regulation prohibiting open burning of solid wastes and containing enforcement procedures insuring that disposal facilities will have a beneficial effect on reducing air pollution. No grant shall be made for any facility under this subsection until the applicant has made provision satisfactory to the Secretary to assure the proper and efficient operation and maintenance of the facility after completion of the construction thereof."

(b) Subsection (d), as so redesignated, is amended to read as follows:

"(d) Not more than 12½ per centum of the grant funds available under subsection (a) of this section shall be expended in any one State, and no grant shall be made for any project, authorized under subsection (c) of this section, in an amount exceeding 5 per centum of the total authorized in any one fiscal year."

SEC. 3. Section 6 of the Clean Air Act (which relates to automotive vehicle and fuel pollution) is amended by adding at the end thereof the following new subsections:

"(c)(1) The Secretary shall prescribe and publish in the Federal Register standards for the allowable emissions of pollutants from gasoline powered vehicles, and the effective date for such standards.

"(2) In prescribing standards for gasoline powered vehicles under this subsection the Secretary shall require (i) that within six months after enactment of this subsection all new gasoline powered vehicles be equipped with blowby systems with emissions from crankcases limited to 0.15 percent of supplied fuel under cyclic operating conditions and (ii) that after November 1, 1966, the allowable exhaust emissions from new gasoline powered vehicles shall be not

more than 275 parts per million of hydrocarbons measured by a nondispersive infrared spectrometer calibrated with hexane and not more than 1.5 per centum by volume of carbon monoxide measured by a nondispersive infrared spectrometer under metropolitan area cyclic type operating conditions with results normalized to 15 divided by percent carbon dioxide plus percent carbon monoxide plus 6 times percent hydrocarbons.

"(3) The Secretary shall establish criteria for allowable emissions from diesel powered vehicles manufactured and introduced into interstate commerce or imported into the United States. Upon the establishment of such criteria the Secretary shall make his recommendations for additional legislation, if necessary, to regulate the discharge of pollutants from diesel powered vehicles.

"(4) The manufacture for distribution in commerce of any gasoline powered vehicle or the importation into the United States of any gasoline powered vehicle, after the effective date of any standards prescribed by the Secretary in accordance with this subsection, which does not meet such standards, is unlawful.

"Whoever violates the provisions of this subsection or the regulations prescribed pursuant to this subsection shall be fined not more than $1,000 or imprisioned not more than six months, or both.

"(d) The Secretary and the Secretary of the Treasury shall jointly promugate rules and regulations that prohibit the importation of any gasoline powered vehicles which fail to meet the standards prescribed in paragraphs (1) and (2) of subsection (c) of this section.

"(e) It is the policy of the United States to insure the proper inspection and maintenance of the devices and other means required to control the emission of air pollutants from gasoline powered vehicles within the standards prescribed by the Secretary under this section. The Secretary is authorizxed to enter into agreements with, and to make grants to, appropriate State agencies designated by the Governors (including such supplemental agreements as may be necessary) to carry out the policy of this section. For the purpose of this subsection an interstate air pollution control agency may qualify if one State having jurisdiction of such agency enters an agreement authorized by this subsection. The sums appropriated to carry out this subsection shall be allotted by the Secretary to States entering into agreements in the proportion that the number of gasoline powered vehicles registered in such year in each such State bears to the total such number in all such States for such year.

"(f) All action taken under this section for the adoption of standards and the promulgation of rules and regulations shall be taken in conformity with the provisions of the Administrative Procedure Act."

SEC. 4. Section 9 of the Clean Air Act (which relates to definitions) is amended by redesignating subsection (g) as subsection (h) and by inserting after subsection (f) the following subsection (g):

"(g) The term 'commerce' means (1) commerce between any place in a State, the District of Columbia, the Commonwealth of Puerto Rico, or a territory or possession of the United States or any place outside thereof, and (2) commerce wholly within the District of Columbia or any such territory or possession."

SEC. 5. (a) Section 13 of the Clean Air Act (which relates to appropriations) is amended by adding at the end thereof the following new subsections:

"(c) There are hereby authorized to be appropriated to carry out subsection 4(c) of this Act for the fiscal year ending June 30, 1966, and for each of the next two succeeding fiscal years the sum of $100,000,000 per fiscal year for the purpose of making grants under this subsection. Sums so appropriated shall remain available until expended.

"(d) There are hereby authorized to be appropriated $25,000,000 for the fiscal year ending June 30, 1966, for the establishment of inspection programs under subsection 6(e) of this Act."

(b) Subsection (b) of section 13 is amended by inserting immediately after the word "Act" the following: ", exclusive of subsection (c) of section 4 and subsection (e) of section 6,".

[H.R. 7065, 89th Cong., 1st sess.]

A BILL To amend the Clean Air Act to require national standards for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, to authorize grants to municipalities and air pollution control agencies for the acquisition, construction, or installation of devices or facilities designed to reduce or eliminate air pollution resulting from the disposal of solid wastes, to direct the Surgeon General to conduct a study of

and report to Congress on the effect of air pollution from all sources on human health (particularly lung cancer), and for other purposes; and to amend the Internal Revenue Code of 1954 to permit deduction of expenditures and increased investment credit for the acquisition, construction, or installation of water and air pollution control devices

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Clean Air Act of December 17, 1963, is hereby amended in the following respects:

SECTION 1. Section 3 (which relates to research, investigations, training, and other activities) is amended—

(1) by striking out the period at the end of paragraph (4) of subsection (a) thereof and inserting in lieu thereof "; and";

(2) by adding after paragraph (4) of subsection (a) the following new paragraphs:

"(5) Initiate, conduct and accelerate research programs relating to gasoline-powered vehicles with a view toward reducing or eliminating (i) emissions of oxides of nitrogen and aldehydes from the crankcase and exhaust of such vehicles, either by means of crankcase and exhaust control devices or by engine redesign, and (ii) emissions of hydrocarbons resulting from gasoline evaporation in carburetors and fuel tanks. To carry out such research the Secretary shall consult with the technical committee established under section 6 of this Act; and

"(6) Initiate, conduct and accelerate research programs relating to diesel-powered vehicles with a view toward reducing or eliminating emissions of hydrocarbons, carbon monoxide, oxides of nitrogen, aldehydes and sulphur dioxide. To carry out such research the Secretary shall consult with the technical committee established under section 6 of this Act and may add to such committee such representatives from the diesel-powered vehicle industry as he deems appropriate; and

"(7) Initiate, conduct and accelerate research programs with a view toward reducing or eliminating pollutants emitted from jet aircraft and missiles and from fuels used to power such jet aircraft and missiles. To carry out such research the Secretary shall appoint a technical committee whose membership shall consist of representatives from the Department, the Department of Defense, Federal Aviation Agency, National Aeronautics and Space Administration, the Atomic Energy Commission, the Department of Commerce, the jet aircraft and missile industries, and affected fuel manufacturers; and

"(8) Initiate, conduct, and accelerate research programs with a view toward developing efficient and low-cost methods of collecting and disposing of municipal solid wastes. To carry out such research the Secretary shall appoint a technical committee, whose membership shall consist of representatives from the Department, the Public Health Service, and municipal solid-waste collection and disposal agencies. The committee shall meet from time to time at the call of the Secretary to evaluate progress in the development of such methods, to recommend programs for municipal solid-waste collection and disposal, to inform and advise municipal solid-waste collection and disposal agencies of such recommendations, and to report to the Secretary recommendations, if any, for additional legislation."

and

(3) by adding after paragraph (8) of subsection (b) the following new paragraph:

"(9) Encourage and promote the policy and provisions of this Act by initiating and carrying out a program designed to (i) inform and advise eligible municipalities and air pollution control agencies of the availability of grants under section 4 hereof and (ii) inform and advise all other eligible persons of the availability of income tax benefits under the Internal Revenue Code of 1954, as amended, in connection with acquisition, construction, or installation of the air pollution control devices specified therein."

(4) by adding at the end of subsection (c) thereof the following new subsections:

"(d) The Secretary shall establish a Federal Air Pollution Control Laboratory within the Department and shall staff and equip such laboratory as necessary to conduct such phases of the national research and development program for the prevention and control of air pollution as he deems appropriate.

"(e) The Secretary shall appoint a technical committee, whose membership shall consist of representatives from the Department, the Bureau of Mines of

the Department of the Interior, the Federal Power Commission, the Atomic Energy Commission, and the coal, petroleum, natural gas, electric power, and atomic power industries, for the purpose of (i) encouraging and accelerating the development of improved low-cost techniques designed to remove sulphur from sulphur-bearing fuels and to reduce emissions of oxides of sulphur produced by the combustion of sulphur-bearing fuels, and (ii) conducting research programs relating to the feasibility of increasing the use of natural gas, electric power, and atomic power as a source of fuel and energy. The committee shall meet from time to time at the call of the Secretary to evaluate progress in and to recommend additional research programs for the development of such techniques. One year after enactment of this section and semiannually thereafter, the Secretary shall report to the Congress on the progress of the development of such techniques and his recommendations, if any, for additional legislation."

SEC. 2. Section 4 (which relates to grants for support of air pollution control programs) is amended—

(1) by striking out the number "12½" in subsection (c) thereof and inserting the number "20" in lieu thereof; and

(2) by adding immediately after subsection (c) the following new subsections:

"(d) The Secretary is authorized to make grants to municipalities and air pollution control agencies in an amount up to two-thirds of the cost of the acquisition, construction or installation of devices or facilities designed to reduce or eliminate air pollution resulting (i) from the disposal of solid wastes or (ii) from the generation of heat or power. No grant shall be made under this subsection to any municipality or air pollution control agency that has not enacted an ordinance or regulation prohibiting open burning of solid wastes and containing enforcement procedures insuring that disposal devices or facilities will operate to reduce air pollution. No grant shall be made for any device or facility under this subsection until the applicant has made provision satisfactory to the Secretary to assure the proper and efficient operation and maintenance of the device or facility after the acquisition, construction, or installation thereof.

"(e) No grant shall be made for any device or facility specified in subsection (d) of this section in an amount exceeding 5 per centum of the total appropriation authorized in any one fiscal year."

SEC. 3. Section 6 (which relates to automotive vehicle and fuel pollution) is amended by adding after subsection (b) thereof the following new subsections:

"(c) (1) The Secretary shall prescribe and publish in the Federal Register, standards for the allowable emissions of pollutants from gasoline-powered vehicles and the effective date for such standards.

"(2) In prescribing standards for gasoline-powered vehicles under this subsection the Secretary shall require (i) that within one year after the enactment of this subsection all new gasoline-powered vehicles be equipped with blowby systems with emissions from crankcase limited to 0.1 per centum of supplied fuel under cyclic operating conditions and (ii) that after November 1, 1967, the allowable exhaust emissions from new gasoline-powered vehicles shall not be more than two hundred and seventy-five parts per million of hydrocarbons measured by a nondispersive infrared spectrometer calibrated with hexane and not more than 1.5 per centum by volume of carbon monoxide measured by a nondispersive infrared spectrometer under metropolitan area cyclic-type operating conditions with results normalized to fifteen divided by per centum carbon dioxide plus per centum carbon monoxide plus six times per centum hydrocarbons.

"(3) The manufacture for distribution in commerce or the importation into the United States of any gasoline-powered vehicle, after the effective date of any standards prescribed by the Secretary in accordance with this subsection, which does not meet such standards is unlawful.

"(4) Whoever violates the provisions of this subsection or regulations prescribed thereunder shall be fined not more than $1,000 or imprisoned not more than six months, or both. Each gasoline-powered vehicle manufactured or imported in violation of such provisions or regulations shall constitute a separate offense.

"(d) The Secretary and the Secretary of the Treasury shall jointly promulgate rules and regulations that prohibit the importation of any gasoline-powered vehicles which fail to meet the standards prescribed in paragraphs (1) and (2) of subsection (c) of this section.

"(e) No appropriation made in any Act of Congress during the fiscal year beginning July 1, 1965, and in each fiscal year thereafter shall be available for

the purchase of any new gasoline-powered vehicle for the service of the executive, legislative, or judicial branches or any other Government departments or establishments unless such vehicle is equipped with a device or other means to reduce or eliminate the discharge of pollutants from the crankcase and exhaust of such vehicle in accordance with the standards prescribed by the Secretary in this section.

"(f) The Secretary shall establish criteria for allowable emissions of pollutants from diesel-powered vehicles manufactured for distribution in commerce or imported into the United States. Upon the establishment of such criteria, the Secretary shall recommend additional legislation, if necessary, to reduce or eliminate the discharge of pollutants from diesel-powered vehicles.

"(g) It is the policy of the United States (i) to insure the proper inspection and maintenance of the devices and other means required to reduce or eliminate the emission of pollutants from gasoline-powered vehicles in compliance with the standards prescribed by the Secretary under this section and (ii) to insure the proper measurement of such emission of pollutants. The Secretary is authorized to enter into agreements with, and to make grants to, appropriate State agencies designated by the respective Governors (including such supplemental agreements as may be necessary) to carry out the policy of this section. For the purpose of this subsection, an interstate air pollution control agency may qualify as an appropriate State agency to receive such grants if one State having jurisdiction of such agency enters into an agreement authorized by this subsection. The sums appropriated to carry out the provisions of this subsection shall be allocated by the Secretary to States entering into agreements in the proportion that the number of gasoline-powered vehicles registered in the year of appropriation in each State bears to the total number of such vehicles in all such States for such year.

"(h) All action taken under this section for the adoption of standards and the promulgation of rules and regulations thereunder shall be in conformity with the provisions of the Administrative Procedure Act."

SEC. 4. Section 7 (which relates to cooperation by Federal agencies to control air pollution from Federal facilities) is amended as follows:

(1) Subsection (b) shall read:

"(b) In order to control air pollution which may endanger the health or welfare of any persons, the Secretary may establish classes of potential pollution sources for any Federal department or agency having jurisdiction over any building, installation, or other property. The Secretary or his duly authorized representative is authorized to enter any such building, installation, or other property at reasonable times for the purpose of inspecting and investigating practices of discharging pollutants."

(2) the following new subsections are added after subsection (b):

"(c) There are hereby authorized to be appropriated necessary amounts to be expended for the procurement, installation, maintenance and operation of devices or other means to prevent or control air pollution caused by any such building, installation, or other property and for which the Secretary has approved the plans and specifications as conforming to the purposes of this section. Such amounts shall be appropriated to the Department and shall be made available to the appropriate Federal department or gency concerned pursuant to a plan approved by the Secretary which will provide for prevention or control of the emission of air pollutants. Such sums shall not be expended for any other purpose.

"(d) In order to assist in assuring appropriate maintenance and operation of such devices or other means of prevention or control of air pollution, the Secretary shall provide training in such matters to personnel of the Federal departments or agencies affected, or which may be affected, by this section. The Secretary shall report annually to the Congress on the status and effectiveness of actions taken to prevent and control air pollution by such Federal departments and agencies."

SEC. 5. The Clean Air Act is further amended by adding a new section 8 and redesignating the present section 8 and the following sections accordingly. The new section 8 shall read as follows:

"STUDY AND REPORT OF SURGEON GENERAL

"SEC. 8. (a) The Surgeon General of the Public Health Service (the 'Surgeon General') is hereby directed to conduct a thorough study for the purpose of determining the effect of air pollutants from all sources on human health. Such

study shall seek to determine, among other things, whether a causal relationship exists between air pollution and lung cancer.

"(b) To assist in making such study, the Surgeon General shall appoint an advisory committee which shall be composed of professional and technical members of proven ability.

"(c) As soon as practicable, but not later than two years after the date of the enactment of this amendment, the Surgeon General shall submit to the Congress a report on the results of the study conducted pursuant to subsection (a) of this section, togther with such recommendations, if any, based upon the findings made in such study, as he may deem to be necessary for the protection of the public health."

SEC. 6. The section redesignated as section 10 (relating to definitions) is amended by redesignating subsection (g) as subsection (h) and by inserting after subsection (f) the following subsection (g):

"(g) The term 'commerce' means trade, traffic, commerce, transportation, or transmission (i) between any place in a State, the District of Columbia, the Commonwealth of Puerto Rico, or a territory or possession of the United States and any place outside thereof, and (ii) wholly within the District of Columbia or any such territory or possession."

SEC. 7. Subsection (b) of the section redesignated as section 14 of the Clean Air Act (which relates to appropriations) is amended by inserting immediately after the word "Act" the words ", exclusive of subsection (d) of section 4 and subsection (g) of section 6," and by adding the following new subsections immediately after subsection (b):

"(c) There is hereby authorized to be appropriated to carry out subsection (d) of section 4 of this Act for the fiscal year ending June 30, 1966, and for each of the next two succeeding fiscal years, the sum of $100,000,000 per fiscal year for the purpose of making grants under that subsection. Sums so appropriated shall remain available until expended.

"(d) There is hereby authorized to be appropriated the sum of $15,000,000 for each of the fiscal years ending June 30, 1966, and June 30, 1967, for the establishment and operation of inspection programs under subsection (g) of section 6 of this Act."

SEC. 8. That the Internal Revenue Code of 1954 is amended by adding at the end of part VI of subchapter B of chapter 1 (relating to itemized deductions for individuals and corporations) the following new section:

"SEC. 183. EXPENDITURES FOR ACQUISITION, CONSTRUCTION, OR INSTALLATION OF WATER AND AIR POLLUTION CONTROL DEVICES.

"(a) TREATMENT AS EXPENSES.—

"(1) IN GENERAL.—A taxpayer may elect to treat expenditures (or any portion thereof) paid or incurred by him during the taxable year in connection with his trade or business for the acquisition, construction or installation of (i) any certified water pollution control device (as defined in subsection (c)), and (ii) any certified air pollution control device (as defined in subsection (d)) as expenses which are not chargeable to capital account expenditures. The expenditures so treated shall be allowed as a deduction.

"(2) CARRYBACKS AND CARRYOVERS OF DEDUCTION.—A taxpayer who during any taxable year has paid or incurred expenditures to which subsection (a) applies may elect to treat such expenditures (or any portion thereof) as having been paid or incurred in any of the three taxable years preceding, or in any of the five taxable years following, the taxable year in which such expenses are paid or incurred.

"(b) ELECTIONS.—

"(1) TIME.—The elections under subsection (a) shall be made within the time prescribed by law (including extensions thereof) for filing the return for such taxable year. The elections shall be made in such manner as the Secretary or his delegate may by regulations prescribe and may not be revoked except with the consent of the Secretary or his delegate.

"(2) CERTIFICATES REQUIRED.—No election may be made under subsection (a) with respect to the expenditures described therein unless the certificates required under subsection (c) or (d), as the case may be, have been issued with respect to the certified water pollution control devices or the certified air pollution control devices for which such expenditures were paid or incurred.

"(c) CERTIFIED WATER POLLUTION CONTROL DEVICES.—

"(1) IN GENERAL.—For the purposes of this section, the term 'certified water pollution control device' means so much of any facilitiy, building, machinery, or equipment, or any part thereof, used to control water pollution by removing, altering, or disposing of wastes resulting from or affecting the taxpayer's trade or business (i) the acquisition, construction, or installation of which is completed after December 31, 1963, (ii) which the State certifying authority has certified to the Federal certifying authority as having been acquired, constructed, or installed in conformity with the State program or requirements for control of water pollution, and (iii) which the Federal certifying authority has certified to the Secretary or his delegate as beneficial to the control of water pollution and in furtherance of the general policy of the United States of cooperating with the States in the reduction and elimination of water pollution under the Federal Water Pollution Control Act, as amended (33 U.S.C. 466).

"(2) For the purposes of this subsection, (i) the term 'State certifying authority' means the State water pollution control agency as defined in section 11(a) of the Federal Water Pollution Control Act, as amended, (ii) the term 'Federal certifying authority' means the Secretary of Health, Education, and Welfare or his delegate, and (iii) the term 'State' includes the District of Columbia and the Commonwealth of Puerto Rico.

"(d) CERTIFIED AIR POLLUTION CONTROL DEVICE.—

"(1) IN GENERAL.—For the purposes of this section, the term 'certified air pollution control device' means so much of any facility, machinery, or equipment, or any part thereof, used to reduce or eliminate air pollution by removing, altering, or disposing of air pollutants resulting from or affecting the taxpayer's trade or business (i) the acquisition, construction, or installation of which is completed after December 31, 1963, (ii) which the State certifying authority has certified to the Federal certifying authority as having been acquired, constructed, or installed in conformity with the State program or requirements for control of air pollution, and (iii) which the Federal certifying authority has certified to the Secretary or his delegate as beneficial to the control of air pollution and in furtherance of the general policy of the United States of cooperating with the States in the reduction or elimination of air pollution under the Clean Air Act, as amended (42 U.S.C. 1857).

"(2) For the purposes of this subsection, (i) the term 'State certifying authority' means the State or interstate air pollution control agency as defined in redesignated section 10 (relating to definitions) of the Clean Air Act, (ii) the term 'Federal certifying authority' means the Secretary of Health, Education, and Welfare, and (iii) the term 'State' includes the District of Columbia and the Commonwealth of Puerto Rico.

"(e) LIMITATIONS.—

"(1) PROFITMAKING DEVICES.—If the taxpayer realizes income from the operation of any certified water pollution control device or certified air pollution control device, through the recovery and profitable utilization of wastes, or otherwise, the expenditures with respect to such control devices which would otherwise be taken into account for purposes of subsection (a) shall be reduced by the amount of such income.

"(2) ADJUSTMENT FOR PRIOR DEPRECIATION DEDUCTION.—If the taxpayer has been allowed any deduction under section 167 (relating to depreciation) with respect to expenditures paid or incurred for a certified water pollution control device or a certified air pollution control device, the amount otherwise allowable as a deduction under subsection (a) shall be reduced by the amount of such depreciation."

SEC. 9. Section 263(a)(1) of the Internal Revenue Code of 1954 (relating to disallowance of deductions for capital expenditures) is amended as follows:

(1) by striking out the word "or" at the end of subparagraph (D) and the period at the end of subparagraph (E) and inserting in lieu of such period the word ", or", and

(2) by adding immediately after subparagraph (E) the following new subparagraph:

"(F) Expenditures for certified water pollution control devices and certified air pollution control devices deductible under section 183."

SEC. 10. (a) IN GENERAL.—Section 46(c) (relating to the definition of qualified investment for purposes of investment credit in certain depreciable property)

of the Internal Revenue Code of 1954 is amended by adding after paragraph (4) thereof the following new paragraph:

"(5) DEVICES AND FACILITIES TO CONTROL WATER AND AIR POLLUTION.—

"(A) In the case of section 38 property which consists of devices, facilities, or equipment to control water or air pollution, the amount of the qualified investment shall be twise the amount determined under paragraph (1).

"(B) For purposes of subparagraph (A), the term 'devices, facilities, or equipment to control water pollution' means a device, facility, or equipment used to control water pollution by removing, altering, or disposing of wastes resulting from or affecting the taxpayer's trade or business, including the necessary intercepting, sewers, outfall sewers, pumping, power, and other equipment and their appurtenances.

"(C) For purposes of subparagraph (A), the term 'devices, facilities, or equipment to control air pollution' means a device, facility, or equipment used to control air pollution by removing, altering, or disposing of air pollutants resulting from or affecting the taxpayer's trade of business."

(b) EFFECTIVE DATE.—The amendment made by subsection (a) shall apply to taxable years beginning after December 31, 1963.

[H.R. 7394, 89th Cong., 1st sess.]

A BILL To amend the Clean Air Act to require national standards for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, to direct the Surgeon General to conduct a study of and report to Congress on the effect of air pollution from all sources on human health (particularly lung cancer), and for other purposes; and to amend the Internal Revenue Code of 1954 to permit deduction of expenditures and increased investment credit for the acquisition, construction, or installation of water and air pollution control devices

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 3 of the Clean Air Act (which relates to research, investigations, training, and other activities) is amended—

(1) by striking out the period at the end of paragraph (4) of subsection (a) thereof and inserting in lieu thereof "; and";

(2) by adding after paragraph (4) of subsection (a) the following new paragraphs:

"(5) initiate, conduct and accelerate research programs relating to gasoline-powered vehicles with a view toward reducing or eliminating (i) emissions of oxides of nitrogen and aldehydes from the crankcase and exhaust of such vehicles, either by means of crankcase and exhaust control devices or by engine redesign, and (ii) emissions of hydrocarbons resulting from gasoline evaporation in carburetors and fuel tanks. To carry out such research the Secretary shall consult with the technical committee established under section 6 of this Act; and

"(6) initate, conduct and accelerate research programs relating to diesel-powered vehicles with a view toward reducing or eliminating emissions of hydrocarbons, carbon monoxide, oxides of nitrogen, aldehydes and sulphur dioxide. To carry out such research the Secretary shall consult with the technical committee established under section 6 of this Act and may add to such committee such representatives from the diesel-powered vehicle industry as he deems appropriate; and

"(7) initiate, conduct, and accelerate research programs with a view toward reducing or eliminating pollutants emitted from jet aircraft and missiles and from fuels used to power such jet aircraft and missiles. To carry out such research the Secretary shall appoint a technical committee whose membership shall consist of representatives from the Department, the Department of Defense, Federal Aviation Agency, National Aeronautics and Space Administration, the Atomic Energy Commission, the Department of Commerce, the jet aircraft and missile industries, and affected fuel manufacturers; and

"(8) initiate, conduct, and accelerate research programs with a view toward developing efficient and low-cost methods of collecting and disposing of municipal solid wastes. To carry out such research the Secretary shall appoint a technical committee, whose membership shall consist of repre-

sentatives from the Department, the Public Health Service, and municipal solid-waste collection and disposal agencies. The committee shall meet from time to time at the call of the Secretary to evaluate progress in the development of such methods, to recommend programs for municipal solid-waste collection and disposal, to inform and advise municipal solid-waste collection and disposal agencies of such recommendations, and to report to the Secretary recommendations, if any, for additional legislation."

(3) by adding after paragraph (8) of subsection (b) the following new paragraph:

"(9) encourage and promote the policy and provisions of this Act by initiating and carrying out a program designed to (i) inform and advise eligible air pollution control agencies of the availability of grants under section 4 hereof and (ii) inform and advise all other eligible persons of the availability of income tax benefits under the Internal Revenue Code of 1954, as amended, in connection with acquisition, construction, or installation of the air pollution control devices specified therein."

(4) by adding after subsection (c) thereof the following new subsections:

"(d) The Secretary shall establish a Federal Air Pollution Control Laboratory within the Department and shall staff and equip such laboratory as necessary to conduct such phases of the national research and development program for the prevention and control of air pollution as he deems appropriate.

"(e) The Secretary shall appoint a technical committee, whose membership shall consist of representatives from the Department, the Bureau of Mines of the Department of the Interior, the Federal Power Commission, the Atomic Energy Commission, and the coal, petroleum, natural gas, electric power, and atomic power industries, for the purpose of (i) encouraging and accelerating the development of improved low-cost techniques designed to remove sulphur from sulphur-bearing fuels and to reduce emissions of oxides of sulphur-bearing fuels and to reduce emission of oxides of sulphur produced by the combustion of sulphur-bearing fuels, and (ii) conducting research programs relating to the feasibility of increasing the use of natural gas, electric power, and atomic power as a source of fuel and energy. The committee shall meet from time to time at the call of the Secretary to evaluate progress in and to recommend additional research programs for the development of such techniques. One year after enactment of this section and semiannually thereafter, the Secretary shall report to the Congress on the progress of the development of such techniques and his recommendations, if any, for additional legisation."

SEC. 2. Section 6 of the Clean Air Act (which relates to automotive vehicle and fuel pollution) is amended by adding after subsection (b) thereof the following new subsections:

"(c) (1) The Secretary shall prescribe and publish, in the Federal Register, standards for the allowable emissions of pollutants from gasoline-powered vehicles and the effective date for such standards.

"(2) In prescribing standards for gasoline-powered vehicles under this subsection the Secretary shall require (i) as soon as practicable after the enactment of this subsection (but not later than November 1, 1967) that all new gasoline-powered vehicles be equipped with blowby systems with emissions from crankcase limited to 0.1 per centum of supplied fuel under cyclic operating conditions and (ii) that after November 1, 1967, the allowable exhaust emissions from new gasoline-powered vehicles shall not be more than two hundred and seventy-five parts per million of hydrocarbons measured by a nondispersive infrared spectrometer calibrated with hexane and not more than 1.5 per centum by volume of carbon monoxide measured by a nondispersive infrared spectrometer under metropolitan area cyclic-type operating conditions with results normalized to fifteen divided by per centum carbon dioxides plus per centum carbon monoxide plus six times per centum hydrocarbons.

"(3) The manufacture for distribution in commerce or the importation into the United States of any gasoline-powered vehicle, after the effective date of any standards prescribed by the Secretary in accordance with this subsection, which does not meet such standards is unlawful.

"(4) Whoever violates the provisions of this subsection or regulations prescribed thereunder shall be fined not more than $1,000 or imprisoned not more than six months, or both. Each gasoline-powered vehicle manufactured or imported in violation of such provisions or regulations shall constitute a separate offense.

"(d) The Secretary and the Secretary of the Treasury shall jointly promulgate rules and regulations that prohibit the importation of any gasoline-powered vehicles which fail to meet the standards prescribed in paragraphs (1) and (2) of subsection (c) of this section.

"(e) No appropriation made in any Act of Congress during the fiscal year beginning July 1, 1965, and in each fiscal year thereafter shall be available for the purchase of any new gasoline-powered vehicle for the service of the executive, legislative, or judicial branches or any other Government departments or establishments unless such vehicle is equipped with a device or other means to reduce or eliminate the discharge of pollutants from the crankcase and exhaust of such vehicle in accordance with the standards prescribed by the Secretary in this section.

"(f) The Secretary shall establish criteria for allowable emissions of pollutants from diesel-powered vehicles manufactured for distribution in commerce or imported into the United States. Upon the establishment of such criteria, the Secretary shall recommend additional legislation, if necessary, to reduce or eliminate the discharge of pollutants from diesel-powered vehicles.

"(g) It is the policy of the United States (i) to insure the proper inspection and maintenance of the devices and other means required to reduce or eliminate the emission of pollutants from gasoline-powered vehicles in compliance with the standards prescribed by the Secretary under this section and (ii) to insure the proper measurement of such emission of pollutants. The Secretary is authorized to enter into agreements with, and to make grants to, appropriate State agencies designated by the respective Governors (including such supplemental agreements as may be necessary) to carry out the policy of this section. For the purpose of this subsection, an interstate air pollution control agency may qualify as an appropriate State agency to receive such grants if one State having jurisdiction of such agency enters into an agreement authorized by this subsection. The sums appropriated to carry out the provisions of this subsection shall be allocated by the Secretary to States entering into agreements in the proportion that the number of gasoline-powered vehicles registered in the year of appropriation in each State bears to the total number of such vehicles in all such States for such year.

"(h) All action taken under this section for the adoption of standards and the promulgation of rules and regulations thereunder shall be in conformity with the provisions of the Administrative Procedure Act."

SEC. 3. (a) Subsection (b) of section 7 of the Clean Air Act (which relates to cooperation by Federal agencies to control air pollution from Federal facilities) is amended to read as follows:

"(b) In order to control air pollution which may endanger the health or welfare of any persons, the Secretary may establish classes of potential pollution sources for any Federal department or agency having jurisdiction over any building, installation, or other property. The Secretary or his duly authorized representative is authorized to enter any such building, installation, or other property at reasonable times for the purpose of inspecting and investigating practices of discharging pollutants."

(b) Such section 7 is further amended by adding at the end thereof the following new subsections:

"(c) There are hereby authorized to be appropriated necessary amounts to be expended for the procurement, installation, maintenance, and operation of devices or other means to prevent or control air pollution caused by any such building, installation, or other property and for which the Secretary has approved the plans and specifications as conforming to the purposes of this section. Such amounts shall be appropriated to the Department and shall be made available to the appropriate Federal department or agency concerned pursuant to a plan approved by the Secretary which will provide for prevention or control of the emission of air pollutants. Such sums shall not be expended for any other purpose.

"(d) In order to assist in assuring appropriate maintenance and operation of such devices or other means of prevention or control of air pollution, the Secretary shall provide training in such matters to personnel of the Federal departments or agencies affected, or which may be affected, by this section. The Secretary shall report annually to the Congress on the status and effectiveness of actions taken to prevent and control air pollution by such Federal departments and agencies."

SEC. 4. (a) The Clean Air Act is further amended by redesignating sections 8 to 14, inclusive, as sections 9 to 15, respectively, and by inserting after section 7 the following new section:

"STUDY AND REPORT OF SURGEON GENERAL

"SEC. 8. (a) The Surgeon General of the Public Health Service (the 'Surgeon General') is hereby directed to conduct a thorough study for the purpose of determining the effect of air pollutants from all sources on human health. Such study shall seek to determine, among other things, whether a causal relationship exists between air pollution and lung cancer.

"(b) To assist in making such study, the Surgeon General shall appoint an advisory committee which shall be composed of professional and technical members of proven ability.

"(c) As soon as practicable, but not later than two years after the date of the enactment of this amendment, the Surgeon General shall submit to the Congress a report on the results of the study conducted pursuant to subsection (a) of this section, together with such recommendations, if any, based upon the findings made in such study, as he may deem to be necessary for the protection of the public health."

(b) Subsection (a) of section 4 of such Act is amended by striking out "section 9" and inserting in lieu thereof "section 10".

SEC. 5. The section of the Clean Air Act redesignated as section 10 (relating to definitions) is amended by redesignating subsection (g) as subsection (h) and by inserting after subsection (f) the following subsection (g):

"(g) The term 'commerce' means trade, traffic, commerce, transportation, or transmission (i) between any place in a State, the District of Columbia, the Commonwealth of Puerto Rico, or a territory or possession of the United States and any place outside thereof, and (ii) wholly within the District of Columbia or any such territory or possession."

SEC. 6. The section of the Clean Air Act redesignated as section 14 (which relates to appropriations) is amended by inserting after "Act" in subsection (b) ", exclusive of subsection (g) of section 6,", and by adding after subsection (b) the following new subsection:

"(c) There is hereby authorized to be appropriated such sums as may be necessary to carry out the purposes of subsection (g) of section 6 of this Act."

SEC. 7. The Internal Revenue Code of 1954 is amended by adding at the end of part VI of subchapter B of chapter 1 (relating to itemized deductions for individuals and corporations) the following new section:

"SEC. 183. EXPENDITURES FOR ACQUISITION, CONSTRUCTION, OR INSTALLATION OF WATER AND AIR POLLUTION CONTROL DEVICES.

"(a) TREATMENT AS EXPENSES.—

"(1) IN GENERAL.—A taxpayer may elect to treat expenditures (or any portion thereof) paid or incurred by him during the taxable year in connection with his trade or business for the acquisition, construction or installation of (A) any certified water pollution control device (as defined in subsection (c)), and (B) any certified air pollution control device (as defined in subsection (d)) as expenses which are not chargeable to capital account. The expenditures so treated shall be allowed as a deduction.

"(2) CARRYBACKS AND CARRYOVERS OF DEDUCTIONS.—A taxpayer who during any taxable year has paid or incurred expenditures to which subsection (a) applies may elect to treat such expenditures (or any portion thereof) as having been paid or incurred in any of the three taxable years preceding, or in any of the five taxable years following, the taxable year in which such expenses are paid or incurred.

"(b) ELECTIONS.—

"(1) TIME.—The elections under subsection (a) shall be made within the time prescribed by law (including extensions thereof) for filing the return for such taxable year. The elections shall be made in such manner as the Secretary or his delegate may by regulations prescribe and may not be revoked except with the consent of the Secretary or his delegate.

"(2) CERTIFICATES REQUIRED.—No election may be made under subsection (a) with respect to the expenditures described therein unless the certificates required under subsection (c) or (d), as the case may be, have been issued

with respect to the certified water pollution control devices or the certified air pollution control devices for which such expenditures were paid or incurred.

"(c) CERTIFIED WATER POLLUTION CONTROL DEVICES.—

"(1) IN GENERAL.—For the purposes of this section, the term 'certified water pollution control device' means so much of any facility, building, machinery, or equipment, or any part thereof, used to control water pollution by removing, altering, or disposing of wastes resulting from or affecting the taxpayer's trade or business (A) the acquisition, construction, or installation of which is completed after December 31, 1963, (B) which the State certifying authority has certified to the Federal certifying authority as having been acquired, constructed, or installed in conformity with the State program or requirements for control of water pollution, and (C) which the Federal certifying authority has certified to the Secretary or his delegate as beneficial to the control of water pollution and in furtherance of the general policy of the United States of cooperating with the States in the reduction and elimination of water pollution under the Federal Water Pollution Control Act, as amended (33 U.S.C. 466).

"(2) For the purposes of this subsection—

"(A) the term 'State certifying authority' means the State water pollution control agency as defined in section 11(a) of the Federal Water Pollution Control Act, as amended,

"(B) the term 'Federal certifying authority' means the Secretary of Health, Education, and Welfare or his delegate, and

"(C) the term 'State' includes the District of Columbia and the Commonwealth of Puerto Rico.

"(d) CERTIFIED AIR POLLUTION CONTROL DEVICE.—

"(1) IN GENERAL.—For the purposes of this section, the term 'certified air pollution control device' means so much of any facility, machinery, or equipment, or any part thereof, used to reduce or eliminate air pollution by removing, altering, or disposing of air pollutants resulting from or affecting the taxpayer's trade or business (A) the acquisition, construction, or installation of which is completed after December 31, 1963, (B) which the State certifying authority has certified to the Federal certifying authority as having been acquired, constructed, or installed in conformity with the State program or requirements for control of air pollution, and (C) which the Federal certifying authority has certified to the Secretary or his delegate as beneficial to the control of air pollution and in furtherance of the general policy of the United States of cooperating with the States in the reduction or elimination of air pollution under the Clean Air Act, as amended (42 U.S.C. 1857).

"(2) For the purposes of this subsection—

"(A) the term 'State certifying authority' means the State or interstate air pollution control agency as defined in section 10 (relating to definitions) of the Clean Air Act,

"(B) the term 'Federal certifying authority' means the Secretary of Health, Education, and Welfare, and

"(C) the term 'State' includes the District of Columbia and the Commonwealth of Puerto Rico.

"(e) LIMITATIONS.—

"(1) PROFITMAKING DEVICES.—If the taxpayer realizes income from the operation of any certified water pollution control device or certified air pollution control device, through the recovery and profitable utilization of wastes, or otherwise, the expenditures with respect to such control devices which would otherwise be taken into account for purposes of subsection (a) shall be reduced by the amount of such income.

"(2) ADJUSTMENT FOR PRIOR DEPRECIATION DEDUCTION.—If the taxpayer has been allowed any deduction under section 167 (relating to depreciation) with respect to expenditures paid or incurred for a certified water pollution control device or a certified air pollution control device, the amount otherwise allowable as a deduction under subsection (a) shall be reduced by the amount of such depreciation."

SEC. 8. Section 263(a)(1) of the Internal Revenue Code of 1954 (relating to disallowance of deductions for capital expenditures) is amended as follows:

(1) by striking out the word "or" at the end of subparagraph (D) and the period at the end of subparagraph (E) and inserting in lieu of such period the word ", or", and

(2) by adding immediately after subparagrph (E) the following new subparagraph:

"(F) Expenditures for certified water pollution control devices and certified air pollution control devices deductible under section 183."

SEC. 9. (a) Section 46(c) of the Internal Revenue Code of 1954 (relating to the definition of qualified investment for purposes of investment credit in certain depreciable property) is amended by adding after paragraph (4) thereof the following new paragraph:

"(5) DEVICES AND FACILITIES TO CONTROL WATER AND AIR POLLUTION.—

"(A) In the case of section 38 property which consists of devices, facilities, or equipment to control water or air pollution, the amount of the qualified investment shall be twice the amount determined under paragraph (1).

"(B) For purposes of subparagraph (A), the term 'devices, facilities, or equipment to control water pollution' means a device, facility, or equipment used to control water pollution by removing, altering, or disposing of wastes resulting from or affecting the taxpayer's trade or business, including the necessary intercepting, sewers, outfall sewers, pumping, power, and other equipment and their appurtenances.

"(C) For purposes of subparagraph (A), the term 'devices, facilities, or equipment to control air pollution' means a device, facility, or equipment used to control air pollution by removing, altering, or disposing of air pollutants resulting from or affecting the taxpayer's trade or business."

(b) The amendment made by subsection (a) shall apply to taxable years beginning after December 31, 1963.

[H.R. 7429, 89th Cong., 1st sess.]

A BILL To amend the Clean Air Act in order to provide for improved control of air pollution from Federal installations and facilities and automotive vehicles

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 6 of the Clean Air Act (42 U.S.C. 1857e) is amended by adding at the end thereof the following:

"(c) Effective on and after October 1, 1966, no Federal department or agency shall purchase any automotive vehicle unless such vehicle is manufactured or equipped to prevent or reduce the discharge of pollutants from its exhaust in accordance with standards established by the Secretary. In establishing such standards, the Secretary may exempt special purpose vehicles from the provisions of this subsection."

SEC. 2. Section 7 of the Clean Air Act (42 U.S.C. 1857f) is amended—

(1) by striking out the last sentence in subsection (b); and

(2) by adding at the end thereof the following:

"(c) There are hereby authorized to be appropriated necessary amounts to be expended for the installation, maintenance, and operation in Federal buildings, installations and other property of such devices as are certified by the Secretary to be adequate for the purposes of subsection (b). Such amounts shall be appropriated to the Federal departments or agencies concerned. Any Federal department or agency having under its jurisdiction any building, installation, or other property not in compliance with requirements established pursuant to subsection (b) shall request from the Congress such appropriations as may be necessary to accomplish compliance.

"(d) No building, installation, or other property shall be constructed, otherwise prepared for use, or expanded by any Federal department or agency after the effective date of this subsection unless such construction, preparation, or expansion includes air pollution control measures determined by the Secretary to be adequate for the purposes of this section.

"(e) In order to assist in assuring appropriate maintenance and operation of devices or other means of prevention or control of air pollution, the Secretary shall provide training in such matters to personnel of any Federal department or agency at the request of the head of such department or agency.

"(f) Each Federal department or agency shall keep the Secretary informed of air pollution control practices in effect at buildings, installations, and other property under its jurisdiction and shall promptly inform the Secretary of the

absence of, or failure to institute practices necessary and adequate for the purposes of this section and the reason or reasons therefor. The Secretary shall report each January to the President and to the Congress on the status and effectiveness of actions taken under this section to prevent and control air pollution by such Federal departments and agencies.

"(g) The Secretary or his duly authorized representative is authorized to enter any such building, installation, or other property at reasonable times for the purpose of inspecting and investigating air pollution control practices."

[H.R. 8007, 89th Cong., 1st sess.]

A BILL To prohibit the manufacture, sale, or use in commerce of any motor vehicle which discharges substances into the air in amounts found by the Secretary of Health, Education, and Welfare to be dangerous to public health

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) the Secretary of Health, Education, and Welfare (hereafter in this Act referred to as the "Secretary"), shall, after conducting such research as he may deem necessary, but not later than one year after the date of enactment of this Act, prescribe and publish in the Federal Register, standards as to the amounts of substances which he considers to be safe, from the standpoint of human health, for a motor vehicle to discharge into the atmosphere under the various conditions under which such vehicle may operate.

(b) Standards prescribed pursuant to subsection (a) of this section may be revised from time to time by the Secretary. Such revised standards shall be published in the Federal Register.

SEC. 2. (a) The manufacture for sale in commerce, the sale in commerce, the offering for sale in commerce, the use in commerce, or the importation into the United States of any motor vehicle which discharges into the atmosphere substances in amounts in excess of the standards prescribed by the Secretary pursuant to the first section of this Act, shall be unlawful.

(b) This Act shall apply only with respect to motor vehicles manufactured after the effective date of this section.

(c) Whoever violates this section shall be subject to a fine of not more than $100. In the case of a manufacturer or importer of motor vehicles, each motor vehicle manufactured or imported in violation of this Act shall constitute a separate offense.

SEC. 3. The Secretary is authorized to prescribe such rules and regulations as may be necessary to carry out the purposes of this Act, and to take such action as may be necessary to insure compliance with this Act.

SEC. 4. As used in this Act—

(1) The term "commerce" means (A) commerce between any place in a State, the District of Columbia, the Commonwealth of Puerto Rico, or a territory or possession of the United States and any place outside thereof, and (B) commerce wholly within the District of Columbia or any such territory or possession; and

(2) The term "motor vehicle" means any vehicle propelled by mechanical power and used for transporting passengers or freight whether on a fixed track or on a highway.

SEC. 5. Section 2 of this Act shall take effect one year after the date on which standards are first prescribed and published in the Federal Register pursuant to subsection (a) of this first section of this Act. Any standards which are revised pursuant to subsection (b) of the first section of this Act shall take effect one year after the date on which they are published in the Federal Register.

[H.R. 8398, 89th Cong., 1st sess.]

A BILL To amend the Clean Air Act to require standards for controlling the emission of pollutants from gasoline-powered or diesel-powered vehicles, to establish a Federal Air Pollution Control Laboratory, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 3 of the Clean Air Act (which relates to research, investigations, and training) is amended—

(1) by striking out the word "and" at the end of paragraph (3) of subsection (a) thereof;

(2) by striking out the period at the end of paragraph (4) of subsection (a) thereof and inserting in lieu thereof "; and";

(3) by adding after paragraph (4) of subsection (2) thereof the following new paragraph (5):

"(5) conduct and accelerate research programs relating to the means of controlling hydrocarbon emissions resulting from the evaporation of gasoline in carburetors and fuel tanks, and the means of controlling emissions of oxides of nitrogen and aldehydes from gasoline-powered or diesel-powered vehicles. To carry out such research the Secretary shall consult with the technical committee established under section 6 of this Act and for research concerning diesel-powered vehicles, he may add to such committee such representatives from the diesel-powered vehicle industry as he deems appropriate."; and

(4) by adding at the end thereof the following new subsections:

"(d) The Secretary shall establish a Federal Air Pollution Control Laboratory within the Department of Health, Education, and Welfare and shall staff and equip such laboratory as necessary to conduct such phases of the national research and development program for the prevention and control of air pollution as he deems appropriate.

"(e) The Secretary shall appoint a technical committee whose membership shall consist of representatives from the Department of Health, Education, and Welfare, the Bureau of Mines of the Department of the Interior, the Federal Power Commission, and the coal, petroleum, and electric power industries, for the purpose of encouraging the development of improved low-cost techniques designed to reduce emissions of oxides of sulfur produced by the combustion of sulfur-containing fuels. The Committee shall meet from time to time at the call of the Secretary to evaluate progress in the development of such techniques and to recommend additional research programs for the development of such techniques. One year after enactment of this section and semiannually thereafter, the Secretary shall report to the Congress on the progress of the development of such techniques and his recommendations, if any, for additional legislation."

SEC. 2. (a) Section 4 of the Clean Air Act (which relates to grants for support of air pollution control programs) is amended by redesignating subsection (c) as subsection (d) and by inserting immediately after subsection (b) the following subsection (c):

"(c) The Secretary is authorized to make grants to municipalities in an amount up to two-thirds of the cost of the construction of facilities which are designed to eliminate air pollution resulting from the disposal of solid wastes. No grant shall be made under this subsection to any municipality that has not enacted an ordinance or other regulation prohibiting open burning of solid wastes and containing enforcement procedures insuring that disposal facilities will have a beneficial effect on reducing air pollution. No grant shall be made for any facility under this subsection until the applicant has made provision satisfactory to the Secretary to assure the proper and efficient operation and maintenance of the facility after completion of the construction thereof."

(b) Subsection (d), as so redesignated, is amended to read as follows:

"(d) Not more than 12½ per centum of the grant funds available under subsection (a) of this section shall be expended in any one State, and no grant shall be made for any project, authorized under subsection (c) of this section, in an amount exceeding 5 per centum of the total authorized in any one fiscal year."

SEC. 3. Section 6 of the Clean Air Act (which relates to automotive vehicle and fuel pollution) is amended by adding at the end thereof th efollowing new subsections:

"(c) (1) The Secretary shall prescribed and publish in the Federal Register standards for the allowable emissions of pollutants from gasoline powered vehicles, and the effective date for such standards.

"(2) In prescribing standards for gasoline powered vehicles under this subsection the Secretary shall require (i) that within six months after enactment of this subsection all new gasoline powered vehicles be equipped with blowby systems with emissions from crankcases limited to 0.15 percent of supplied fuel under cyclic operating conditions and (ii) that after November 1, 1966, the allowable exhaust emissions from new gasoline powered vehicles shall be not

more than 275 parts per million of hydrocarbons measured by a non-dispersive infrared spectrometer calibrated with hexane and not more than 1.5 per centum by volume of carbon monoxide measured by a nondispersive infrared spectrometer under metropolitan area cyclic type operating conditions with results normalized to 15 divided by percent carbon dioxide plus percent carbon monoxide plus 6 times percent hydrocarbons.

"(3) The Secretary shall establish criteria for allowable emissions from diesel powered vehicles manufactured and introduced into interstate commerce or imported into the United States. Upon the establishment of such criteria the Secretary shall make his recommendations for additional legislation, if necessary, to regulate the discharge of pollutants from diesel powered vehicles.

"(4) The manufacture for distribution in commerce of any gasoline powered vehicle or the importation into the United States of any gasoline powered vehicle, after the effective date of any standards prescribed by the Secretary in accordance with this subsection, which does not meet such standards, is unlawful.

"Whoever violates the provisions of this subsection or the regulations prescribed pursuant to this subsection shall be fined not more than $1,000 or imprisoned not more than six months, or both.

"(d) The Secretary and the Secretary of the Treasury shall jointly promulgate rules and regulations that prohibit the importation of any gasoline powered vehicles which fail to meet the standards prescribed in paragraphs (1) and (2) of subsection (c) of this section.

"(e) It is the policy of the United States to insure the proper inspection and maintenance of the devices and other means required to control the emission of air pollutants from gasoline powered vehicles within the standards prescribed by the Secretary under this section. The Secretary is authorized to enter into agreements with, and to make grants to, appropriate State agencies designated by the Governors (including such supplemental agreements as may be necessary) to carry out the policy of this section. For the purpose of this subsection an interstate air pollution control agency may qualify if one State having jurisdiction of such agency enters an agreement authorized by this subsection. The sums appropriated to carry out this subsection shall be allotted by the Secretary to States entering into agreements in the proportion that the number of gasoline powered vehicles registered in such year in each such State bears to the total such number in all such States for such year.

"(f) All action taken under this section for the adoption of standards and the promulgation of rules and regulations shall be taken in conformity with the provisions of the Administrative Procedure Act."

SEC. 4. Section 9 of the Clean Air Act (which relates to definitions) is amended by redesignating subsection (g) as subsection (h) and by inserting after subsection (f) the following subsection (g):

"(g) The term 'commerce' means (1) commerce between any place in a State, the District of Columbia, the Commonwealth of Puerto Rico, or a territory or possession of the United States or any place outside thereof, and (2) commerce wholly within the District of Columbia or any such territory or possession."

SEC. 5. (a) Section 13 of the Clean Air Act (which relates to appropriations) is amended by adding at the end thereof the following new subsections:

"(c) There are hereby authorized to be appropriated to carry out subsection 4(c) of this Act for the fiscal year ending June 30, 1966, and for each of the next two succeeding fiscal years the sum of $100,000,000 per fiscal year for the purpose of making grants under this subsection. Sums so appropriated shall remain available until expended.

"(d) There are hereby authorized to be appropriated $25,000,000 for the fiscal year ending June 30, 1966, for the establishment of inspection programs under subsection 6(e) of this Act."

(b) Subsection (b) of section 13 is amended by inserting immediately after the word "Act" the following: ", exclusive of subsection (c) of section 4 and subsection (e) of section 6,".

[H.R. 8723, 89th Cong., 1st sess.]

A BILL To amend the Clean Air Act to require standards for controlling the emission of pollutants from gasoline-powered or diesel-powered vehicles, to establish a Federal Air Pollution Control Laboratory, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I—AMENDMENTS TO CLEAN AIR ACT

SEC. 101. The Clean Air Act is amended (1) by inserting immediately above the heading of section 1: "TITLE I—AIR POLLUTION PREVENTION AND CONTROL"; (2) by changing the words "this Act" wherever they appear in sections 1 through 7 to "this title"; (3) by redesignating sections 1 through 7 and references thereto as sections 101 through 107; (4) by redesignating sections 8 through 14 and references thereto as sections 301 through 307; (5) by inserting immediately above the heading of the so redesignated section 301: "TITLE III —GENERAL"; (6) by striking out subsection (a) of the so redesignated section 306 and striking out the letter (b) at the beginning of subsection (b) in the so redesignated section 306; (7) by striking out "this Act" in the so redesignated section 306 and inserting in lieu thereof "title I"; and (8) by inserting after the so redesignated section 107 and before the heading of such title III the following new title:

"TITLE II—CONTROL OF AIR POLLUTION FROM MOTOR VEHICLES

"SHORT TITLE

"SEC. 201. This title may be cited as the 'Motor Vehicle Air Pollution Control Act'.

"ESTABLISHMENT OF STANDARDS

"SEC. 202. (a) The Secretary shall by regulation, giving appropriate consideration to technological feasibility and economic costs, prescribe standards, requirements, or limitations applicable to the emission of any kind of substance, from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment cause or contribute to, or are likely to cause or contribute to, air pollution which endangers the health or welfare of any persons.

"(b) Regulations initially prescribed under this section shall, as soon as practicable, be promulgated by the Secretary, to become effective no later than September 1, 1967.

"(c) The Secretary is authorized to amend such regulations promulgated under this section, to become effective on the date specified in the order promulgating the amendments thereto.

"DIESEL CRITERIA

"SEC. 203. The Secretary shall, as soon as practicable, develop standards for allowable emissions from diesel powered vehicles manufactured and introduced into interstate commerce or imported into the United States. The Secretary shall make recommendations to the Congress for additional legislation to regulate the discharge of pollutants from diesel powered vehicles by January 31, 1967.

"PROHIBITED ACTS

"SEC. 204. (a) The following acts and the causing thereof are prohibited—

"(1) in the case of a manufacturer of new motor vehicles or new motor vehicle engines for distribution in commerce, the manufacture for sale, the sale, or the offering for sale, or the introduction or delivery for introduction into commerce, or the importation into the United States for sale or resale of any new motor vehicle or new motor vehicle engine, manufactured after the effective date of regulations under this title which are applicable to such vehicle or engine unless it is in conformity with such regulations (except as provided in subsection (b));

"(2) for any person to fail or refuse to permit entry or inspection pursuant to section 207, or to permit access to records pursuant to section 207, or to fail to make reports required under section 208; or

"(3) for any person to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title prior to its sale and delivery to the ultimate purchaser.

"(b)(1) The Secretary may exempt any new motor vehicle or new motor vehicle engine, or class thereof, from subsection (a), upon such terms and conditions as he may find necessary to protect the public health or welfare,

for the purpose of research, investigations, studies, demonstrations, or training, or for reasons of national security.

"(2) A new motor vehicle or new motor vehicle engine offered for importation by a manufacturer in violation of subsection (a) shall be refused admission into the United States, but the Secretary of the Treasury and the Secretary of Health, Education, and Welfare may, by joint regulation, provide for authorizing the importation of such a motor vehicle upon such terms and conditions (including the furnishing of a bond) as may appear to them appropriate to insure that any such motor vehicle will be brought into conformity with the standards, requirements, and limitations applicable to it under this title.

"(3) A new motor vehicle or motor vehicle engine intended solely for export, and so labeled or tagged on the outside of the container and on the vehicle or engine itself, shall not be subject to the provisions of subsection (a) if it is shown that the failure so to comply would not be in conflict with any standard, requirement, or limitation imposed by the country of designation and such compliance would make the vehicle unacceptable to the purchaser or consignee.

INJUNCTION PROCEEDINGS

"SEC. 205. (a) The district courts of the United States shall have jurisdiction to restrain violations of paragraph (1), (2), or (3) of section 204(a).

"(b) Actions to restrain such violations shall be brought by and in the name of the United States. In any such action, subpenas for witnesses who are required to attend a district court in any district may run into any other district.

"PENALTIES

"SEC. 206. Any person who violates paragraph (1), (2), or (3) of section 204(a) shall be subject to a fine of not more than $1,000. Such violation with respect to section 204(a)(1) and 204(a)(3) shall constitute a separate offense with respect to each new motor vehicle or new motor vehicle engine.

"INSPECTIONS

"SEC. 207. For purposes of enforcement of this title, officers and employees designated by the Secretary, upon presenting appropriate credentials and a written notice to the owner, operator, or agent in charge, are authorized to enter at reasonable times, any factory, warehouse, or other business establishment or premises where new motor vehicles or new motor vehicle engines are manufactured, assembled, or held prior to their sale or delivery to the ultimate consumer, or are being worked on after such sale or delivery, and to make a reasonable inspection of such vehicles or engines to determine compliance with this title and regulations thereunder.

"RECORDS AND REPORTS

"SEC. 208. (a) Every manufacturer shall establish and maintain such records, make such reports, and provide such information as the Secretary may reasonably require to enable him to determine whether such manufacturer has acted or is acting in compliance with this title and regulations thereunder.

"(b) All information reported shall be considered confidential for the purpose of section 1905 of title 18 of the United States Code, except where such information is related to other officers or employees concerned with carrying out this Act or when relevant in any proceeding under this Act.

"DEFINITIONS FOR TITLE II

"SEC. 209. As used in this title—

"(a) The term 'manufacturer' means any person engaged in the manufacturing or assembling of new motor vehicles or motor vehicle engines, or importing such vehicles or engines for resale, or who acts for and is under the control of any such person in connection with the distribution of new motor vehicles or motor vehicle engines, but shall not include any dealer with respect to new motor vehicles or motor vehicle engines received by him in commerce.

"(b) The term 'motor vehicle' means any gasoline powered self-propelled vehicle designed for transporting persons or property on a street or highway.

"(c) The term 'new motor vehicle' means a motor vehicle the equitable or legal title to which has never been transferred by a manufacturer, distributor, or dealer to an ultimate purchaser.

"(d) The term 'dealer' means any person resident or located in any State who is engaged in the sale or the distribution of new motor vehicles or new motor vehicle engines to the ultimate purchaser.

"(e) The term 'ultimate purchaser' means, with respect to any new motor vehicle or new motor vehicle engine, the first person, other than a dealer purchasing in his capacity as a dealer, who in good faith purchases such new motor vehicle or new engine for purposes other than resale.

"(f) The term 'commerce' means (1) commerce between any place in any State and any place outside thereof; and (2) commerce wholly within the District of Columbia."

SEC. 102. (a) Paragraph (1) of subsection (c) of the redesignated section 105 of the Clean Air Act (which relates to abatement of air pollution) is amended by adding at the end thereof the following new subparagraph:

"(D) Whenever the Secretary, upon receipt of reports, surveys, or studies from any duly constituted international agency, has reason to believe that any pollution referred to in subsection (a) which endangers the health or welfare of persons in a foreign country is occurring, or whenever the Secretary of State requests him to do so with respect to such pollution which the Secretary of State alleges is of such a nature, the Secretary of Health, Education, and Welfare shall give formal notification thereof to the air pollution control agency of the municipality where such discharge or discharges originate, to the air pollution control agency of the State in which such municipality is located, and to the interstate air pollution control agency, if any, in the jurisdictional area of which such municipality is located, and shall call promptly a conference of such agency or agencies. The Secretary shall invite the foreign country which may be adversely affected by the pollution to attend and participate in the conference, and the representative of such country shall, for the purpose of the conference and any further proceeding resulting from such conference, have all the rights of a State air pollution control agency."

(b) So much of subsection (f) of such redesignated section 105 as precedes clause (2) of such subsection is amended to read as follows:

"(f) If action reasonably calculated to secure abatement of the pollution within the time specified in the notice following the public hearing is not taken, the Secretary—

"(1) in the case of pollution of air which is endangering the health or welfare of persons (A) in a State other than that in which the discharge or discharges (causing or contributing to such pollution) originate, or (B) in a foreign country, may request the Attorney General to bring a suit on behalf of the United States to secure abatement of the pollution, and".

SEC. 103. Redesignated section 103 of the Clean Air Act (which relates to research, investigations, and training) is amended—

(1) by striking out the word "and" at the end of paragraphs (1), (2), and (3) of subsection (a) thereof;

(2) by striking out the period at the end of paragraph (4) of subsection (a) thereof and inserting in lieu thereof "; and";

(3) by adding after paragraph (4) of subsection (a) thereof the following new paragraph (5):

"(5) conduct and accelerate research programs (A) relating to the means of controlling hydrocarbon emissions resulting from the evaporation of gasoline in carburetors and fuel tanks, and the means of controlling emissions of oxides of nitrogen and aldehydes from gasoline-powered or diesel-powered vehicles, and to carry out such research the Secretary shall consult with the technical committee established under section 106 of this Act, and for research concerning diesel-powered vehicles he may add to such committee such representatives from the diesel-powered vehicle industry as he deems appropriate; and (B) directed toward the development of improved low-cost techniques designed to reduce emissions of oxides of sulfur produced by the combustion of sulfur-containing fuels."; and

(4) by adding at the end of such section the following new subsection:

"(d) The Secretary is authorized to construct a Federal Air Pollution Control Laboratory and shall staff and equip such laboratory as necessary to conduct such phases of the national research and development program for the prevention and control of air pollution as he deems appropriate."

SEC. 104. Redesignated section 106 of the Clean Air Act is amended by inserting at the end thereof a new subsection as follows:

"(c) The technical committee appointed pursuant to subsection (a) shall recommend standards for the allowable exhaust emissions of pollutants from new motor vehicles and new motor vehicel engines to the Secretary not later than January 31, 1966."

TITLE II—SOLID WASTE DISPOSAL

SHORT TITLE

SEC. 201. This title (hereinafter referred to as "this Act") may be cited as the "Solid Waste Disposal Act".

PURPOSES

SEC. 202. The purposes of this Act are—

(1) to initiate and accelerate a national research and development program for new and improved methods of proper and economic solid waste disposal, including studies directed toward the conservation of natural resources by reducing the amount of waste and unsalvageable materials and by recovery and utilization of potential resources in solid wastes; and

(2) to provide technical and financial assistance to State and local governments and interstate agencies in the planning, development, establishment, and conduct of solid waste disposal programs.

DEFINITIONS

SEC. 203. When used in this Act—

(a) The term "Secretary" means the Secretary of Health, Education, and Welfare; except that such term means the Secretary of the Interior with respect to problems of solid waste resulting from the extraction, processing, or utilization of minerals or fossil fuels where the generation, production, or reuse of such waste is or may be controlled within the extraction, processing, or utilization facility or facilities and where such control is a feature of the technology or economy of the operation of such facility or facilities.

(b) The term "State" means a State, the District of Columbia, the Commonwealth of Puetro Rico, the Virgin Islands, Guam, and American Samoa.

(c) The term "interstate agency" means an agency of two or more municipalities in different States, or an agency established by two or more States, with authority to provide for the disposal of solid wastes and serving two or more municipalities located in different States.

(d) The term "solid waste" means garbage, refuse, and other discarded solid materials, including solid-waste materials resulting from industrial, commercial, and agricultural operations, and from community activities.

(e) The term "solid-waste disposal" means the collection, storage, treatment, utilization, processing, or final disposal of solid waste.

(f) The term "construction", with respect to any project of construction under this Act, means (1) the erection or building of new structures and acquisition of lands or interests therein, or the acquisition, replacement, expansion, remodeling, alteration, modernization, or extension of existing structures, and (2) the acquisition and installation of initial equipment of, or required in connection with, new or newly acquired structures or the expanded, remodeled, altered, modernized or extended part of existing structures (including trucks and other motor vehicles, and tractors, cranes, and other machinery) necessary for the proper utilization and operation of the facility after completion of the project; and includes preliminary planning to determine the economic and engineering feasibility and the public health and safety aspects of the project, the engineering, architectural, legal, fiscal, and economic investigations and studies, and any surveys, designs, plans, working drawings, specifications, and other action necessary for the carrying out of the project, and the inspection and supervision of the process of carrying out the project to completion.

RESEARCH, DEMONSTRATIONS, TRAINING, AND OTHER ACTIVITIES

SEC. 204. (a) The Secretary shall conduct, and encourage, cooperate with, and render financial and other assistance to appropriate public (whether Federal, State, interstate, or local) authorities, agencies, and institutions, private agencies and institutions, and individuals in the conduct of, and promote the coordination of, research, investigations, experiments, training, demonstrations, surveys, and

studies relating to the operation and financing of solid-waste disposal programs, the development and application of new and improved methods of solid-waste disposal (including devices and facilities therefor), and the reduction of the amount of such waste and unsalvageable waste materials.

(b) In carrying out the provisions of the preceding subsection, the Secretary is authorized to—

(1) collect and make available, through publications and other appropriate means, the results of, and other information pertaining to, such research and other activities, including appropriate recommendations in connection therewith;

(2) cooperate with public and private agencies, institutions, and organizations, and with any industries involved, in the preparation and the conduct of such research and other activities; and

(3) make grants-in-aid to, or contract with, public or private agencies and institutions and individuals for research and training projects; and such contracts for research may be made in accordance with and subject to the limitations provided with respect to research contracts of the military departments in title 10, United States Code, section 2353, except that the determination, approval, and certification required thereby shall be made by the Secretary; except that not to exceed 25 per centum of the total amount appropriated pursuant to the authorization in this Act for any fiscal year may be obligated for the purposes of this paragraph during such fiscal year.

(4) make grants to any State, municipality, or intermunicipal, or interstate agency for the purpose of assisting in the development (including the construction of facilities) of any project which will demonstrate a new or improved method of disposing of solid wastes, except that (A) not more than two-thirds of the cost of any project approved by the Secretary may be paid from the appropriations made pursuant to this Act, (B) not more than 12½ per centum of the appropriations made pursuant to this Act and expended under this paragraph may be expended in any one State, (C) no grant shall be made under this subsection to any municipality that has not enacted or is not subject to a law, ordinance or other regulation prohibiting open burning of solid wastes and containing enforcement procedures insuring that disposal facilities will have a beneficial effect on reducing air pollution, (D) no grant shall be made for any facility under this subsection until the applicant has made provision satisfactory to the Secretary to assure the proper and efficient operation and maintenance of the facility after completion of the construction thereof, and (E) no grant shall be made under this paragraph until the Secretary has consulted with the appropriate official as designated by the Governor or Governors of the States affected.

(c) (1) No part of any appropriated funds may be expended pursuant to authorization given by this Act involving any scientific or technological research or development activity unless such expenditure is conditioned upon provisions effective to insure that all information, copyrights, uses, processes, patents, and other developments resulting from that activity will be made freely available to the general public. Nothing contained in this subsection shall deprive the owner of any background patent relating to any such activity, without his consent, of any right which that owner may have under that patent.

(2) Whenever any information, copyright, use, process, patent, or development resulting from any such research or development activity conducted in whole or in part with appropriated funds expended under authorization of this Act is withheld or disposed of by any person, organization, or agency in contravention of the provisions of subsection (c) (1), the Attorney General shall institute, upon his own motion or upon request made by any person having knowledge of pertinent facts, an action for the enforcement of the provisions of such subsection in the district court of the United States for any judicial district in which any defendant resides, is found, or has a place of business. Such court shall have jurisdiction to hear and determine such action, and to enter therein such orders and decrees as it shall determine to be required to carry into effect fully the provisions of this subsection. Process of the district court for any judicial district in any action instituted under this subsection may be served in any other judicial district of the United States by the United States marshal thereof. Whenever it appears to the court in which any such action is pending that other parties should be brought before the court in such action, the court may cause such other parties to be summoned from any judicial district of the United States.

INTERSTATE AND INTERLOCAL COOPERATION

SEC. 205. The Secretary shall encourage cooperative activities by the States and local governments in connection with solid-waste disposal programs; encourage, where practicable, interstate, interlocal, and regional planning for, and the conduct of, interstate, interlocal, and regional solid-waste disposal programs; and encourage the enactment of improved and, so far as practicable, uniform State and local laws governing solid-waste disposal.

SEC. 206. Section 104 of the Clean Air Act is amended by inserting at the end thereof a new subsection (d) as follows:

"(d) not to exceed 10 per centum of amounts appropriated pursuant to section 210 of the Solid Waste Disposal Act for any fiscal year may be used by the Secretary to make grants to State or interstate air pollution control agencies in an amount up to two-thirds of the cost of making or arranging for surveys of solid waste disposal practices and problems within the jurisdictional areas of such agencies, and of developing solid waste disposal plans for such areas. The Secretary shall make a grant under this section only if he finds that there is satisfactory assurance that the planning of solid-waste disposal will be coordinated, so far as practicable with other related State, interstate, regional, and local planning activities, including those financed in part with funds pursuant to section 701 of the Housing Act of 1954."

LABOR STANDARDS

SEC. 207. No grant for a project of construction under this Act shall be made unless the Secretary finds that the application contains or is supported by reasonable assurance that all laborers and mechanics employed by contractors or subcontractors on projects of the type covered by the Davis-Bacon Act, as amended (40 U.S.C. 276a—276a–5), will be paid wages at rates not less than those prevailing on similar work in the locality as determined by the Secretary of Labor in accordance with that Act; and the Secretary of Labor shall have with respect to the labor standards specified in this section the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (15 F.R. 3176; 5 U.S.C. 133z–15) and section 2 of the Act of June 13, 1934, as amended (40 U.S.C. 276c).

OTHER AUTHORITY NOT AFFECTED

SEC. 208. This Act shall not be construed as superseding or limiting the authorities and responsibilities, under any other provisions of law, of the Secretary, the Secretary of the Interior, or any other Federal officer, department, or agency.

PAYMENTS

SEC. 209. Payments under this Act may be made (after necessary adjustment on account of previously made underpayments or overpayments) in advance or by way of reimbursement, and in such installments and on such conditions as the Secretary may determine.

APPROPRIATIONS

SEC. 210. There are hereby authorized to be appropriated for the purposes of carrying out this Act, and section 104(d) of the Clean Air Act, $20,000,000 for each of the fiscal years ending June 30, 1966, and June 30, 1967. Sums so appropriated shall remain available until expended.

[H.R. 8800, 89th Cong., 1st sess.]

A BILL To amend the Clean Air Act to require standards for controlling the emission of pollutants from gasoline-powered or diesel-powered vehicles, to establish a Federal Air Pollution Control Laboratory, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I—AMENDMENTS TO CLEAN AIR ACT

SEC. 101. The Clean Air Act is amended (1) by inserting immediately above the heading of section 1: "TITLE I—AIR POLLUTION PREVENTION AND CONTROL"; (2) by changing the words "this Act" wherever they appear in sec-

tions 1 through 7 to "this title"; (3) by redesignating sections 1 through 7 and references thereto as sections 101 through 107; (4) by redesignating sections 8 through 14 and references thereto as sections 301 through 307; (5) by inserting immediately above the heading of the so redesignated section 301: "TITLE III—GENERAL"; (6) by striking out subsection (a) of the so redesignated section 306 and striking out the letter (b) at the beginning of subsection (b) in the so redesignated section 306; (7) by striking out "this Act" in the so redesignated section 306 and inserting in lieu thereof "title I"; and (8) by inserting after the so redesignated section 107 and before the heading of such title III the following new title:

"TITLE II—CONTROL OF AIR POLLUTION FROM MOTOR VEHICLES

"SHORT TITLE

"SEC. 201. This title may be cited as the 'Motor Vehicle Air Pollution Control Act'.

"ESTABLISHMENT OF STANDARDS

"SEC. 202. (a) The Secretary shall by regulation, giving appropriate consideration to technological feasibility and economic costs, prescribe standards, requirements or limitations applicable to the emission of any kind of substance, from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment cause or contribute to, or are likely to cause or contribute to, air pollution which endangers the health or welfare of any persons.

"(b) Regulations initially prescribed under this section shall, as soon as practicable, be promulgated by the Secretary, to become effective no later than September 1, 1967.

"(c) The Secretary is authorized to amend such regulations promulgated under this section, to become effective on the date specified in the order promulgating the amendments thereto.

"DIESEL CRITERIA

"SEC. 203. The Secretary shall, as soon as practicable, develop standards for allowable emissions from diesel powered vehicles manufactured and introduced into interstate commerce or imported into the United States. The Secretary shall make recommendations to the Congress for additional legislation to regulate the discharge of pollutants from diesel powered vehicles by January 31, 1967.

"PROHIBITED ACTS

"SEC. 204. (a) The following acts and the causing thereof are prohibited—

"(1) in the case of a manufacturer of new motor vehicles or new motor vehicle engines for distribution in commerce, the manufacture for sale, the sale, or the offering for sale, or the introduction or delivery for introduction into commerce, or the importation into the United States for sale or resale of any new motor vehicle or new motor vehicle engine, manufactured after the effective date of regulations under this title which are applicable to such vehicle or engine unless it is in conformity with such regulations (except as provided in subsection (b));

"(2) for any person to fail or refuse to permit entry or inspection pursuant to section 207, or to permit access to records pursuant to section 207, or to fail to make reports required under section 208; or

"(3) for any person to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title prior to its sale and delivery to the ultimate purchaser.

"(b) (1) The Secretary may exempt any new motor vehicle or new motor vehicle engine, or class thereof, from subsection (a), upon such terms and conditions as he may find necessary to protect the public health or welfare, for the purpose of research, investigations, studies, demonstrations, or training, or for reasons of national security.

"(2) A new motor vehicle or new motor vehicle engine offered for importation by a manufacturer in violation of subsection (a) shall be refused admission into the United States, but the Secretary of the Treasury and the Secretary of Health, Education, and Welfare may, by joint regulation, provide for authorizing the importation of such a motor vehicle upon such terms and conditions (including

the furnishing of a bond) as may appear to them appropriate to insure that any such motor vehicle will be brought into conformity with the standards, requirements, and limitations applicable to it under this title.

"(3) A new motor vehicle or motor vehicle engine intended solely for export, and so labeled or tagged on the outside of the container and on the vehicle or engine itself, shall not be subject to the provisions of subsection (a) if it is shown that the failure so to comply would not be in conflict with any standard, requirement, or limitation imposed by the country of designation and such compliance would make the vehicle unacceptable to the purchaser or consignee.

"INJUNCTION PROCEEDINGS

"SEC. 205. (a) The district courts of the United States shall have jurisdiction to restrain violations of paragraph (1), (2), or (3) of section 204(a).

"(b) Actions to restrain such violations shall be brought by and in the name of the United States. In any such action, subpenas for witnesses who are required to attend a district court in any district may run into any other district.

"PENALTIES

"SEC. 206. Any person who violates paragraph (1), (2), or (3) of section 204(a) shall be subject to a fine of not more than $1,000. Such violation with respect to section 204(a)(1) and 204(a)(3) shall constitute a separate offense with respect to each new motor vehicle or new motor vehicle engine.

"INSPECTIONS

"SEC. 207. For purposes of enforcement of this title, officers and employees designated by the Secretary, upon presenting appropriate credentials and a written notice to the owner, operator, or agent in charge, are authorized to enter, at reasonable times, any factory, warehouse, or other business establishment or premises where new motor vehicles or new motor vehicle engines are manufactured, assembled, or held prior to their sale or delivery to the ultimate consumer, or are being worked on after such sale or delivery, and to make a reasonable inspection of such vehicles or engines to determine compliance with this title and regulations thereunder.

"RECORDS AND REPORTS

"SEC. 208. (a) Every manufacturer shall establish and maintain such records, make such reports, and provide such information as the Secretary may reasonably require to enable him to determine whether such manufacturer has acted or is acting in compliance with this title and regulations thereunder.

"(b) All information reported shall be considered confidential for the purpose of section 1905 of title 18 of the United States Code, except where such information is related to other officers or employees concerned with carrying out this Act or when relevant in any proceeding under this Act.

"DEFINITIONS FOR TITLE II

"SEC. 209. As used in this title—

"(a) The term 'manufacturer' means any person engaged in the manufacturing or assembling of new motor vehicles or motor vehicle engines, or importing such vehicles or engines for resale, or who acts for and is under the control of any such person in connection with the distribution of new motor vehicles or motor vehicle engines, but shall not include any dealer with respect to new motor vehicles or motor vehicle engines received by him in commerce.

"(b) The term 'motor vehicle' means any gasoline-powered self-propelled vehicle designed for transporting persons or property on a street or highway.

"(c) The term 'new motor vehicle' means a motor vehicle the equitable or legal title to which has never been transferred by a manufacturer, distributor, or dealer to an ultimtae purchaser.

"(d) The term 'dealer' means any person resident or located in any State who is engaged in the sale or the distribution of new motor vehicles or new motor vehicle engines to the ultimate purchaser.

"(e) The term 'ultimate purchaser' means, with respect to any new motor vehicle or new motor vehicle engine, the first person, other than a dealer pur-

chasing in his capacity as a dealer, who in good faith purchases such new motor vehicle or new engine for purposes other than resale.

"(f) The term 'commerce' means (1) commerce between any place in any State and any place outside thereof; and (2) commerce wholly within the District of Columbia."

SEC. 102. (a) Paragraph (1) of subsection (c) of the redesignated section 105 of the Clean Air Act (which relates to abatement of air pollution) is amended by adding at the end thereof the following new subparagraph:

"(D) Whenever the Secretary, upon receipt of reports, surveys, or studies from any duly constituted international agency, has reason to believe that any pollution referred to in subsection (a) which endangers the health or welfare of persons in a foreign country is occurring, or whenever the Secretary of State requests him to do so with respect to such pollution which the Secretary of State alleges is of such a nature, the Secretary of Health, Education, and Welfare shall give formal notification thereof to the air pollution control agency of the municipality where such discharge or discharges originate, to the air pollution control agency of the State in which such municipality is located, and to the interstate air pollution control agency, if any, in the jurisdictional area of which such municipality is located, and shall call promptly a conference of such agency or agencies. The Secretary shall invite the foreign country which may be adversely affected by the pollution to attend and participate in the conference, and the representative of such country shall, for the purpose of the conference and any further proceeding resulting from such conference, have all the rights of a State air pollution control agency."

(b) So much of subsection (f) of such redesignated section 105 as precedes clause (2) of such subsection is amended to read as follows:

"(f) If action reasonably calculated to secure abatement of the pollution within the time specified in the notice following the public hearing is not taken, the Secretary—

"(1) in the case of pollution of air which is endangering the health or welfare of persons (A) in a State other than that in which the discharge or discharges (causing or contributing to such pollution) originate, or (B) in a foreign country, may request the Attorney General to bring a suit on behalf of the United States to secure abatement of the pollution, and".

SEC. 103. Redesignated section 103 of the Clean Air Act (which relates to research, investigations, and training) is amended—

(1) by striking out the word "and" at the end of paragraphs (1), (2), and (3) of subsection (a) thereof;

(2) by striking out the period at the end of paragraph (4) of subsection (a) thereof and inserting in lieu thereof "; and";

(3) by adding after paragraph (4) of subsection (a) thereof the following new paragraph (5):

"(5) conduct and accelerate research programs (A) relating to the means of controlling hydrocarbon emissions resulting from the evaporation of gasoline in carburetors and fuel tanks, and the means of controlling emissions of oxides of nitrogen and aldehydes from gasoline-powered or diesel-powered vehicles, and to carry out such research the Secretary shall consult with the technical committee established under section 106 of this Act, and for research concerning diesel-powered vehicles he may add to such committee such representatives from the diesel-powered vehicle industry as he deems appropriate; and (B) directed toward the development of improved low-cost techniques designed to reduce emissions of oxides of sulfur produced by the combustion of sulfur-containing fuels." and

(4) by adding at the end of such section the following new subsection:

"(d) The Secretary is authorized to construct a Federal Air Pollution Control Laboratory and shall staff and equip such laboratory as necessary to conduct such phases of the national research and development program for the prevention and control of air pollution as he deems appropriate."

SEC. 104. Redesignated section 106 of the Clean Air Act is amended by inserting at the end thereof a new subsection as follows:

"(c) The technical committee appointed pursuant to subsection (a) shall recommend standards for the allowable exhaust emissions of pollutants from new motor vehicles and new motor vehicle engines to the Secretary not later than January 31, 1966."

TITLE II—SOLID WASTE DISPOSAL

SHORT TITLE

SEC. 201. This title (hereinafter referred to as "this Act") may be cited as the "Solid Waste Disposal Act".

PURPOSES

SEC. 202. The purposes of this Act are—

(1) to initiate and accelerate a national research and development program for new and improved methods of proper and economic solid waste disposal, including studies directed toward the conservation of natural resources by reducing the amount of waste and unsalvageable materials and by recovery and utilization of potential resources in solid wastes; and

(2) to provide technical and financial assistance to State and local governments and interstate agencies in the planning, development, establishment, and conduct of solid waste disposal programs.

DEFINITIONS

SEC. 203. When used in this Act—

(a) The term "Secretary" means the Secretary of Health, Education, and Welfare; except that such term means the Secretary of the Interior with respect to problems of solid waste resulting from the extraction, processing, or utilization of minerals or fossil fuels where the generation, production, or reuse of such waste is or may be controlled within the extraction, processing, or utilization facility or facilities and where such control is a feature of the technology or economy of the operation of such facility or facilities.

(b) The term "State" means a State, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, and American Samoa.

(c) The term "interstate agency" means an agency of two or more municipalities in different States, or an agency established by two or more states, with authority to provide for the disposal of solid wastes and serving two or more municipalities located in different States.

(d) The term "solid waste" means garbage, refuse, and other discarded solid materials, including solid-waste materials resulting from industrial, commercial, and agricultural operations, and from community activities.

(e) The term "solid-waste disposal" means the collection, storage, treatment, utilization, processing, or final disposal of solid waste.

(f) The term "construction", with respect to any project of construction under this Act, means (1) the erection or building of new structures and acquisition of lands or interests therein, or the acquisition, replacement, expansion, remodeling, alteration, modernization, or extension of existing structures, and (2) the acquisition and installation of initial equipment of, or required in connection with, new or newly acquired structures or the expanded, remodeled, altered, modernized or extended part of existing structures (including trucks and other motor vehicles, and tractors, cranes, and other machinery) necessary for the proper utilization and operation of the facility after completion of the project; and includes preliminary planning to determine the economic and engineering feasibility and the public health and safety aspects of the project, the engineering, architectural, legal, fiscal, and economic investigations and studies, and any surveys, designs, plans, working drawings, specifications, and other action necessary for the carrying out of the project, and the inspection and supervision of the process of carrying out the project to completion.

RESEARCH, DEMONSTRATIONS, TRAINING, AND OTHER ACTIVITIES

SEC. 204. (a) The Secretary shall conduct, and encourage, cooperate with, and render financial and other assistance to appropriate public (whether Federal, State, interstate, or local) authorities, agencies, and institutions, private agencies and institutions, and individuals in the conduct of, and promote the coordination of, research, investigations, experiments, training, demonstrations, surveys, and studies relating to the operation and financing of solid-waste disposal programs, the development and application of new and improved methods of solid-waste disposal (including devices and facilities therefor), and the reduction of the amount of such waste and unsalvageable waste materials.

(b) In carrying out the provisions of the preceding subsection, the Secretary is authorized to—

(1) collect and make available, through publications and other appropriate means, the results of, and other information pertaining to, such research and other activities, including appropriate recommendations in connection therewith;

(2) cooperate with public and private agencies, institutions, and organizations, and with any industries involved, in the preparation and the conduct of such research and other activities; and

(3) make grants-in-aid to, or contract with, public or private agencies and institutions and individuals for research and training projects; and such contracts for research may be made in accordance with and subject to the limitations provided with respect to research contracts of the military departments in title 10, United States Code, section 2353, except that the determination, approval, and certification required thereby shall be made by the Secretary; except that not to exceed 25 per centum of the total amount appropriated pursuant to the authorization in this Act for any fiscal year may be obligated for the purposes of this paragraph during such fiscal year.

(4) make grants to any State, municipality, or intermunicipal, or interstate agency for the purpose of assisting in the development (including the construction of facilities) of any project which will demonstrate a new or improved method of disposing of solid wastes, except that (A) not more than two-thirds of the cost of any project approved by the Secretary may be paid from the appropriations made pursuant to this Act, (B) not more than 12½ per centum of the appropriations made pursuant to this Act and expended under this paragraph may be expended in any one State, (C) no grant shall be made under this subsection to any municipality that has not enacted or is not subject to a law, ordinance, or other regulation prohibiting open burning of solid wastes and containing enforcement procedures insuring that disposal facilities will have a beneficial effect on reducing air pollution, (D) no grant shall be made for any facility under this subsection until the applicant has made provision satisfactory to the Secretary to assure the proper and efficient operation and maintenance of the facility after completion of the contruction thereof, and (E) no grant shall be made under this paragraph until the Secretary has consulted with the appropriate official as designated by the Governor or Governors of the States affected.

(c)(1) No part of any appropriated funds may be expended pursuant to authorization given by this Act involving any scientific or technological research or development activity unless such expenditure is conditioned upon provisions effective to insure that all information, copyrights, uses, processes, patents, and other developments resulting from that activity will be made freely available to the general public. Nothing contained in this subsection shall deprive the owner of any background patent relating to any such activity, without his consent, of any right which that owner may have under that patent.

(2) Whenever any information, copyright, use, process, patent, or development resulting from any such research or development activity conducted in whole or in part with appropriated funds expended under authorization of this Act is withheld or disposed of by any person, organization, or agency in contravention of the provisions of subsection (c)(1), the Attorney General shall institute, upon his own motion or upon request made by any person having knowledge of pertinent facts, an action for the enforcement of the provisions of such subsection in the district court of the United States for any judicial district in which any defendant resides, is found, or has a place of business. Such court shall have jurisdiction to hear and determine such action, and to enter therein such orders and decrees as it shall determine to be required to carry into effect fully the provisions of this subsection. Process of the district court for any judicial district in any action instituted under this subsection may be served in any other judicial district of the United States by the United States marshal thereof. Wherever it appears to the court in which any such action is pending that other parties should be brought before the court in such action, the court may cause such other parties to be summoned from any judicial district of the United States.

INTERSTATE AND INTERLOCAL COOPERATION

SEC. 205. The Secretary shall encourage cooperative activities by the States and local governments in connection with solid-waste-disposal programs; encourage, where practicable, interstate, interlocal, and regional planning for, and the conduct of, interstate, interlocal, and regional solid-waste-disposal programs;

and encourage the enactment of improved and, so far as practicable, uniform State and local laws governing solid-waste disposal.

SEC. 206. Section 104 of the Clean Air Act is amended by inserting at the end thereof a new subsection (d) as follows:

"(d) not to exceed 10 per centum of amounts appropriated pursuant to section 210 of the Solid Waste Disposal Act for any fiscal year may be used by the Secretary to make grants to State or interstate air pollution control agencies in an amount up to two-thirds of the cost of making or arranging for surveys of solid-waste-disposal practices and problems within the jurisdictional areas of such agencies, and of developing solid-waste, disposal plans for such areas. The Secretary shall make a grant under this section only if he finds that there is satisfactory assurance that the planning of solid-waste disposal will be coordinated, so far as practicable, with other related State, interstate, regional, and local planning activities, including those financed in part with funds pursuant to section 701 of the Housing Act of 1954."

LABOR STANDARDS

SEC. 207. No grant for a project of construction under this Act shall be made unless the Secretary finds that the application contains or is supported by reasonable assurance that all laborers and mechanics employed by contractors or subcontractors on projects of the type covered by the Davis-Bacon Act, as amended (40 U.S.C. 276a—276a–5), will be paid wages at rates not less than those prevailing on similar work in the locality as determined by the Secretary of Labor in accordance with that Act; and the Secretary of Labor shall have with respect to the labor standards specified in this section the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (15 F.R. 3176; 5 U.S.C. 133z–15) and section 2 of the Act of June 13, 1934, as amended (40 U.S.C. 276c).

OTHER AUTHORITY NOT AFFECTED

SEC. 208. This Act shall not be construed as superseding or limiting the authorities and responsibilities, under any other other provisions of law, of the Secretary, the Secretary of the Interior, or any other Federal officer, department, or agency.

PAYMENTS

SEC. 209. Payments under this Act may be made (after necessary adjustment on account of previously made underpayments or overpayments) in advance or by way of reimbursement, and in such installments and on such conditions as the Secretary may determine.

APPROPRIATIONS

SEC. 210. There are hereby authorized to be appropriated for the purposes of carrying out this Act, and section 104(d) of the Clean Air Act, $20,000,000 for each of the fiscal years ending June 30, 1966, and June 30, 1967. Sums so appropriated shall remain available until expended.

[S. 306, 89th Cong., 1st sess.]

AN ACT To amend the Clean Air Act to require standards for controlling the emission of pollutants from gasoline-powered or diesel-powered vehicles to establish a Federal Air Pollution Control Laboratory, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I—AMENDMENTS TO CLEAN AIR ACT

SEC. 101. The Clean Air Act is amended (1) by inserting immediately above the heading of section 1: "TITLE I—AIR POLLUTION PREVENTION AND CONTROL"; (2) by changing the words "this Act" wherever they appear in sections 1 through 7 to "this title"; (3) by redesignating sections 1 through 7 and references thereto as sections 101 through 107; (4) by redesignating sections 8 through 14 and references thereto as sections 301 through 307; (5) by inserting immediately above the heading of the so redesignated section 301:

"TITLE III—GENERAL"; (6) by striking out subsection (a) of the so redesignated section 306 and striking out the letter (b) at the beginning of subsection (b) in the so redesignated section 306; (7) by striking out "this Act" in the so redesignated section 306 and inserting in lieu thereof "title I"; and (8) by inserting after the so redesignated section 107 and before the heading of such title III the following new title:

"TITLE II—CONTROL OF AIR POLLUTION FROM MOTOR VEHICLES

"SHORT TITLE

"SEC. 201. This title may be cited as the 'Motor Vehicle Air Pollution Control Act'.

"ESTABLISHMENT OF STANDARDS

"SEC. 202. (a) The Secretary shall by regulation, giving appropriate consideration to technological feasibility and economic costs, prescribe standards, requirements, or limitations applicable to the emission of any kind of substance, from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment cause or contribute to, or are likely to cause or contribute to, air pollution which endangers the health or welfare of any persons.

"(b) Regulations initially prescribed under this section shall, as soon as practicable, be promulgated by the Secretary, to become effective no later than September 1, 1967.

"(c) The Secretary is authorized to amend such regulations promulgated under this section, to become effective on the date specified in the order promulgating the amendments thereto.

"DIESEL CRITERIA

"SEC. 203. The Secretary shall, as soon as practicable, develop standards for allowable emissions from diesel powered vehicles manufactured and introduced into interstate commerce or imported into the United States. The Secretary shall make recommendations to the Congress for additional legislation to regulate the discharge of pollutants from diesel powered vehicles by January 31, 1967.

"PROHIBITED ACTS

"SEC. 204. (a) The following acts and the causing thereof are prohibited—

"(1) in the case of a manufacturer of new motor vehicles or new motor vehicle engines for distribution in commerce, the manufacture for sale, the sale, or the offering for sale, or the introduction or delivery for introduction into commerce, or the importation into the United States for sale or resale of any new motor vehicle or new motor vehicle engine, manufactured after the effective date of regulations under this title which are applicable to such vehicle or engine unless it is in conformity with such regulations (except as provided in subsection (b));

"(2) for any person to fail or refuse to permit entry or inspection pursuant to section 207, or to permit access to records pursuant to section 207, or to fail to make reports required under section 208; or

"(3) for any person to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title prior to its sale and delivery to the ultimate purchaser.

"(b) (1) The Secretary may exempt any new motor vehicle or new motor vehicle engine, or class thereof, from subsection (a), upon such terms and conditions as he may find necessary to protect the public health or welfare, for the purpose of research, investigations, studies, demonstrations, or training, or for reasons of national security.

"(2) A new motor vehicle or new motor vehicle engine offered for importation by a manufacturer in violation of subsection (a) shall be refused admission into the United States, but the Secretary of the Treasury and the Secretary of Health, Education, and Welfare may, by joint regulation, provide for authorizing the importation of such a motor vehicle upon such terms and conditions (including the furnishing of a bond) as may appear to them appropriate to insure that any such motor vehicle will be brought into conformity with the standards, requirements, and limitations applicable to it under this title.

"(3) A new motor vehicle or motor vehicle engine intended solely for export, and so labeled or tagged on the outside of the container and on the vehicle or

engine itself, shall not be subject to the provisions of subsection (a) if it is shown that the failure so to comply would not be in conflict with any standard, requirement, or limitation imposed by the country of designation and such compliance would make the vehicle unacceptable to the purchaser or consignee.

"INJUNCTION PROCEEDINGS

"SEC. 205. (a) The district courts of the United States shall have jurisdiction to restrain violations of paragraph (1), (2), or (3) of section 204(a).

"(b) Actions to restrain such violations shall be brought by and in the name of the United States. In any such action, subpenas for witnesses who are required to attend a district court in any district may run into any other district.

"PENALTIES

"SEC. 206. Any person who violates paragraph (1), (2), or (3) of section 204(a) shall be subject to a fine of not more than $1,000. Such violation with respect to section 204(a)(1) and 204(a)(3) shall constitute a separate offense with respect to each new motor vehicle or new motor vehicle engine.

"INSPECTIONS

"SEC. 207. For purposes of enforcement of this title, officers and employees designated by the Secretary, upon presenting appropriate credentials and a written notice to the owner, operator, or agent in charge, are authorized to enter, at reasonable times, any factory, warehouse, or other business establishment or premises where new motor vehicles or new motor vehicle engines are manufactured, assembled, or held prior to their sale or delivery to the ultimate consumer, or are being worked on after such sale or delivery, and to make a reasonable inspection of such vehicles or engines to determine compliance with this title and regulations thereunder.

"RECORDS AND REPORTS

"SEC. 208. (a) Every manufacturer shall establish and maintain such records, make such reports, and provide such information as the Secretary may reasonbly require to enable him to determine whether such manufacturer has acted or is acting in compliance with this title and regulations thereunder.

"(b) All information reported shall be considered confidential for the purpose of section 1905 of title 18 of the United States Code, except where such information is related to other officers or employees concerned with carrying out this Act or when relevant in any proceeding under this Act.

"DEFINITIONS FOR TITLE II

"SEC. 209. As used in this title—

"(a) The term 'manufacturer' means any person engaged in the manufacturing or assembling of new motor vehicles or motor vehicle engines, or importing such vehicles or engines for resale, or who acts for and is under the control of any such person in connection with the distribution of new motor vehicles or motor vehicle engines, but shall not include any dealer with respect to new motor vehicles or motor vehicle engines received by him in commerce.

"(b) The term 'motor vehicle' means any gasoline powered self-propelled vehicle designed for transporting persons or property on a street or highway.

"(c) The term 'new motor vehicle' means a motor vehicle the equitable or legal title to which has never been transferred by a manufacturer, distributor, or dealer to an ultimate purchaser.

"(d) The term 'dealer' means any person resident or located in any State who is engaged in the sale or the distribution of new motor vehicles or new motor vehicle engines to the ultimate purchaser.

"(e) The term 'ultimate purchaser' means, with respect to any new motor vehicle or new motor vehicle engine, the first person, other than a dealer purchasing in his capacity as a dealer, who in good faith purchases such new motor vehicle or new engine for purposes other than resale.

"(f) The term 'commerce' means (1) commerce between any place in any State and any place outside thereof; and (2) commerce wholly within the District of Columbia."

SEC. 102. (a) Paragraph (1) of subsection (c) of the redesignated section 105 of the Clean Air Act (which relates to abatement of air pollution) is amended by adding at the end thereof the following new subparagraph:

"(D) Whenever the Secretary, upon receipt of reports, surveys, or studies from any duly constituted international agency, has reason to believe that any pollution referred to in subsection (a) which endangers the health or welfare of persons in a foreign country is occurring, or whenever the Secretary of State requests him to do so with respect to such pollution which the Secretary of State alleges is of such a nature, the Secretary of Health, Education, and Welfare shall give formal notification thereof to the air pollution control agency of the municipality where such discharge or discharges originate, to the air pollution control agency of the State in which such municipality is located, and to the interstate air pollution control agency, if any, in the jurisdictional area of which such municipality is located, and shall call promptly a conference of such agency or agencies. The Secretary shall invite the foreign country which may be adversely affected by the pollution to attend and participate in the conference, and the representative of such country shall, for the purpose of the conference and any further proceeding resulting from such conference, have all the rights of a State air pollution control agency."

(b) So much of subsection (f) of such redesignated section 105 as precedes clause (2) of such subsection is amended to read as follows:

"(f) If action reasonably calculated to secure abatement of the pollution within the time specified in the notice following the public hearing is not taken, the Secretary—

"(1) in the case of pollution of air which is endangering the health or welfare of persons (A) in a State other than that in which the discharge or discharges (causing or contributing to such pollution) originate, or (B) in a foreign country, may request the Attorney General to bring a suit on behalf of the United States to secure abatement of the pollution, and".

SEC. 103. Redesignated section 103 of the Clean Air Act (which relates to research, investigations, and training) is amended—

(1) by striking out the word "and" at the end of paragraphs (1), (2), and (3) of subsection (a) thereof;

(2) by striking out the period at the end of paragraph (4) of subsection (a) thereof and inserting in lieu thereof "; and";

(3) by adding after paragraph (4) of subsection (a) thereof the following new paragraph (5):

"(5) conduct and accelerate research programs (A) relating to the means of controlling hydrocarbon emissions resulting from the evaporation of gasoline in carburetors and fuel tanks, and the means of controlling emissions of oxides of nitrogen and aldehydes from gasoline-powered or diesel-powered vehicles, and to carry out such research the Secretary shall consult with the technical committee established under section 106 of this Act, and for research concerning diesel-powered vehicles he may add to such committee such representatives from the diesel-powered vehicle industry as he deems appropriate; and (B) directed toward the development of improved low-cost techniques designed to reduce emissions of oxides of sulfur produced by the combustion of sulfur-containing fuels."; and

(4) by adding at the end of such section the following new subsection:

"(d) The Secretary is authorized to construct a Federal Air Pollution Control Laboratory and shall staff and equip such laboratory as necessary to conduct such phases of the national research and development program for the prevention and control of air pollution as he deems appropriate."

SEC. 104. Redesignated section 106 of the Clean Air Act is amended by inserting at the end thereof a new subsection as follows:

"(c) The technical committee appointed pursuant to subsection (a) shall recommend standards for the allowable exhaust emissions of pollutants from new motor vehicles and new motor vehicle engines to the Secretary not later than January 31, 1966."

TITLE II—SOLID WASTE DISPOSAL

SHORT TITLE

SEC. 201. This title (hereinafter referred to as "this Act") may be cited as the "Solid Waste Disposal Act".

PURPOSES

SEC. 202. The purposes of this Act are—

(1) to initiate and accelerate a national research and development program for new and improved methods of proper and economic solid waste disposal, including studies directed toward the conservation of natural resources by reducing the amount of waste and unsalvageable materials and by recovery and utilization of potential resources in solid wastes; and

(2) to provide technical and financial assistance to State and local governments and interstate agencies in the planning, development, establishment, and conduct of solid waste disposal programs.

DEFINITIONS

SEC. 203. When used in this Act—

(a) The term "Secretary" means the Secretary of Health, Education, and Welfare; except that such term means the Secretary of the Interior with respect to problems of solid waste resulting from the extraction, processing, or utilization of minerals or fossil fuels where the generation, production, or reuse of such waste is or may be controlled within the extraction, processing, or utilization facility or facilities and where such control is a feature of the technology or economy of the operation of such facility or facilities.

(b) The term "State" means a State, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, and American Samoa.

(c) The term "interstate agency" means an agency of two or more municipalities in different States, or an agency established by two or more States, with authority to provide for the disposal of solid wastes and serving two or more municipalities located in different States.

(d) The term "solid waste" means garbage, refuse, and other discarded solid materials, including solid-waste materials resulting from industrial, commercial, and agricultural operations, and from community activities.

(e) The term "solid-waste disposal" means the collection, storage, treatment, utilization, processing, or final disposal of solid waste.

(f) The term "construction", with respect to any project of construction under this Act, means (1) the erection or building of new structures and acquisition of lands or interests therein, or the acquisition, replacement, expansion, remodeling, alteration, modernization, or extension of existing structures, and (2) the acquisition and installation of initial equipment of, or required in connection with, new or newly acquired structures or the expanded, remodeled, altered, modernized or extended part of existing structures (including trucks and other motor vehicles, and tractors, cranes, and other machinery) necessary for the proper utilization and operation of the facility after completion of the project; and includes preliminary planning to determine the economic and engineering feasibility and the public health and safety aspects of the project, the engineering, architectural, legal, fiscal, and economic investigations and studies, and any surveys, designs, plans, working drawings, specifications, and other action necessary for the carrying out of the project, and the inspection and supervision of the process of carrying out the project to completion.

RESEARCH, DEMONSTRATIONS, TRAINING, AND OTHER ACTIVITIES

SEC. 204. (a) The Secretary shall conduct, and encourage, cooperate with, and render financial and other assistance to appropriate public (whether Federal, State, interstate, or local) authorities, agencies, and institutions, private agencies and institutions, and individuals in the conduct of, and promote the coordination of, research, investigations, experiments, training, demonstrations, surveys, and studies relating to the operation and financing of solid-waste disposal programs, the development and application of new and improved methods of solid-waste disposal (including devices and facilities therefor), and the reduction of the amount of such waste and unsalvageable waste materials.

(b) In carying out the provisions of the preceding subsection, the Secretary is authorized to—

(1) collect and make available, through publications and other appropriate means, the results of, and other information pertaining to, such research and other activities, including appropriate recommendations in connection therewith;

(2) cooperate with public and private agencies, institutions, and organizations, and with any industries involved, in the preparation and the conduct of such research and other activities; and

(3) make grants-in-aid to, or contract with, public or private agencies and institutions and individuals for research and training projects; and such contracts for research may be made in accordance with and subject to the limitations provided with respect to research contracts of the military departments in title 10, United States Code, section 2353, except that the determination, approval, and certification required thereby shall be made by the Secretary; except that not to exceed 25 per centum of the total amount appropriated pursuant to the authorization in this Act for any fiscal year may be obligated for the purposes of this paragraph during such fiscal year.

(4) make grants to any State, municipality, or intermunicipal, or interstate agency for the purpose of assisting in the development (including the construction of facilities) of any project which will demonstrate a new or improved method of disposing of solid wastes, except that (A) not more than two-thirds of the cost of any project approved by the Secretary may be paid from the appropriations made pursuant to this Act, (B) not more than 12½ per centum of the appropriations made pursuant to this Act and expended under this paragraph may be expended in any one State, (C) no grant shall be made under this subsection to any municipality that has not enacted or is not subject to a law, ordinance or other regulation prohibiting open burning of solid wastes and containing enforcement procedures insuring that disposal facilities will have a beneficial effect on reducing air pollution, (D) no grant shall be made for any facility under this subsection until the applicant has made provision satisfactory to the Secretary to assure the proper and efficient operation and maintenance of the facility after completion of the construction thereof, and (E) no grant shall be made under this paragraph until the Secretary has consulted with the appropriate official as designated by the Governor or Governors of the States affected.

(c)(1) No part of any appropriated funds may be expended pursuant to authorization given by this Act involving any scientific or technological research or development activity unless such expenditure is conditioned upon provisions effective to insure that all information, copyrights, uses, processes, patents, and other developments resulting from that activity will be made freely available to the general public. Nothing contained in this subsection shall deprive the owner of any background patent relating to any such activity, without his consent, of any right which that owner may have under that patent.

(2) Whenever any information, copyright, use, process, patent, or development resulting from any such research or development activity conducted in whole or in part with appropriated funds expended under authorization of this Act is withheld or disposed of by any person, organization, or agency in contravention of the provisions of subsection (c)(1), the Attorney General shall institute, upon his own motion or upon request made by any person having knowledge of pertinent facts, an action for the enforcement of the provisions of such subsection in the district court of the United States for any judicial district in which any defendant resides, is found, or has a place of business. Such court shall have jurisdiction to hear and determine such action, and to enter therein such orders and decrees as it shall determine to be required to carry into effect fully the provisions of this subsection. Process of the district court for any judicial district in any action instituted under this subsection may be served in any other judicial district of the United States by the United States marshal thereof. Whenever it appears to the court in which any such action is pending that other parties should be brought before the court in such action, the court may cause such other parties to be summoned from any judicial district of the United States.

INTERSTATE AND INTERLOCAL COOPERATION

SEC. 205. The Secretary shall encourage cooperative activities by the States and local governments in connection with solid-waste disposal programs; encourage, where practicable, interstate, interlocal, and regional planning for, and the conduct of, interstate, interlocal, and regional solid-waste disposal programs; and encourage the enactment of improved and, so far as practicable, uniform State and local laws governing solid-waste disposal.

SEC. 206. Section 104 of the Clean Air Act is amended by inserting at the end therof a new subsection (d) as follows:

"(d) not to exceed 10 per centum of amounts appropriated pursuant to section 210 of the Solid Waste Disposal Act for any fiscal year may be used by the Secretary to make grants to State or interstate air pollution control agencies in an amount up to two-thirds of the cost of making or arranging for surveys of solid waste disposal practices and problems within the jurisdictional areas of such agencies, and of developing solid waste disposal plans for such areas. The Secretary shall make a grant under this section only if he finds that there is satisfactory assurance that the planning of solid-waste disposal will be coordinated, so far as practicable, with other related State, interstate, regional, and local planning activities, including those financed in part with funds pursuant to section 701 of the Housing Act of 1954."

LABOR STANDARDS

SEC. 207. No grant for a project of construction under this Act shall be made unless the Secretary finds that the application contains or is supported by reasonable assurance that all laborers and mechanics employed by contractors or subcontractors on projects of the type covered by the Davis-Bacon Act, as amended (40 U.S.C. 276a—276a-5), will be paid wages at rates not less than those prevailing on similar work in the locality as determined by the Secretary of Labor in accordance with that Act; and the Secretary of Labor shall have with respect to the labor standards specified in this section the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (15 F.R. 3176; 5 U.S.C. 133z-15) and section 2 of the Act of June 13, 1934, as amended (40 U.S.C. 276c).

OTHER AUTHORITY NOT AFFECTED

SEC. 208. This Act shall not be construed as superseding or limiting the authorities and responsibilities, under any other provisions of law, of the Secretary, the Secretary of the Interior, or any other Federal officer, department, or agency.

PAYMENTS

SEC. 209. Payments under this Act may be made (after necessary adjustment on account of previously made underpayments or overpayments) in advance or by way of reimbursement, and in such installments and on such conditions as the Secretary may determine.

APPROPRIATIONS

SEC. 210. There are hereby authorized to be appropriated for the purposes of carrying out this Act, and section 104(d) of the Clean Air Act, $20,000,000 for each of the fiscal years ending June 30, 1966, and June 30, 1967. Sums so appropriated shall remain available until expended.

Passed the Senate May 18, 1965.

Attest: FELTON M. JOHNSTON,
Secretary.

(Agency reports on the aforementioned bills are as follows:)

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D.C., July 8, 1965.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in response to your request for a report on S. 306, a bill "To amend the Clean Air Act to require standards for controlling the emission of pollutants from gasoline-powered or diesel-powered vehicles, to establish a Federal Air Pollution Control Laboratory, and for other purposes." This will also respond to your request for the views of the Bureau of the Budget on H.R. 463, H.R. 4001, H.R. 7065, H.R. 7394, and H.R. 7429, bills of related purpose.

The major provisions of S. 306 are:

1. The Clean Air Act would be amended to authorize and require the Secretary of Health, Education, and Welfare to prescribe, publish, and enforce stand-

ards for the allowable emissions of pollutants from gasoline-powered vehicles, no later than September 1, 1967. Penalties are established for prohibited acts and implementing regulations authorized.

2. The Secretary would be required to develop standards for allowable emissions from diesel-powered vehicles and to recommend to the Congress regulatory legislation therefor by January 31, 1967.

3. The abatement procedures authorized by the act would be extended to cover cases of air pollution originating in the United States and endangering the health and welfare of persons in a foreign country.

4. The act would be amended to provide for the conduct and acceleration of research programs relating to the means of controlling hydrocarbon and other emissions from gasoline-powered or diesel-powered vehicles; and to develop low-cost techniques to reduce the emission of sulfur oxides produced by the combustion of sulfur-bearing fuels.

5. The Secretary would be authorized to construct, staff, and equip a Federal Air Pollution Control Laboratory.

6. A new title, the "Solid Waste Disposal Act," would be added, authorizing a national research, development, demonstration, and planning assistance program to promote new and improved methods of disposing of solid wastes. The portions of this program related to domestic solid wastes and trash would be administered by the Secretary of Health, Education, and Welfare and those aspects related to metal salvage and reclamation and mining wastes would be administered by the Secretary of the Interior.

The enactment by the Congress of the Clean Air Act in December 1963 has greatly furthered activities directed toward dealing with this problem through both research and the application of control techniques and procedures. The basic objectives of S. 306 seem to us to be directed toward continuing and accelerating the progress which was spurred by that act and consistent too with the President's urging that we "end the poisoning of * * * the air we breathe," and that we seek better solutions to the problems posed by the rapid increase in solid wastes.

Our comments on specific provisions of S. 306 are as follows:

1. We support the extension of the abatement provisions of the act to international air pollution originating in the United States, as recommended by the President in his message on natural beauty.

The President also recommended that the act be amended to permit the Secretary of Health, Education, and Welfare to investigate potential air pollution problems before damage actually begins and to make recommendations on the avoidance of damage. The Department of Health, Education, and Welfare has provided to the committee suggested language for such an amendment. We recommend its inclusion in the bill.

2. We join the Department of Health, Education, and Welfare in questioning seriously the desirability of amending section 3 of the act to identify a few specific pollutants for accelerated research. Section 3 of the act already authorizes a broad research and training program, including all types of polluting emissions from automotive vehicles. We believe that the overall air pollution research effort will be most effective if the program is free to follow the leads which are technically most promising.

3. We do not believe the bill should authorize the establishment of a specified Federal Air Pollution Control Laboratory. Instead, we support the view of the Department of Health, Education, and Welfare that general authority is needed to construct facilities which may be required to carry out the functions authorized by the Clean Air Act.

The authority for construction of facilities needed in the air pollution control program should not, however, be subject to the appropriation limitations now contained in section 13 of the act. Inclusion within those limitations would require the discontinuance of much ongoing research and control work for any budget year for which construction funds were requested.

4. The provisions of S. 306 relating to patents and copyrights do not provide the flexibility provided in the President's patent policy memorandum of October 10, 1963. In our view, patent policy should be addressed by general regulation or legislation, rather than by piecemeal application to individual programs. Accordingly, if legislation is to be enacted in this area, we support the general approach taken in S. 1809. We therefore, recommend deletion of subsection (c) of section 209 of the proposed Solid Waste Disposal Act.

In addition to the above specific comments on S. 306, we wish to recommend the committee's favorable consideration of technical and clarifying amendments suggested in the report of the Department of Health, Education, and Welfare. With respect to the solid waste title, we recommend revisions in accordance with the draft submitted with the report of that Department.

We recommend against enactment of the remaining bills because we believe that S. 306, with the amendments which we have recommended, is best adapted to the purpose of reducing air pollution. However, with respect to three of the other bills, we wish to bring three specific objections to your attention:

1. H.R. 7065 and H.R. 7394 would amend the Internal Revenue Code of 1954. In his message on natural beauty, the President reported: "I have directed the Chairman of the Council of Economic Advisers, with the appropriate departments, to study the use of economic incentives as a technique to stimulate pollution prevention and abatement, and to recommend actions or legislation, if needed." The study is underway, with Bureau of the Budget participation, but has not yet progressed to the point of providing recommendations. We believe that the study should be completed before tax legislation of this type is considered. In addition, we believe that tax measures should generally not be proposed as portions of substantive legislation.

2. We agree fully with the objectives of H.R. 7429 and are working, in conjunction with the Department of Health, Education, and Welfare, toward the bill's purpose of reducing air pollution from Federal installations. However, we believe that the existing authority of the Clean Air Act is adequate and that enactment of the bill is not necessary. The last sentence of the proposed section 7(c) directs Federal agencies to request funds for control measures from the Congress. If this sentence were construed as an attempt to limit the authority of the President under the Budget and Accounting Act and related statutes, it would seriously conflict with the established budgetary process. We therefore recommend against enactment of section 7(c) of H.R. 7429.

3. Finally, we object to the provisions regarding the establishment of statuatory interagency committees in certain of the bills. Flexible arrangements are advisable in fast-moving scientific and technical areas.

Section 203(a)(3) of the administration-proposed amendment to S. 306 submitted with the report of the Department of Health, Education, and Welfare deals with solid wastes. We wish to make specific the administration's views on the application of that section to the restoration of abandoned strip mine land.

Section 205 of the Appalachian Regional Development Act of 1965 authorizes a comprehensive study of the strip mine problem in the United States to provide a factual basis for policies under which the Federal Government may participate in an action program. The law requires that this study be completed and submitted to the President, and by him to the Congress with his recommendations by July 1, 1967. The Appalachian Act authorized limited rehabilitation of unreclaimed strip-mined areas in the Appalachian region only until the study is completed. Congress subsequently restricted the action program under the legislation to publicly owned land. We concur fully in the Congress' objectives in authorizing the study and in restricting the action program: Establishing a sound factual basis for Federal action, and preventing windfall financial gain to private landowners from the expenditure of Federal funds to reclaim abandoned strip mines located on their properties.

The solid waste title of the bill under consideration permits demonstration projects only, but the authorization is not restricted to public lands. However, the Department of the Interior has indicated that use of this authority to reclaim strip-mined private land will not be undertaken unless provision and procedure for preventing windfall financial gain to private property owners are assured. We share the Department's concern and intend to support fully the Department's efforts in this regard. We believe that strip mine rehabilitation expenditures should be restricted to publicly owned land except where detailed project plans for private property rehabilitation eliminate the possibility of private financial windfall from these Federal expenditures.

This authority will be administered consistent with the study authorized by the Appalachian Act. Strip mine rehabilitation policies will be thoroughly reviewed and appropriately modified in the light of findings and recommendations resulting from that study.

In summary, legislation along the lines of S. 306 would be consistent with the objectives of the administration and we recommend its enactment subject to consideration of the above comments and suggested modifications.

Sincerely yours,

PHILLIP S. HUGHES,
Assistant Director for Legislative Reference.

GENERAL COUNSEL OF THE DEPARTMENT OF COMMERCE,
Washington, D.C., June 21, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This letter is in further reply to your request for the views of this Department with respect to H.R. 463, H.R. 2105, H.R. 4001, H.R. 7065, H.R. 7394, H.R. 7429, H.R. 8007, H.R. 8398, and S. 306, bills for reducing air pollution from motor vehicles and other sources. We recommend enactment of H.R. 7429 and S. 306, if amended as set forth below, and recommend against enactment of H.R. 463, H.R. 2105, H.R. 4001, H.R. 7065, H.R. 7394, H.R. 8007, and H.R. 8398.

We believe that it is in the public interest to improve our national program for reduction of air pollution. As you know, the Secretary of Health, Education, and Welfare presently has authority under the Clean Air Act to seek reduction of air pollution in many ways. However, more specific authority is required for Federal action to reduce air pollution from motor vehicle exhaust emissions. We also believe that it would be beneficial to expand the provisions of the Clean Air Act on control of air pollution by Federal facilities.

The amendment to the Clean Air Act proposed by S. 306 would authorize and require the Secretary of Health, Education, and Welfare to prescribe, by regulation, standards or requirements to limit motor vehicle exhaust emissions which are likely to endanger health or welfare of any persons, such regulations to be effectively by September 1, 1967. S. 306 would also direct him to develop diesel powered vehicle exhaust emission standards, and to recommend to Congress (by January 31, 1967) legislation for regulating such emissions. Manufacturers and importers of motor vehicles and engines would be required to maintain records and make reports necessary to determine compliance with the regulations. The inspection of manufacturing and storage facilities and their contents also would be authorized. Manufacturers and importers of vehicles or engines which did not comply with the prescribed regulations would be subject to fine. Persons refusing to provide records, to make required reports, or to permit inspection would be guilty of a misdemeanor, as would any person who removed or rendered inoperative a required emission control device prior to the initial sale of a vehicle or engine.

S. 306 also would authorize the Secretary of Health, Education, and Welfare to commence air pollution abatement actions on his own initiative or at the request of neighboring countries with respect to pollution originating in the United States and endangering persons in the neighboring country. Other portions of the bill would provide for accelerated research on certain motor vehicle emissions, and would authorize the construction of facilities to carry out the functions of the Clean Air Act.

S. 306 also includes a proposed Solid Waste Disposal Act which would authorize cooperation with public authorities and others in promoting improvement of solid waste disposal facilities and development and application of new methods of solid waste disposal. Dissemination of information, cooperation in research and other activities, and grants for research and training projects and for development of new methods of disposing of solid wastes would be authorized. S. 306 would also require that all funds expended under the proposed Solid Waste Disposal Act be subject to the condition that all information, copyrights, user provisions, patents, and other developments resulting from activities supported by such funds will be made freely available to the general public and provides enforcement procedures.

In general, we believe that S. 306 is well adapted to the purposes of providing Federal programs to control motor vehicle exhaust emissions and to encourage improvement of our present methods and facilities for disposing of solid waste.

The provisions of title I of S. 306 allow a coordinated program of promulgation of meaningful regulations based on sufficient research, and effective enforcement of the regulations through inspection powers, records requirements, criminal or injunctive enforcement proceedings, and import control measures. As technology and the state of the art change, emission standards could be changed under S. 306 by administrative regulation based on further research and the best information available, rather than upon the more time-consuming process of legislative amendment, as H.R. 4001, H.R. 7065, H.R. 7394 and H.R. 8398 would require.

While the Solid Waste Disposal Act is generally well adapted toward establishing a national program of aiding and encouraging improvement of our solid waste disposal facilities and methods, its provisions relating to patents and copyrights are in conflict with the President's patent policy memorandum of October 10, 1963 (28 F.R. 10943). Patent policy should be set by general regulation or legislation, rather than by piecemeal application to individual programs. Furthermore, we believe that the President's memorandum reflects a more sound view of patent policy than the view presently incorporated in S. 306. Accordingly, we recommend amendment of S. 306 before enactment to delete subsection (c) of section 204 of the proposed Solid Waste Disposal Act. In addition, there appears to be an error in reference in S. 306, and we recommend amendment of the figure "207" in line 7 of page 4 of the bill to read "208".

H.R. 7429 would amend the Clean Air Act to augment its provisions for control of air pollution from Federal installations. Section 1 of the bill would prevent Federal agencies from purchasing automotive vehicles which do not meet exhaust pollutant discharge standards set by the Secretary of Health, Education, and Welfare, unless such vehicles were for special purposes and exempted by the Secretary from adherence to his standards. Section 2 of H.R. 7429 would authorize appropriation of funds necessary for installation and operation of air pollution control devices on Federal property not meeting standards for air pollution set under section 7 of the present Clean Air Act. In addition, all new Federal construction would be required to include air pollution control measures established by the Secretary. The Secretary would be required to establish programs for training Federal personnel in operation of air pollution control equipment. He would be informed by other Federal departments of their air pollution control activities, would have the power to inspect Federal buildings, and would report to the Congress on control of Federal air pollution. We note that this measure has been passed in form by the Senate as title II of S. 560, now pending before the Committee on Public Works of the House of Representatives.

While full utilization by the Secretary of Health, Education, and Welfare of the provisions in section 2 of H.R. 7429 may be delayed until more adequate types of air pollution control devices can be developed, we believe that those provisions would not usefully augment section 7 of the Clean Air Act. We assume that any standards established under H.R. 7429 by the Department of Health, Education, and Welfare will take appropriate account of the state of the art and the practicality of various control measures.

The amendments proposed by section 2 of H.R. 7429 would have beneficial effect in promoting use of present air pollution control devices and techniques. In addition, they would provide statutory support for an increased program of control of air pollution from Federal installations, as well as explicit appropriation authority. In this connection, however, we note that the last sentence of the proposed subsection (c) (p. 2 of the bill, lines 14–19) may conflict with established budgetary procedures. We therefore recommend deletion of that sentence. As air pollution control technology expands and improves, the Secretary of Health, Education, and Welfare will be able to bring about use by the Government of the best air pollution control devices available and to steadily reduce Federal pollution of air, if section 2 of H.R. 7429 is enacted.

Enactment of S. 306 will enable the Secretary of Health, Education, and Welfare to require air pollution control devices on all new gasoline powered motor vehicles sold in interstate commerce, including those sold to the Federal Government. Accordingly, if favorable consideration is given to S. 306, we recommend that H.R. 7429 be amended by deleting section 1 thereof.

We recommend against enactment of the remaining bills (H.R. 463, H.R. 2105, H.R. 4001, H.R. 7065, H.R. 7394, H.R. 8007 and H.R. 8398), primarily because

we believe that H.R. 7429 and S. 306, with our recommended amendments, are best adapted to the purpose of achieving reduction of air pollution. However, we have additional objections to the bills we do not favor, which we wish to bring to your attention.

H.R. 463, H.R. 2105 and H.R. 8007 fail to include the comprehensive civil regulatory provisions included in title I of S. 306 which we believe are necessary to an effective automotive air pollution reduction program. Furthermore, under section 2 of both H.R. 463 and H.R. 8007, an individual automobile owner whose exhaust emission control system became ineffective through no fault of his own and without his knowledge might nevertheless be subject to a fine of not more than $1,000 ($100 under H.R. 8007) or imprisonment for not more than 1 year (H.R. 463 only), if he drove across a State line or within the District of Columbia, or sold his car. We think this criminal provision is unreasonable, because most car owners would not possess the sophisticated testing equipment needed to check the effectiveness of their exhaust emission control devices. We also object to H.R. 2105 because it places authority to issue emission standards in the Surgeon General, rather than in the Secretary of Health, Education, and Welfare.

H.R. 4001, H.R. 7065, H.R. 7394 and H.R. 8398 all contain specific motor vehicle exhaust emission standards which the Secretary of Health, Education, and Welfare would be required to issue as regulations. Statutory standards are too inflexible to be appropriate for regulation of a rapidly changing technology. Standards should be adjusted to meet changing conditions and may be made more strict as the state of the art advances, if necessary.

In addition, we object to the amendments to the Internal Revenue Code of 1954 proposed by H.R. 7065 and H.R. 7394, because they fall within the subject area now being studied by the interagency committee on economic incentives for abatement of pollution. We believe that the interagency committee should have a full opportunity to make a comprehensive study before enactment of tax legislation of the type contained in H.R. 7065 and H.R. 7394 is considered. Generally, tax measures should be the subject of separate bills, rather than attachments to substantive legislation.

The Bureau of the Budget advises that there would be no objection to the submission of this report from the standpoint of the administration's program.

Sincerely yours,

ROBERT E. GILES.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., June 9, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. HARRIS: Your committee has requested our report on H.R. 4001, a bill to amend the Clean Air Act to require standards for controlling the emission of pollutants from gasoline-powered or diesel-powered vehicles, to establish a Federal Air Pollution Control Laboratory, and for other purposes, and a similar bill, S. 306, which passed the Senate on May 18, 1965.

President Johnson in his recent natural beauty message forcibly pointed out that pollution destroys the natural beauty, menaces the public health, reduces our efficiency and property values, and raises taxes. He pointed out the need for greater efforts in the control and prevention of air and water pollution, in the control of automobile exhaust emissions, and in the disposal of solid wastes. H.R. 4001 and the Senate-passed bill S. 306 are designed to aid in the strengthening of our efforts in these areas. We believe that S. 306 offers the best approach to the problems of automobile emission control and solid waste disposal. Other legislative efforts are now in progress to strengthen our efforts in the control and prevention of air and water pollution. We therefore recommend the enactment of S. 306 with amendments suggested by this Department and the Department of Health, Education, and Welfare.

S. 306 amends the Clean Air Act, as amended, by adding two new titles to the Act.

The first title relates to the control of air pollution through the establishment of standards, requirements, or limitations applicable to exhaust emissions from new motor vehicles or new motor vehicle engines. These standards will be

established by regulations which will be effective no later than September 1, 1967. After this date, the bill prohibits, among other things, the manufacture for distribution in commerce, for sale, or delivery for introduction into commerce, or the importation into the United States of any new motor vehicle or new motor vehicle engine that does not comply with these standards, unless exempted by the Secretary of Health, Education, and Welfare. The bill establishes penalties for any violation and provides for the inspection of these motor vehicles at the factory, warehouse, or other business house where the vehicles are stored or worked on pending sale or delivery to the consumer.

We believe that this new title in the Clean Air Act will aid in preventing the further pollution of the air from motor vehicle exhaust emissions. This Department has considerable experience through research in fuels used by automobiles and the constituents of automobile exhausts which contaminate the air. Some of this research has been conducted with funds made available to this Department pursuant to the present Clean Air Act. We think that the Secretary of Health, Education, and Welfare will be able to use our expertise in developing standards under this new title.

We note that the term "ultimate purchaser" is defined in section 209(e) on page 8 of the bill. This term is used in section 209(c) on page 7 of the bill. In section 207 on page 6 of the bill, however, the term "ultimate consumer" is used, but it is not defined. We suggest that the term "ultimate purchaser" should be substituted for the term "ultimate consumer" on page 6, line 12, of S. 306.

S. 306 also adds to the Clean Air Act a new title relating to the disposal of solid wastes. The bill refers to this title as "title II." We think it should be renumbered as "title III."

This new title will be very important to this Department. It authorizes the Secretary of Health, Education, and Welfare and the Secretary of the Interior to carry out a program to meet the problems of solid waste disposal.

The disposal, control, and reclamation of waste products resulting from the extraction, processing, and utilization of mineral substances are important technologic and economic factors in the effective conservation of mineral resources as well as the economics of the mineral-based industries. The Department of the Interior, through the Bureau of Mines, has for many years approached the problem of minimizing waste mainly from the standpoint of conserving the resource. Specifically, we have sought instances where improved recovery systems would reduce mineral losses, and incidentally reduce the volume of the products finally discarded. We have concentrated our attention in those instances where improvements in recovery promised direct economic gains to the industry.

S. 306 will require the Federal Government, including this Department, to emphasize the effects of mineral industry-based wastes on the total environment and require that more attention be directed to instances where waste disposal practices might be improved for the dual purposes of conserving the resources and of conserving other resource values, including natural beauty.

S. 306 directs this Department to encourage, cooperate with, and give financial, technical, and other aid to public and private agencies and institutions, and individuals in the conduct of research, investigations, experiments, training, demonstrations, surveys, and studeies relating to the operation and financing of solid waste disposal programs, the development and use of new and better methods of disposal, and the reduction of the amount of waste and unsalvageable waste masterials. The Secretary is also authorized to carry out these activities directly. Thus, the bill enables this Department to carry out a comprehensive program designed to meet the problems of solid waste disposal resulting from the extraction, processing, or utilization of minerals or fossil fuels where such activities are or could be controlled within the operating or inactive facility or facilities, such as the plant, a coal mine (active or inactive), or strip mine (active or inactive).

In carrying out this program, we may publish the results of our research and other activities, cooperate with public or private groups in the preparation and conduct of research and other activities, make grants for research and training projects, and enter into contracts for such projects. Contracts will be made in accordance with title 10, United States Code, section 2353. The bill provides that not more than 25 percent of the amount appropriated to carry out this title in any one fiscal year may be obligated by this Department and the Secretary of Health, Education, and Welfare for such grants and contracts.

The bill also authorizes the Secretary to make grants to any State, municipality, or intermunicipal, or interstate agency to aid in developing a project to demonstrate a new or improvde method of disposing of solid wastes. The maxiumum grant for a project can be two-thirds of the project cost. In the case of a municipality, there must be a law, regulation, or ordinance that prohibits open burning of solid wastes. The Secretary must also find that the project will continue to be operated and maintained after construction. The bill provides that not more than 12.5 percent of the amount appropriated under this title may be expended in any one State by this Department and HEW. We assume that this means 12.5 percent of the amount appropriated each fiscal year. If it does not, we recommend that this provision be clarified.

The bill provides that no part of the funds made available under this title involving any scientific research and development activity may be expended unless the expenditure is conditioned upon provisions which insure that all information, processes, patents, etc., will be made available to the public. Provision is also made for the enforcement of the patent provision by the Attorney General. There is an existing Presidential policy statement on patents which make these provisions undesirable.

The bill also adds a new provision to title I of the Clean Air Act which authorizes the Secretary of Health, Education, and Welfare to use 10 percent of the annual amount appropriated to carry out the solid waste disposal title for grants to State and interstate air pollution control agencies in the amount of two-thirds of the costs of making or arranging for surveys of solid waste disposal practices and problems within the scope of these agencies, and of developing solid waste disposal plans for such areas. We think this latter provision is desirable, but we believe it should be made a part of the solid waste title which be administered by both this Department and HEW.

The bill authorizes an annual appropriation of $20 million for fiscal years 1966 and 1967.

We believe that S. 306 fully carries out the objectives of President Johnson when he said in his natural beauty message that he recommends legislation to—

"Assist the States in developing comprehensive programs for some forms of solid waste disposal.

"Provide for research and demonstration projects leading to more effective methods for disposing of or salvaging solid wastes."

We strongly recommend its enactment with the amendments suggested by the administration.

The Bureau of the Budget has advised that there is no objection to the presentation of this report from the standpoint of the administration's program.

Sincerely yours,

STEWART L. UDALL,
Secretary of the Interior.

FEDERAL POWER COMMISSION REPORT ON H.R. 4001, 89TH CONGRESS

A bill "to amend the Clean Air Act to require standards for controlling the emission of pollutants from gasoline-powered or diesel-powered vehicles, to establish a Federal Air Pollution Control Laboratory, and for other purposes."

Public Law 88–206, known as the Clean Air Act, approved December 17, 1963 (77 Stat. 392), augmented and strengthened the Federal air pollution program by giving the Secretary of Health, Education, and Welfare specific abatement powers and establishing a program of financial assistance to State and local agencies for air pollution control work. Other provisions of the act directed the Secretary to develop and promulgate criteria of air quality and air pollution emission limitations and to conduct studies and investigations leading to the development of practical, low-cost methods of removing sulfur from fuels in order to reduce the amount of atmospheric sulfurous pollution caused by the burning of sulfur containing coal and oil.

Last year extensive hearings were held by the Senate Public Works Special Subcommittee on Air and Water Pollution with a view to formulating appropriate legislation to further implement the provisions of the newly enacted Clean Air Act. The amendments to section 3 of the Clean Air Act proposed in this bill are intended to implement the recommendations contained in the subcommittee report. "Steps Toward Clean Air," issued in October 1964. (See vol. 111, Congressional Record, Jan. 7, 1965, No. 4, pp. 283–285.)

Briefly, these amendments would authorize the Secretary of Health, Education and Welfare to establish a Federal Air Pollution Control Laboratory within the Department "to conduct such phases of the national research and development program for the prevention and control of air pollution as he deems appropriate." In addition, it authorizes the appointment by the Secretary of a technical committee composed of representatives of the Departments of Interior and Health, Education, and Welfare, the coal and petroleum industries, the electric power industry, and the Federal Power Commission to encourage "the development of improved low-cost techniques designed to reduce emissions of oxides of sulfur produced by the combustion of sulfur-containing fuels." The committee would evaluate progress in the development of pollution control techniques and recommend additional research programs. A major purpose of the bill is to encourage research relating to the direct control of hydrocarbon emissions resulting from the operation of automotive vehicles.

The Commission strongly supports the basic purposes and objectives of the bill insofar as it seeks to solve the sulfurous air pollution problem through research, and we believe that continued Federal efforts should facilitate and encourage the execution and coordination of research programs in that field. At the same time, however, we believe that consideration should be given to broadening the scope of the contemplated research programs along the lines discussed below to embrace a broader program for combating the overall problem of air pollution.

The focus of this Commission's interest, as far as air pollution is concerned, is of course primarily with respect to the pollution resulting from the operation of steam-electric generating plants. The Commission has no direct control under the Federal Power Act over the location of such plants, the nature of the fuel they burn, or the installations incorporated into such plants to minimize pollution caused by waste from combustion. Nevertheless, the Commission is, we believe, playing an important indirect role to improve this situation through the exercise of the responsibility contained in section 202(a) of the Federal Power Act directing the Commission to promote interconnection and coordination of electric utility systems for "the purpose of assuring an abundant supply of electric energy throughout the United States with the greatest possible economy and with regard to the proper utilization and conservation of natural resources."

Pursuant to this authority the Commission's recent National Power Survey Report, issued December 12, 1964, presents guidelines for development of the Nation's electric power industry, designed to encourage full regional and country-wide coordination of the Nation's 3,600 electric utilities and to help achieve savings in the cost of generation and transmission of electricity. The power survey emphasizes the importance of lowering power costs through fully coordinated networks, including cooperative planning and construction of larger and more efficient generating plants near fuel sources and outside metropolitan centers to feed electricity into extra-high-voltage regional grids.

The survey, which was conducted in cooperation with advisory committees drawn from all segments of the electric power industry, gives prominent recognition to the problems of air and water pollution and their significance in regard to the design, location, and operation of larger thermal electric plants. The report points up the possibilities for combating air pollution through greater interconnection of utility systems and emphasizes in particular the importance of careful plant site selection in minimizing the adverse economic and social effects of pollution. It also calls for more research to identify pollution damage limits and more information on methods and equipment to bring costs down. The survey reaches the significant conclusion that despite the effect on costs, the Nation's capacity to produce needed electrical energy will not be impaired by an adequate program of pollution control. See chapter 9, National Power Survey.

The electric power industry has been much concerned with the problem of air pollution control, and most present installations are equipped with high stacks and with devices that limit plant emissions of particulate matter. The most severe air pollution problems involving electric generating plants normally occur at stations within urban areas. If the industry pools its resources along the lines advocated in the National Power Survey, and it has done this in some instances already, it is reasonable to anticipate that the large generating plants of the future will be designed and located to serve overall network loads, and utilities serving metropolitan areas will be locating much of their new capacity beyond the metropolitan zones. Even absent an air pollution problem, utilities

serving large metropolitan areas will often be justified in constructing their large steam plants many miles from these congested areas. Moreover, new plants will be more efficient than the older ones now in operation and, since they will operate continuously to serve the system base loads, air pollution will be minimized. Thus, as a matter of economy, the existing plants, many of which are located in urban areas, will tend to be retired much earlier.

We do not wish to convey the impression that the construction of mine-mouth steam-electric generating stations will solve the air pollution problems, because there will be problems attendant to these installations. Pollution abatement facilities such as precombustion treatment of fuels, high stacks, dust collectors, and treatment of flue gases will be required, but the acceptable level of tolerance will be such that the control facilities can be provided at a more reasonable cost. While this is a proper concern of the industry, presently known processes for precombustion treatment of fuels are expensive and the matter may appropriately concern the projected Federal air pollution control research effort.

We also suggest that the committee, in addition to encouraging research with respect to atmospheric pollution arising from sulfur-containing fuels, may also want to encourage research with respect to controlling combination caused by the emission of nitrogen oxides and particulates from the combustion of various fuels.

Without implying any limit on the potential research areas, it is suggested that revolutionary advancements are possible in two areas which would seem to merit appropriate attention as a part of the Federal air pollution control research effort:

Rechargeabe batteries.—The development of a rechargeable battery for motor vehicles could overcome a major source of air pollution in our cities; yet, little real improvement in large power storage battery construction has been made in this century. Such development initially would permit converting the multitudes of motor vehicles used for short haul, stop-and-start activities in urban areas to battery-powered operation. Even this limited application would achieve major benefits in pollution abatement and noise control. The energy conversions in modern electric powerplants are far more efficient than those in internal combustion auto engines, so that the total pollutant potential would decrease, and the combustion refuse would be concentrated where it could be better controlled. The batteries would normally be charged during the night, when power system loads are at a minimum, thus further improving the efficiencies of the electric power system operations.

While the development of such batteries is likely to be difficult and expensive, it does not appear to be impossible. In fact, several industrial manufacturers are known to be working on the problem. The Edison Electric Institute is also supporting some research. However, the present scale of effort is not likely to result in rapid progress. Substantial Government support would not guarantee success, but the potential benefits are so great that it seems that serious consideration of a much enlarged research and development program would be waranted.

Electrified mass transportation.—Along the same lines, electrified rapid transit facilities would help to relieve air pollution as well as traffic congestion.

The Federal Power Commission is aware of the seriousness of air pollution problems, and recognizes that the electric power industry has major responsibilities in helping to solve these problems. The Commission stands ready to continue to cooperate with the Department of Health, Education, and Welfare and other interested groups and agencies in their continuing efforts to meet this major challenge of our industrialized society through strengthened research.

FEDERAL POWER COMMISSION,
JOSEPH C. SWIDLER, *Chairman.*

DEPARTMENT OF THE AIR FORCE,
OFFICE OF THE SECRETARY,
Washington, June 10, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives

DEAR MR. CHAIRMAN: Reference is made to your request to the Secretary of Defense for the views of the Department of Defense with respect to H.R. 7065, 89th Congress, a bill "To amend the Clean Air Act to require national standards

for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, to authorize grants to municipalities and air pollution control agencies for the acquisition, construction, or installation of devices or facilities designed to reduce or eliminate air pollution resulting from the disposal of solid wastes, to direct the Surgeon General to conduct a study of and report to Congress on the effect of air pollution from all sources on human health (particularly lung cancer), and for other purposes; and to amend the Internal Revenue Code of 1954 to permit deduction of expenditures and increased investment credit for the acquisition, construction, or installation of water and air pollution control devices" and H.R. 7394, 89th Congress, a bill "To amend the Clean Air Act to require national standards for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, to direct the Surgeon General to conduct a study of and report to Congress on the effect of air pollution from all sources on human health (particularly lung cancer), and for other purposes; and to amend the Internal Revenue Code of 1954 to permit deduction of expenditures and increased investment credit for the acquisition, construction, or installation of water and air pollution control devices." The Secretary of Defense has delegated to the Department of the Air Force the responsibility for expressing the views of the Department of Defense.

The bills are similar in their effect upon the Department of Defense. A related bill, S. 560, was the subject of congressional hearings in February 1965, at which time the views of the Department of Defense were elicited. Testimony of the Department of Defense spokesman appears at pages 137–146, of the hearings (Federal Installations, Facilities, and Equipment Pollution Control Act, hearings before a Special Subcommittee on Air and Water Pollution of the Committee on Public Works, U.S. Senate, February 23, 24, and 26, 1965). The views of the Department of Defense were considered by the Senate committee and, in the main, those views are reflected in the amended version of S. 560 as it passed the Senate on March 25, 1965. The Department of the Air Force, on behalf of the Department of Defense, recommends, in lieu of amendment of sections 6 and 7 of the Clean Air Act as proposed by H.R. 7065 and H.R. 7394, those sections be amended as proposed by the Senate-passed version of S. 560 with the modifications indicated below.

(*a*) With regard to the exemption for special-purpose vehicles (new sec. 6(c) as proposed by S. 560), the utilization by the Department of Defense and other agencies of heavy-duty track and wheeled vehicles presents a special problem. As now written, the amendment would not provide for the test of practicability or effects on operational capability as was envisioned in the Department of Defense position as presented in the hearings on S. 560. It is suggested that, on page 4, line 17 of S. 560 as passed by the Senate, the period be changed to a comma and the following be added: "taking into account the practicability of providing such air pollution control devices without degrading the operational capabilities or utilities of these special-purpose vehicles."

With regard to other provisions relating to limitations on air pollution emissions from motor vehicles, the Department of the Air Force, on behalf of the Department of Defense, defers to the position of the Department of Health, Education, and Welfare. As in the case of other standards and rules, the Department of Defense should be consulted insofar as the special interests of this Department are concerned.

(*b*) As pointed out in the Department of Defense testimony on S. 560, and equally applicable to H.R. 7065 and H.R. 7394, the development of Federal standards for Federal agencies would appear to obviate the need for the "permit" system contemplated by section 7(b) of the Clean Air Act. Recognizing, however, that there may be overriding legislative and administrative considerations which make continuation of the permit system necessary, it is considered essential that both the standards and the regulatory provisions relating to permits be developed by the Department of Health, Education, and Welfare in consultation with the Federal agencies affected. The rulemaking system under the Administrative Procedure Act does, to a certain extent, provide such an approach. It is the opinion of the Department of the Air Force, however, that due to the complicated technical and professional problems involved in pollution abatement, the Secretary of Health, Education, and Welfare or his designated representative should be required by legislation to coordinate and consult with the other departments on this subject. Accordingly, it is recommended that a new subsection (h) be added to title II of S. 560 as follows:

"(h) In developing Federal standards for Federal installations, determining

special classes of pollutants, and establishing regulatory procedures relating to permits, the Secretary shall consult with the Federal departments or agencies concerned and shall take into account the practicability of achieving the desired controls."

The Department of the Air Force is opposed to the establishment by statute of another technical committee (additional subec. 3(a)(7) of the Clean Air Act as proposed by H.R. 7065 and H.R. 7394) relating to research on jet aircraft, missiles, and fuels therefor. It is noted that this amendment would require the initiating, conducting, and accelerating of research programs. It assigns to the technical committee the task of carrying out research without providing the funds or facilities to do so. On the other hand, the desirability of liaison and consultation among the Department of Health, Education, and Welfare, Department of Defense, Federal Aviation Agency, National Aeronautics and Space Administration, Atomic Energy Commission, Commerce, and the affected industries, is concurred in. It is further recognized that dependence upon ad hoc liaison without some formalized arrangement is not a completely satisfactory procedure. It is therefore suggested that proposed subsection 3(a)(7) provide that the Secretary of Health, Education, and Welfare issue, in conjunction with other appropriate Secretaries and Administrators, a Federal policy establishing rules and procedures for consultation on research and control measures associated with the jet aircraft, missile, and fuel problem.

The need for study to determine the effects of air pollution from all sources on human health (as proposed in sec. 5 of H.R. 7065 and sec. 4 of H.R. 7394) is a matter within the primary cognizance of the Department of Health, Education, and Welfare. The desirability of such studies may more appropriately be commented upon by that Department. With regard to potential air pollutants associated with military activities, in the event such studies are undertaken either as a result of legislation or by the Public Health Service on its own initiative, professional and technical information and assistance will be made available, consistent with other requirements, by the Department of Defense.

With regard to the proposed tax treatment (sec. 8, H.R. 7065; sec. 7, H.R. 7394) of expenditures for acquisition, construction, or installation of water and air pollution control devices, the Department of Defense defers to the views of the Treasury Department. Such proposals could possibly resolve some of the current problems associated with Defense contractors. In the event these provisions are enacted into law, it is suggested that, in defining "devices" for tax treatment purposes, those items necessary for detecting and measuring pollution be included within the meaning of the term.

The following technical changes are recommended in H.R. 7065:

(*a*) Page 2, lines 5 to 7, should be changed to read:

"(1) by striking out the periods at the end of paragraph (4) of subsection (a) and paragraph (8) of subsection (b) and inserting in lieu of each '; and', and by striking out 'and' at the end of paragraph (7) of subsection (b);".

(*b*) On page 2, lines 10 and 20; page 3, lines 4 and 15; and page 4, line 7, the first letters in the first words should be lower case.

(*c*) On page 11, line 16, the present provisions of section 5, H.R. 7065, should be designated as subsection (a) and a subsection (b) inserted after line 14, page 12, as follows:

"(b) Subsection (a) of section 4 of such Act is amended by striking out 'section 9' and inserting in lieu thereof 'section 10' ".

(*d*) Page 16, line 2, "taxpayers's" should read "taxpayer's".

(*e*) Page 19, line 7, the reference to "section 18.3" should read "section 183".

The following technical change is recommended in H.R. 7394:

(*a*) Page 2, lines 1 to 3, should be changed to read:

"(1) by striking out the periods at the end of paragraph (4) of subsection (a) and paragraph (8) of subsection (b) and inserting in lieu of each '; and', and by striking out 'and' at the end of paragraph (7) of subsection (b);".

This report has been coordinated within the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Bureau of the Budget advises that, from the standpoint of the administration's program, there is no objection to the presentation of this report for the consideration of the committee.

Sincerely,

ROBERT H. CHARLES,
Assistant Secretary of the Air Force,
(Installations and Logistics).

GENERAL SERVICES ADMINISTRATION,
Washington, D.C., July 9, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Your letter of April 9, 1965, requested the views of the General Services Administration on H.R. 7065, 89th Congress, a bill to amend the Clean Air Act to require national standards for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, to authorize grants to municipalities and air pollution control agencies for the acquisition, construction, or installation of devices or facilities designed to reduce or eliminate air pollution resulting from the disposal of solid wastes, to direct the Surgeon General to conduct a study of and report to Congress on the effect of air pollution from all sources on human health (particularly lung cancer), and for other purposes; and to amend the Internal Revenue Code of 1954 to permit deduction of expenditures and increased investment credit for the acquisition, construction, or installation of water and air pollution control devices.

The purposes of the bill are stated in the title.

The President in his message to the Congress of February 8, 1965, on the subject of "Natural Beauty" stated, among other things, that the Administrator of General Services has already taken steps to assure that motor vehicles purchased by the Federal Government meet minimum standards of exhaust quality. Since that time the administration has indicated the recommendation of legislation along the lines of S. 306, which is applicable to all liquid fueled vehicles. In this connection, we are pleased to advise that GSA has developed a regulation, pursuant to Public Law 88–515, approved August 30, 1964 (78 Stat. 696), and section 206(a)(4) of the Federal Property and Administrative Services Act of 1949, as amended, which will establish a Federal standard covering motor vehicle exhaust emission on vehicles purchased by the Federal Government.

This standard was developed in full collaboration with industry and concerned Government agencies. It was published in the Federal Register on January 26, 1965 (30 Fed. Reg. 801), for comment by interested parties. The regulation is based on the "California Test Procedure and Criteria in Motor Vehicle Exhaust Emission Control" which is the only criteria known at this time. Further development of standards for exhaust emission control will probably be based on limits established by the Department of Health, Education, and Welfare.

The GSA standard will be effective September 28, 1966, for the purchase by the Federal Government of the 1967 model series of motor vehicles in accordance with the provisions of section 4 of the act of August 30, 1964.

Specifications developed by GSA for the purchase of automotive vehicles to be used by the Federal Government already have included a requirement that the engines be provided with positive crankcase ventilation systems. These systems route most crankcase emissions back into the combustion chambers of the engines, thereby substantially reducing the pollutants released by the crankcase. Further developments in this area will also probably be based on limits or requirements established by the Department of Health, Education, and Welfare.

We believe that GSA's program is consistent with the objectives of section 1 of H.R. 7065 as augmented by section 3 of the bill which prescribes specific limitations on allowable emissions of pollutants for gasoline-powered vehicles. As a practical matter, however, we believe that standards should be established administratively rather than by statute in order to permit flexibility to conform to future development of methods and devices for the control or elimination of air pollutants by motor vehicles.

Further, in view of the foregoing, we see no purpose to be accomplished by the enactment of the proposed section 6(e) of the Clean Air Act set forth on lines 11 through 20, page 8 of the bill, which would prohibit the purchase by the Government of gasoline-powered vehicles not equipped with devices to reduce or eliminate the discharge of air pollutants from such vehicles. In the event the committee favorably considers these provisions, however, we recommend that at line 12, page 8, the date "July 1, 1965," be amended to read "July 1, 1966."

Section 1 of the bill would also add a section 3(e) to the to the Clean Air Act to authorize the Secretary of Health, Education, and Welfare to appoint a technical committee consisting of representatives from DHEW, the Bureau of Mines of the Department of the Interior, the Federal Power Commission, and the coal,

petroleum, and electric power industries, for the purpose of encouraging the development of improved low-cost techniques designed to reduce emissions of oxides of sulfur produced by the combustion of sulfur-containing fuels. While GSA is in accord with such purpose, we question the desirability of the proliferation of technical committees established by statute which could produce undesirable rigidity in program approaches and result in the inefficient use of scarce technical personnel. However, if it is considered that the enactment of the proposed section 3(e) of the Clean Air Act is desirable and would affect GSA with respect to responsibilities concerning specifications, standards, and procurement of automotive equipment for use by the Federal Government, it is suggested that consideration be given to include a representative of GSA on the technical committee.

Although GSA would not be opposed to the enactment of H.R. 7065 if amended in accordance with the foregoing, we would prefer the enactment of S. 306 a similar bill which is also under consideration by your committee, and which would obviate the foregoing comments.

We do not anticipate that the enactment of the proposed legislation would affect the budgetary requirements of GSA.

The Bureau of the Budget has advised that, from the standpoint of the administration's program, there is no objection to the submission of this report to your committee.

Sincerely yours,

LAWSON B. KNOTT, Jr., *Administrator.*

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION,
OFFICE OF THE ADMINISTRATOR,
Washington, D.C., June 29, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives,
Washington, D.C.

DEAR MR. CHAIRMAN: This replies to your request for a report by the National Aeronautics and Space Administration on two bills, H.R. 7065 (Mr. Lindsay) and H.R. 7394 (Mr. McVicker), and responds to the committee notice of public hearings which have been held on proposed amendments to the Clean Air Act.

In effect there are now six bills on amending the Clean Air Act before NASA for comment. In addition to H.R. 7065 and H.R. 7394, the notice of hearings identified H.R. 7429 (Mr. Harris), H.R. 463 (Mr. Halpern), H.R. 4001 (Mr. Fallon), and S. 306.

Under the existing Clean Air Act, as amended (77 Stat. 392, 42 U.S.C. 1857), the Secretary of Health, Education, and Welfare is given broad authority to prevent and control air pollution, including the authority to encourage cooperative activities by State and local governments and by all Federal departments and agencies having functions relating to the prevention and control of air pollution; to establish a national research and development program; to make grants for the support of air pollution control programs; to provide for the abatement of air pollution by voluntary action or by court order; to encourage continued efforts by the automotive and fuel industries to develop devices and fuels to prevent pollution emanating from the exhaust of automotive vehicles and to report to Congress thereon; to establish classes of potential pollution sources for Federal installations and license their use; and to prescribe such regulations as are necessary to carry out his functions under the act.

The six bills, in general, would amend the Clean Air Act and are designed to accelerate the elimination or reduction of air pollution. The Secretary of HEW would be directed to accelerate research programs relating to gasoline-powered vehicles, diesel-powered vehicles, and jet aircraft and missiles and fuels used to power jet aircraft and missiles with a view toward reducing or eliminating pollutants emitted from those sources. With respect to jet aircraft and missiles and their fuels, the Secretary would appoint a technical committee to carry out the research composed of representatives from the Department of Health, Education, and Welfare, Department of Defense, Federal Aviation Agency, National Aeronautics and Space Administration, the Atomic Energy Commission, the Department of Commerce, the jet aircraft and missile industries, and affected fuel manufacturers. A Federal Air Pollution Control Laboratory would be estab-

lished within the Department of Health, Education, and Welfare to conduct research and development for the prevention and control of air pollution.

The current program for grants in support of air pollution control programs would be amended to authorize the Secretary to make grants to municipalities and air pollution control agencies for the acquisition, construction, or installation of devices or facilities designed to reduce or eliminate air pollution resulting from the disposal of solid wastes or from the generation of heat or power.

Section 6 (automotive vehicle exhaust and fuel pollution) of the Clean Air Act would be amended to include "standards for the allowable emissions of pollutants from gasoline-powered vehicles" and to include a requirement that within 1 year after enactment all new gasoline-powered vehicles be equipped with systems limiting air pollution within specified percentages. Provision would be made that no future appropriation shall be available for the purchase of any new gasoline-powered vehicle by the executive, legislative, or judicial branches of the Government unless such vehicle is equipped with a device to reduce or eliminate air pollution in accordance with the standards prescribed by the Secretary.

Section 7 (control of air pollution from Federal facilities) of the Clean Air Act would be amended to provide that the Secretary may establish classes of potential pollution sources for any Federal agency having jurisdiction over any building, installation, or other property, and to enter any such facility at reasonable times for the purpose of inspecting and investigating practices of discharging pollutants. Appropriations would be authorized for the procurement, installation, and operation of devices or other means to prevent or control air pollution from Federal facilities for which the Secretary has approved the plans and specifications. Some of the bills would provide that appropriations for those purposes be made to the Department of Health, Education, and Welfare and would be made available to the agency concerned pursuant to plans approved by the Secretary while other of the bills would authorize appropriations directly to the agencies. The Secretary would provide training in air pollution control and would make an annual report to Congress on the status and effectiveness of air pollution control actions by Federal agencies.

Some of the bills would provide for a study and report by the Surgeon General of the effect of air pollutants from all sources on human health (particularly lung cancer) and would amend the Internal Revenue Code of 1954 to permit the deduction of exepnditures and increase investment credit for the acquisition, construction, or installation of water and air pollution control devices.

The National Aeronautics and Space Administration supports the major purpose embodied in the proposed bills; i.e., the reduction or elimination of pollutants in the air.

In the field of Federal air pollution control, NASA has followed a program of prevention of air pollution and other hazards covering NASA personnel, equipment, and facilities as well as persons and property near NASA installations. We have cooperated with the Departments of Defense and Health, Education, and Welfare in exchange of information on potential hazards and effective measures for their control. It is believed that NASA activities have a relatively small effect on air pollution and that our program for the prevention of pollution and for safeguarding the public health is effective. This program has evolved from meticulous and day-to-day attention to a myriad of details that are interwoven in the special operations of NASA.

Enactment of those provisions of the proposed legislation which would make it necessary for NASA to obtain funds from HEW for the installation, maintenance, and operation of waste disposal and the placing of HEW in the position of determining design characteristics of facilities unique to NASA operations could seriously delay vital NASA programs and could appreciably add to their cost.

The provisions of the proposed legislation other than those pertaining to Federal installations would appear to be of primary concern to the Department of Health, Education, and Welfare, the General Services Administration, and the Department of the Treasury. National Aeronautics and Space Administration would defer to those agencies for comment on such provisions.

In addition to the foregoing the following comments may be made on the listed bills:

H.R. 7065, "To amend the Clean Air Act to require national standards for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, to autorize grants to municipalities and air pollution control agencies for the acquisition, construction, or installation of devices or facilities designed

to reduce or eliminate air pollution resulting from the disposal of solid wastes, to direct the Surgeon General to conduct a study of and report to Congress on the effect of air pollution from all sources on human health (particularly lung cancer), and for other purposes; and to amend the Internal Revenue Code of 1954 to permit deduction of expenditures and increased investment credit for the acquisition, construction, or installation of water and air pollution control devices.

H.R. 7394, "To amend the Clean Air Act to require national standards for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, to direct the Surgeon General to conduct a study of and report to Congress on the effect of air pollution from all sources on human health (particularly lung cancer), and for other purposes; and to amend the Internal Revenue Code of 1954 to permit deduction of expenditures and increased investment credit for the acquisition, construction, or installation of water and air pollution control devices."

H.R. 4001. "To amend the Clean Air Act to require standards for controlling the emission of pollutants from gasoline-powered or diesel-powered vehicles, to establish a Federal Air Pollution Control Laboratory, and for other puropses."

H.R. 7429, "To amend the Clean Air Act in order to provide for improved control of air pollution from Federal installations and facilities and automotive vehicles."

H.R. 463, "To authorize the Secretary of Health, Education, and Welfare to prescribe safe standards for the discharge of substances into the air by motor vehicles."

S. 306, "To amend the Clean Air Act to require standards for controlling the emission of pollutants from gasoline-powered or diesel-powered vehicles, to establish a Federal Air Pollution Control Laboratory, and for other purposes."

With respect to H.R. 7065 and H.R. 7394, it is suggested that the technical committee, as provided in section 1 on jet aircraft and missiles, is not needed and the provisions for it should be deleted.

It is recommended that the term "gasoline-powered vehicle" be defined in H.R. 7065, H.R. 7394, and H.R. 4001 in the manner in which the term "motor vehicle" is defined in H.R. 463. We would recommend the provisions of H.R. 7429 pertaining to Federal installations over those in H.R. 7065 and H.R. 7394. In this connection the provisions for the entrance to Federal buildings for the purpose of inspecting and investigating air pollution control practices should avoid intoning an unnecessary police-like activity. To preserve the existing cooperative effort of identifying and resolving problems it is suggested that the provisions could be cast as follows:

"The Secretary or his duly authorized representative is authorized to enter any building, installation, or other property at mutually agreeable times for the purpose of observing and evaluating practices of discharging pollutants.

As to the provisions of S. 306, NASA would defer to the Department of Health, Education, and Welfare.

The Bureau of the Budget has advised that, from the standpoint of the program of the President, there is no objection to the submission of this report to the Congress.

Sincerely yours,

THOMAS P. MURPHY,
(For Richard L. Colloghan,
Assistant Administrator
for Legislative Affairs.)

ATOMIC ENERGY COMMISSION,
Washington, D.C., July 7, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives

DEAR MR. HARRIS: This is in response to your request for the Commission's comments on H.R. 7065, a bill to amend the Clean Air Act.

The Commission recognizes the national concern with air pollution and the need for comprehensive control thereof, and fully supports the objective of controlling pollution which could endanger the health or welfare of persons.

The Commission, therefore, fully supports the objectives of H.R. 7065. However, certain sections of the bill as drafted are not clear in some respects and would, we believe, create some serious problems.

In summary, the bill, as we understand it, would require the setting of national standards for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, authorize grants to municipalities and air pollution control agencies to reduce or eliminate air pollution, direct the Surgeon General to conduct a study of the effect of air pollution on human health, amend the Internal Revenue Code of 1954 to permit certain deductions in connection with acquisition of air pollution control devices, and amend section 7 of the act relating to Federal agencies.

Section 4, paragraphs (b) and (c), which amend section 7 of the act, authorize the Secretary of the Department of Health, Education, and Welfare to establish classes of potential pollution for any Federal agency having jurisdiction over a building, installation, or other property; and to enter on such property and inspect and investigate practices of discharging pollutants. In addition, the bill would authorize appropriations to the Department of Health, Education, and Welfare to be made available to agencies for procurement, installation, maintenance, and operation of devices to prevent pollution, all in accordance with plans and specifications approved by the Secretary. We believe that such a provision is basically unsound. The agency responsible for carrying out a program should be solely responsible for budgeting for all aspects of the program. When certain aspects of an agency's program, particularly operation of a waste disposal system, are placed under the discretionary control of another agency, the resulting division of responsibility would only lead to inefficiencies and a less rapid improvement toward the desired objectives.

Under section 4(b) the Secretary could establish standards applicable to radioactive discharges. This function is now being performed by the Federal Radiation Council. The Federal Radiation Council is required by statute to advise the President with respect to radiation matters and to provide guidance to all Federal agencies in the formulation of radiation standards. In addition, the Atomic Energy Commission, in connection with its functions, is authorized to and has established standards in the area of control of radioactivity. The duplicative authority which H.R. 7065 would provide is therefore not necessary. We recommend that paragraphs (b) and (c) of section 4 be deleted. This deletion would then make unnecessary paragraph (d).

Section 1, amending section 3, paragraph (4), would add a subsection (c) authorizing the Secretary to appoint a technical committee, on which the Atomic Energy Commission would be a member, one of the purposes of which would be to conduct research programs relating to the feasibility of utilizing atomic power as a source of fuel and energy. The conduct of such research, insofar as atomic power is concerned, is presently a statutory function and mandate of the Commission under the Atomic Energy Act. As such, it appears inappropriate to include such a function in this committee. In any event, we recommend deletion of provisions for this and other statutory committees in the bill because of the desirability of flexible interagency arrangements.

H.R. 7394 includes provisions which are identical to those in H.R. 7065, referred to above, and these comments also apply to the identical provisions of H.R. 7394.

Throughout its history of operation, AEC has endeavored to cooperate with State, local, and regional health and pollution control authorities, as well as with the U.S. Public Health Service, so that all discharges of a pollutant nature not only comply with applicable standards but are kept as far below the maximum permissible levels as it is practical to do. Please be assured that we will continue to follow this policy.

The Bureau of the Budget has advised that there is no objection to the presentation of this report from the standpoint of the administration's program.

Sincerely yours,

JOHN V. VINCIGUERRA
(For General Manager).

FEDERAL AVIATION AGENCY,
OFFICE OF THE ADMINISTRATOR,
Washington, D.C., July 8, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in reply to your request for the views of this Agency on H.R. 7065, a bill to amend the Clean Air Act to require national standards for reducing or eliminating the emission of air pollutants from gasoline-pow-

ered vehicles, to authorize grants to municipalities and air pollution control agencies for the acquisition, construction, or installation of devices for facilities designed to reduce or eliminate air pollution resulting from the disposal of solid wastes, to direct the Surgeon General to conduct a study of and report to Congress on the effect of air pollution from all sources on human health (particularly lung cancer), and for other purposes; and to amend the Internal Revenue Code of 1954 to permit deduction of expenditures and increased investment credit for the acquisition, construction, or installation of water and air pollution control devices.

And H.R. 7394, a bill to amend the Clean Air Act to require national standards for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, to direct the Surgeon General to conduct a study of and report to Congress on the effect of air pollution from all sources on human health (particularly lung cancer), and for other purposes; and to amend the Internal Revenue Code of 1954 to permit deduction of expenditures and increased investment credit for the acquisition, construction, or installation of water and air pollution control devices.

Since the bills are identical insofar as the comments of this Agency are concerned, this report suffices for both bills.

Since the Department of Health, Education, and Welfare will have the primary responsibility for the administration of any pollution abatement program which is authorized by Congress, we defer to the views of that Department on the named bills.

However, we would like to make two recommendations. First, the proposed amendment to section 3 of the Clear Air Act that adds a new paragraph (5) (starting on line 10, p. 2) refers to research programs relating to "gasoline-powered vehicles." In conducting that research, the Secretary of Health, Education, and Welfare is to consult with a technical committee established under section 6 of the act. Since section 6 relates to automotive vehicle exhaust and fuel pollution, we assume that the new paragraph (5) was not intended to apply to airplanes. However, if such was the intent, we recommend that the committee established under section 6 include representation from the aviation community.

Second, the proposed paragraph (7) amendment to section 3 of the act (starting on line 4, p. 3) refers to "jet aircraft." We recommend that "turbine-powered aircraft" be used in place of "jet aircraft" to make it clear that turbopropeller driven aircraft are included in the research program. As to the need and desirability for the technical committee proposed in this section, we defer to the HEW report.

The Bureau of the Budget has advised that there is no objection from the standpoint of the administration's program to the submission of this report to your committeee.

Sincerely,

WILLIAM F. MCKEE, *Administrator.*

DEPARTMENT OF AGRICULTURE,
Washington, D.C., May 27, 1965.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives

DEAR MR. CHAIRMAN: We wish to thank you for your letter of April 9, 1965, giving us the opportunity to report on H.R. 7065. The bill is entitled to amend the Clean Air Act to require national standards for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, to authorize grants to municipalities and air pollution control agencies for the acquisition, construction, or installation of devices or facilities designed to reduce or eliminate air pollution resulting from the disposal of solid wastes, to direct the Surgeon General to conduct a study of and report to Congress on the effect of air pollution from all sources on human health (particularly lung cancer), and for other purposes; and to amend the Internal Revenue Code of 1954 to permit deduction of expenditures and increased investment credit for the acquisition, construction, or installation of water and air pollution control devices.

This Department makes no recommendation as to the enactment of H.R. 7065 as it does not affect any of our programs. We believe that the Department of Health, Education, and Welfare would be in a better position to give a more definitive recommendation on this bill.

The Bureau of the Budget advises that there is no objection to the submission of this report from the standpoint of the administration's program.

Sincerely yours,

ORVILLE L. FREEMAN.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., June 9, 1965.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. HARRIS: Your committee has requested our report on H.R. 7065, a bill "To amend the Clean Air Act to require national standards for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, to authorize grants to municipalities and air pollution control agencies for the acquisition, construction, or installation of devices or facilities designed to reduce or eliminate air pollution resulting from the disposal of solid wastes, to direct the Surgeon General to conduct a study of and report to Congress on the effect of air pollution from all sources on human health (particularly lung cancer), and for other purposes; and to amend the Internal Revenue Code of 1954 to permit deduction of expenditures and increased investment credit for the acquisition, construction, or installation of water and air pollution control devices," and on a similar bill H.R. 7394.

We recommend the enactment of S. 306 with the amendments suggested by the administration which carries out the President's objectives of providing greater efforts in the control of automobile exhaust emissions and in the disposal of solid wastes in lieu of these bills.

Section 1 of H.R. 7065 amends section 3 of the Clean Air Act, as amended (42 U.S.C. 1857b), in a number of ways.

First, it adds to subsection (a) of this section of the act three new paragraphs directing the Secretary of Health, Education, and Welfare to initiate, conduct, and accelerate research programs relating to air pollution and gasoline-powered vehicles, diesel-powered vehicles, and jet aircraft and missiles. Section 3(a) of the act now directs HEW to, among other things, "conduct, and promote the coordination and acceleration of, research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, and control of air pollution." We think that this authority is adequate.

Second, it directs the Secretary of Health, Education, and Welfare to establish within his Department a Federal Air Pollution Control Laboratory. We understand that the Department of Health, Education, and Welfare has recommended, in lieu of this provision, legislation which gives to that agency general authority to construct and equip facilities to carry out the purposes of the Clean Air Act. We concur in their recommendation.

Third, it directs the Secretary of Health, Education, and Welfare to appoint a technical committee composed of various industry and Federal representatives, including representatives of the Bureau of Mines of this Department, and to encourage the development of low-cost techniques related to sulfur-bearing fuels and to conduct research programs relating to the feasibility of increasing the use of natural gas, electric power, and atomic power as a source of fuel and energy. We think that adequate authority now exists for such a committee, if one is needed. We also think that the Secretary of the Interior should have flexibility in appointing representatives to such a committee and not be limited by statute to appointing only representatives from the Bureau of Mines. In addition, we are unaware of any need to establish a committee to conduct a research program which, if needed, can be accomplished far more effectively using the existing capabilities of this Department and other Federal agencies.

Fuel and energy sources are complexly related to the conservation of natural resources, and efforts to increase the use of one fuel in preference to another must be considered from more than an air pollution standpoint. Supplies of natural gas are limited and its conservation must be considered in any energy survey. It is difficult to see how research on the feasibility of increasing the use of electric power would solve air pollution problems. Electric power is primarily produced through the combustion of solid and liquid fuels.

Section 2 is primarily concerned with grants for reducing or eliminating air pollution resulting from the disposal of solid wastes, while section 3 relates

to the control of motor-vehicle exhaust emissions. We think that S. 306, which passed the Senate on May 18, 1965 provides the best approach to both of these problems.

Section 4 of the bill amends section 7 of the act. This section now provides for the establishment of classes of potential pollutants for which a Federal agency having jurisdiction over a Federal installation must get a permit before discharging any matter in the air. H.R. 7065, among other things, authorizes appropriations to the various Federal agencies to install devices to prevent the discharge of pollutants into the air. This section of the bill is similar to H.R. 7429 and title II of S. 560 which passed the Senate on March 25, 1965, and which is pending before the Committee on Public Works of the House of Representatives. While we think adequate authority exists to carry out the President's directives relating to this problem, the enactment of either H.R 7429 or S. 560 would be welcome as additional congressional support for the program.

Section 5 of the bill directs the Public Health Service to conduct a study to determine the effect of air pollutants on human health, including a study on the causal relationship between air pollution and lung cancer. We think that section 3(a) of the Clean Air Act now permits such a study.

Section 8 of the bill amends the Internal Revenue Code of 1954 to permit certain tax incentives for the acquisition, construction, or installation of water and air pollution control devices.

President Johnson, in his natural beauty message, said:

"I have directed the Chairman of the Council of Economic Advisers, with the appropriate departments to study the use of economic incentives as a technique to stimulate pollution prevention and abatement, and to recommend actions or legislation, if needed."

We think that consideration of legislation providing tax incentives in this area should await the conclusion of this study.

The Bureau of the Budget has advised that there is no objection to the presentation of this report from the standpoint of the administration's program.

Sincerely yours,

STEWART L. UDALL,
Secretary of the Interior.

THE GENERAL COUNSEL OF THE TREASURY,
Washington, D.C., June 18, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Reference is made to your requests for the views of this Department on H.R. 7065 and H.R. 7394, similar bills, amending the Clean Air Act.

The proposed legislation would (1) require the Secretary of Health, Education, and Welfare to prescribe national standards for reducing or eliminating the emission of air pollutants from gasoline-powdered vehicles; (2) authorize grants to municipalities and air pollution control agencies for the acquisition, construction, or installation of devices or facilities designed to reduce or eliminate air pollution resulting from disposal of solid wastes; (3) direct the Surgeon General to conduct a study and report to Congress on the effect of air pollution from all sources on human health; and (4) amend the Internal Revenue Code to permit deductions of expenditures and increased investment credit for the acquisition, construction, or installation of water and air pollution control devices.

Since the Department of Health, Education, and Welfare has the primary responsibility in this field, the Treasury defers to its views as to the need for and desirability of legislation treating with this subject matter.

The tax provisions of the bills (sections 8, 9, and 10 of H.R. 7065 and sections 7, 8, and 9 of H.R. 7394) are of particular interest to the Treasury. These provisions would permit a taxpayer to deduct expenditures for certified air or water pollution control devices in lieu of charging these expenditures to his capital account, and to claim an investment credit on devices, facilities, or equipment to control water or air pollution equal to twice the amount normally available. The President, in his message of February 8, 1965, on Natural

Beauty of Our Country, stated he had directed the Chairman of the Council of Economic Advisers, with the appropriate departments, to study the use of economic incentives as a technique to stimulate pollution prevention and abatement, and to recommend actions or legislation, if needed. In view of this, the Department recommends that consideration of the tax provisions of the bills be postponed until the Council of Economic Advisers has submitted its report.

Finally, the bills would impose cetain responsibilities on the Bureau of Customs of this Department in connection with importations of gasoline-powered vehicles. From this standpoint, the Department would recommend the enactment of S. 306 in lieu of provisions of H.R. 7065 and H.R. 7394 dealing with gasoline-powered vehicles. S. 306 as passed by the Senate and referred to your committee, would in general present no unusual administrative difficulties for this Department.

There is, however, one additional technical matter which the Department would like to have considered by your committee. S. 306 provides that motor vehicles not in conformance with established standards may be entered into the United States, under suitable bond, to be brought into conformity. The bond would be breached in cases of failure to conform, thereby making the importer liable to liquidated damages. However, the principal purpose of the bill is to keep nonconforming vehicles out of domestic commerce. Therefore, it is suggested that a provision be added to S. 306 to indicate what disposition should be made of motor vehicles which are not brought into conformity with the standards.

The Department has been advised by the Bureau of the Budget that there is no objection from the standpoint of the administration's program to the submission of this report to your committee.

Sincerely yours,

FRED B. SMITH,
Acting General Counsel.

FEDERAL POWER COMMISSION REPORT ON H.R. 7065 AND H.R. 7394, 89TH CONGRESS, JUNE 21, 1965

Bills to amend the Clean Air Act relative to research programs and establishment of pollution standards for gasoline and diesel-powered vehicles; and to amend the Internal Revenue Code of 1954 to permit deduction of expenditures and increased investment credit for water and air pollution control devices.

These bills, which are generally similar, would authorize the Surgeon General to prescribe national standards for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles and direct the Surgeon General to research problems of air pollution and solid-waste disposal. H.R. 7065 would also authorize a system of grants to municipalities and air pollution control agencies to finance the acquisition, construction, and installation of devices or facilities for these purposes. In addition to amending the Clean Air Act, the bills, as a means of providing tax incentives for adopting air and water pollution abatement measures, would amend the Internal Revenue Code of 1954 to permit the deduction of expenditures and increased investment credit for the acquisition, construction, or installation of water and air pollution control devices.

These bills include provisions for pollution research which are similar to those in H.R. 4001, 89th Congress, upon which we transmitted our report on June 4, 1965. We incorporate that report by reference herein, and supplement it with respect to the matters of water pollution control and tax incentives, which are not raised by H.R. 4001.

The Commission maintains a continuing interest in the solution or alleviation of air and thermal pollution problems associated with the design, location, and operation of large thermal electric plants, which entail significant temperature rises in the water of streams and the pollution of air from toxic powerplant effluents. These matters are discussed in chapter 9 of the Commission's National Power Survey Report, issued December 12, 1964.

I. WATER POLLUTION PROBLEMS

While we recognize that the basic remedy for water pollution is to treat the source of pollution before it enters the stream, we believe that the hydroelectric projects which the Commission has licensed under the comprehensive standards

of the Federal Power Act have enhanced the effectiveness of our rivers in disposing of wastes without excessive pollution. Many streams in their natural state have periods of extremely low flow during which they all but disappear. Storage reservoirs at hydroelectric projects usually regulate natural flows so as to supplement them during low-flow periods. Such stream-flow regulation increases the production of firm power and may also facilitate water quality control. Thus, a hydroelectric plant at a storage reservoir is generally most valuable as a peaking plant because hydroelectric generation can start and stop much more readily than steamplant generation. When so operated, maximum water discharges are made at times of peak power requirements. Optimum operation of the plant in the interest of power alone would probably dictate that no water be released during offpeak periods of power demands. However, such operation would not maximize the project's contribution to water quality control. Therefore Commission licenses sometimes provide for a reregulating reservoir to be constructed downstream from the powerplant. The reregulating reservoir accommodates daily or weekly peaking operations of the upstream powerplant by storing all or a part of the releases and then releasing the water from the lower reservoir at a uniform rate, thus preserving or improving water quality. In other cases the Commission prescribes minimum water releases from the storage reservoir. (Another method of harmonizing peaking power operations with water quality control is the ponding of wastes for release during periods of high-flow discharges for power.)

II. PROPOSED INTERNAL REVENUE CODE AMENDMENTS

The bills are designed to offer tax incentives to the installation, completed on or after January 1, 1964, of water or air pollution control devices. The proposed incentives would consist either of (a) additional investment tax credits, doubling the credit allowed by existing law, to the extent that the cost of the devices is capitalized for tax purposes and qualifies for the credit within the meaning of section 38 of the Internal Revenue Code; or (b) the privilege of treating the entire outlay as an ordinary business expense, deductible in the tax year of incurrence, with the deduction itself subject to carry back for up to 3 years or carry forward for as much as 5 years.

Without attempting a general evaluation of the employment of tax inducements for such purposes as encouraging installation of pollution control devices, there is plainly no purpose in offering tax inducements to the extent that the desirable actions will be taken by the taxpayer in any event. The proposals as applied to the electric utility industry present such a situation. The definition of air pollution control devices ("so much of any facility, machinery, or equipment, or any part thereof, used to reduce or eliminate air pollution") is so broad that it would seem to include the mechanical and electrostatic precipitators which are now standard equipment in the chimneys of new steam-electric generating plants and might even be construed to include the chimney stacks themselves. There is no point in offering tax incentives for the devices which will be installed in any event in new electric plants.

FEDERAL POWER COMMISSION,
By JOSEPH C. SWIDLER, *Chairman.*

DEPARTMENT OF AGRICULTURE,
Washington, D.C., May 27, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives

DEAR MR. CHAIRMAN: We wish to thank you for your letter of April 16, 1965, giving us the opportunity to report on H.R. 7394. The bill is entitled "To amend the Clean Air Act to require national standards for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, to direct the Surgeon General to conduct a study of and report to Congress on the effect of air pollution from all sources on human health (particularly lung cancer), and for other purposes; and to amend the Internal Revenue Code of 1954 to permit deduction of expenditures and increased investment credit for the acquisition, construction, or installation of water and air pollution control devices."

This Department makes no recommendation as to the enactment of H.R. 7394 as it does not affect any of our programs. We believe that the Department of

Health, Education, and Welfare would be in a better position to give a more definitive recommendation on this bill.

The Bureau of the Budget advises that there is no objection to the submission of this report from the standpoint of the administration's program.

Sincerely yours,

ORVILLE L. FREEMAN.

FEDERAL POWER COMMISSION,
Washington, D.C., June 10, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives,
Washington, D.C.

DEAR MR. CHAIRMAN: H.R. 7429, upon which your letter of May 24, 1965, requests us to make a report would amend the Clean Air Act to provide for improved control of air pollution from Federal installations and facilities and automotive vehicles.

The bill does not affect the responsibilities of the Federal Power Commission since we do not purchase motor vehicles or operate Federal buildings, installations, or other property within the purview of this legislation. Consequently, while we appreciate the opportunity extended, we have no comment to offer on the merits of the bill.

Sincerely,

DAVID S. BLACK, *Acting Chairman.*

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., June 9, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. HARRIS: Your committee has requested our report on H.R. 7429, a bill to amend the Clean Air Act in order to provide for improved control of air pollution from Federal installations and facilities and automotive vehicles.

H.R. 7429 amends sections 6 and 7 of the Clean Air Act (42 U.S.C. 1857e and 1857f). The provisions of this bill are identical to the provisions of title II of S. 560 which passed the Senate on March 25, 1965, and which is pending before the Comittee on Public Works of the House of Representatives. Title I of S. 560 also amends section 9 of the Federal Water Pollution Control Act, as amended (33 U.S.C. 466h).

H.R. 7429 amends section 6 of the Clean Air Act which relates to the encouragement of continued efforts by the automobile and fuel industries to find devices and fuels to prevent the pollution of the air from automotive exhaust emissions. The bill adds to this section of the act a provision which prohibits any Federal agency from purchasing any automotive vehicle after October 1, 1966, unless it is manufactured or equipped to prevent or reduce emissions from its exhaust in accordance with standards set by the Secretary of Health, Education, and Welfare. Special purpose vehicles may be exempt.

The bill also amends section 7 of the act. This section now provides for the establishment of classes of potential pollutants for which a Federal agency having jurisdiction over a Federal installation must get a permit before discharging any matter in the air. The bill, among other things, authorizes appropriations to the various Federal agencies to install devices to prevent the discharge of pollutants into the air and prohibit, after the effective date of the bill, the construction of any Federal property unless provision is made for adequate air pollution control measures.

President Johnson, in his recent message on natural beauty, said:

"I am directing the heads of all agencies to improve measures to abate pollution caused by direct agency operation, contracts, and cooperative agreements. Federal procurement practices must make sure that the Government equipment uses the most effective techniques for controlling pollution. The Administrator of General Services has already taken steps to assure that motor vehicles purchased by the Federal Government meet minimum standards of exhaust quality."

Although adequate authority exists to carry out the President's directives, the enactment of H.R. 7429 would be welcome as additional congressional support for the program.

The Bureau of the Budget has advised that there is no objection to the presentation of this report from the standpoint of the administration's program.

Sincerely yours,

STEWART UDALL,
Secretary of the Interior.

DEPARTMENT OF THE AIR FORCE,
OFFICE OF THE SECRETARY,
Washington, June 10, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives.

DEAR MR. CHAIRMAN: Reference is made to your request to the Secretary of Defense for the views of the Department of Defense with respect to H.R. 7429, 89th Congress, a bill to amend the Clean Air Act in order to provide for improved control of air pollution from Federal installations and facilities and automotive vehicles. The Secretary of Defense has delegated to the Department of the Air Force the responsibility for expressing the views of the Department of Defense.

H.R. 7429 is identical to title II of S. 560 as amended by the Senate Committee on Public Works and passed by the Senate on March 25, 1965. S. 560 was the subject of Senate committee hearings in February 1965, at which time the views of the Department of Defense were elicited. Testimony of the Department of Defense spokesman appears at pages 137–146 of the hearings (Federal Installations, Facilities, and Equipment Pollution Control Act, hearings before a Special Subcommittee on Air and Water Pollution of the Committee on Public Works, U.S. Senate, February 23, 24, and 26, 1965). The views of the Department of Defense were considered by the committee and, in the main, those views are reflected in S. 560 as passed by the Senate. H.R. 7429 would amend sections 6 and 7 of the Clean Air Act in the same way as would S. 560 as passed. The Department of the Air Force favors enactment of such legislation (as well as the additional provisions of S. 560), subject to the modifications indicated below.

(*a*) With regard to the exemption for special purpose vehicles (new section 6(c) of the Clean Air Act as proposed by H.R. 7429), the utilization by the Department of Defense and other agencies of heavy duty track and wheeled vehicles presents a special problem. H.R. 7429 would not provide for the test of practicability or effect on operational capability as was envisioned in the Department of Defense position as presented in the hearings on S. 560. It is suggested that, on page 2, line 2 of H.R. 7429, the period be changed to a comma and the following be added: "taking into account the practicability of providing such air pollution control devices without degrading the operational capabilities or utility of these special purpose vehicles."

(*b*) As pointed out in Department of Defense testimony on S. 560, and equally applicable to H.R. 7429, the development of Federal standards for Federal agencies would appear to obviate the need for the "permit" system contemplated by section 7(b) of the Clean Air Act. Recognizing, however, that there may be overriding legislative and administrative considerations which make continuation of the permit system necessary, it is considered essential that both the standards and the regulatory provisions relating to permits be developed by the Department of Health, Education, and Welfare in consultation with the Federal agencies affected. Therefore, it is the option of the Department of the Air Force that, due to the complicated technical and professional problems involved in pollution abatement, the Secretary of Health, Education, and Welfare be required by legislation to consult with the other Departments on this subject. Accordingly, it is recommended that a new subsection (h) be added to section 2(2) of H.R. 7429, as follows:

"(h) In developing Federal standards for Federal installations, determining special classes of pollutants, and establishing regulatory procedures relating to permits, the Secretary shall consult with the Federal departments or agencies concerned and shall take into account the practicability of achieveing the desired controls."

This report has been coordinated within the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Bureau of the Budget advises that, from the standpoint of the administration's program, there is no objection to the presentation of this report for the consideration of the committee.

Sincerely,

ROBERT H. CHARLES,
Assistant Secretary of the Air Force
(Installations and Logistics).

THE GENERAL COUNSEL OF THE TREASURY,
Washington, D.C., June 18, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Reference is made to your request for the views of this Department on H.R. 8007, "To prohibit the manufacture, sale or use in commerce of any motor vehicle which discharges substances into the air in amounts found by the Secretary of Health, Education, and Welfare to be dangerous to public health."

The proposed legislation directs the Secretary of Health, Education, and Welfare, after conducting the necessary research, to prescribe and publish in the Federal Register standards as to the amounts of substances which he considers to be safe, from the standpoint of human health, for a motor vehicle to discharge into the atmosphere. The act would apply only to motor vehicles manufactured after the effective date, which is 1 year after the date on which standards are first prescribed and published in the Federal Register. The manufacture, sale, or importation of motor vehicles not meeting the prescribed standards is made unlawful by subsection (a) of section 2 of the bill.

Since the Department of Health, Education, and Welfare has the primary responsibility in this field, the Treasury defers to its views as to the need for, and desirability of, legislation dealing with the subject matter. However, the bill would impose certain responsibilities on the Bureau of Customs of this Department in connection with importations of motor vehicles.

From the standpoint of Treasury interest, the Department would recommend the enactment of S. 306 in lieu of further consideration of H.R. 8007. S. 306, as passed by the Senate and referred to your committee, would in general present no unusual administrative difficulties for this Department.

There is, however, one additional technical matter which the Department would like to have considered by your committee. S. 306 provides that motor vehicles not in conformance with established standards may be entered into the United States, under suitable bond, to be brought into conformity. The bond would be breached in cases of failure to conform, thereby making the importer liable to liquidated damages. However, the principal purpose of the bill is to keep nonconforming vehicles out of domestic commerce. Therefore, it is suggested that a provision be added to S. 306 to indicate what disposition should be made of motor vehicles which are not brought into conformity with the standards.

The Department has been advised by the Bureau of the Budget that there is no objection from the standpoint of the administration's program to the submission of this report to your committee.

Sincerely yours,

FRED B. SMITH,
Acting General Counsel.

DEPARTMENT OF STATE,
Washington, D.C., June 9, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives

DEAR MR. CHAIRMAN: This report on H.R. 8007, a bill "To prohibit the manufacture, sale, or use in commerce of any motor vehicle which discharges substances into the air in amounts found by the Secretary of Health, Education, and Welfare to be dangerous to public health," is submitted in response to your request of May 12, 1965.

This bill would require that imported as well as domestically manufactured motor vehicles meet the standards prescribed by the Secretary of Health, Education, and Welfare. On the understanding that the same standards would apply to domestically produced and imported vehicles, this requirement would be consistent with the international obligations of the United States. Accordingly, the Department of State would have no objection to the enactment of this bill.

The Bureau of the Budget advises that from the standpoint of the administration's program there is no objection to the submission of this report.

Sincerely yours,

DOUGLAS MACARTHUR II,
Assistant Secretary for Congressional Relations
(For the Secretary of State).

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., June 9, 1965.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. HARRIS: Your committee has requested our report on H.R. 4001, a bill "To amend the Clean Air Act to require standards for controlling the emission of pollutants from gasoline-powered or diesel-powered vehicles, to establish a Federal Air Pollution Control Laboratory, and for other purposes," and a similar bill—S. 306 which passed the Senate on May 18, 1965.

President Johnson in his recent natural beauty message forcefully pointed out that pollution destroys the natural beauty, menaces the public health, reduces our efficiency and property values, and raises taxes. He pointed out the need for greater efforts in the control and prevention of air and water pollution, in the control of automobile exhaust emissions, and in the disposal of solid wastes. H.R. 4001 and the Senate-passed bill S. 306 are designed to aid in strengthening our efforts in these areas. We believe that S. 306 offers the best approach to the problems of automobile emission control and solid waste disposal. Other legislatiye efforts are now in progress to strengthen our efforts in the control and prevention of air and water pollution. We therefore recommend the enactment of S. 306 with amendments suggested by this Department and the Department of Health, Education, and Welfare.

S. 306 amends the Clean Air Act, as amended, by adding two new titles to the act.

The first title relates to the control of air pollution through the establishment of standards, requirements, or limitations applicable to exhaust emissions from new motor vehicles or new motor vehicle engines. These standards will be established by regulations which will be effective no later than September 1, 1967. After this date, the bill prohibits, among other things, the manufacture for distribution in commerce, for sale, or delivery for introduction into commerce, or the importation into the United States of any new motor vehicle or new motor vehicle engine that does not comply with these standards, unless exempted by the Secretary of Health, Education, and Welfare. The bill establishes penalties for any violation and provides for the inspection of these motor vehicles at the factory, warehouse, or other business house where the vehicles are stored or worked on pending sale or delivery to the consumer.

We believe that this new title in the Clean Air Act will aid in preventing the further pollution of the air from motor vehicle exhaust emissions. This Department has considerable experience through research in fuels used by automobiles and the constituents of automobile exhausts which contaminate the air. Some of this research has been conducted with funds made available to this Department pursuant to the present Clean Air Act. We think that the Secretary of Health, Education, and Welfare will be able to use our expertise in developing standards under this new title.

We note that the term "ultimate purchaser" is defined in section 209(e) on page 8 of the bill. This term is used in section 209(c) on page 7 of the bill. In section 207 on page 6 of the bill, however, the term "ultimate consumer" is used, but it is not defined. We suggest that the term "ultimate purchaser" should be substituted for the term "ultimate consumer" on page 6, line 12, of S. 306.

S. 306 also adds to the Clean Air Act a new title relating to the disposal of

solid wastes. The bill refers to this title as "title II." We think it should be renumbered as "title III."

This new title will be very important to this Department. It authorizes the Secretary of Health, Education, and Welfare and the Secretary of the Interior to carry out a program to meet the problems of solid waste disposal.

The disposal, control, and reclamation of waste products resulting from the extraction, processing, and utilization of mineral substances are important technologic and economic factors in the effective conservation of mineral resources as well as the economics of the mineral-based industries. The Department of the Interior, through the Bureau of Mines, has for many years approached the problem of minimizing waste mainly from the standpoint of conserving the resource. Specifically, we have sought instances where improved recovery systems would reduce mineral losses, and incidentally reduce the volume of the products finally discarded. We have concentrated our attention in those instances where improvements in recovery promised direct economic gains to the industry.

S. 306 will require the Federal Government, including this Department, to emphasize the effects of mineral industry-based wastes on the total environment and require that more attention be directed to instances where waste disposal practices might be improved for the dual purposes of conserving the resource and of conserving other resource values, including natural beauty.

S. 306 directs this Department to encourage, cooperate with, and give financial, technical, and other aid to public and private agencies and institutions, and individuals in the conduct of research, investigations, experiments, training, demonstrations, surveys, and studies relating to the operation and financing of solid waste disposal programs, the development and use of new and better methods of disposal, and the reduction of the amount of waste and unsalvageable waste materials. The Secretary is also authorized to carry out these activities directly. Thus, the bill enables this Department to carry out a comprehensive program designed to meet the problems of solid waste disposal resulting from the extraction, processing, or utilization of minerals or fossil fuels where such activities are or could be controlled within the operating or inactive facility or facilities, such as the plant, a coal mine (active or inactive), or strip mine (active or inactive).

In carrying out this program, we may publish the results of our research and other activities, cooperate with public or private groups in the preparation and conduct of research and other activities, make grants for research and training projects, and enter into contracts for such projects. Contracts will be made in accordance with title 10, United States Code, section 2353. The bill provides that not more than 25 percent of the amount appropriated to carry out this title in any one fiscal year may be obligated by this Department and the Secretary of Health, Education, and Welfare for such grants and contracts.

The bill also authorizes the Secretary to make grants to any State, municipality, or intermunicipal, or interstate agency to aid in developing a project to demonstrate a new or improved method of disposing of solid wastes. The maximum grant for a project can be two-thirds of the project cost. In the case of a municipality, there must be a law, regulation, or ordinaance that prohibits open burning of solid wastes. The Secretary must also find that the project will continue to be operated and maintained after construction. The bill provides that not more than 12.5 percent of the amount appropriated under this title may be expended in any one State by this Department and HEW. We assume that this means 12.5 percent of the amount appropriated each fiscal year. If it does not, we recommend that this provision be clarified.

The bill provides that no part of the funds made available under this title involving any scientific research and development activity may be expended unless the expenditure is conditioned upon provisions which insure that all information, processes, patents, etc., will be made available to the public. Provision is also made for the enforcement of the patent provision by the Attorney General. There is an existing Presidential policy statement on patents which may these provisions undesirable.

The bill also adds a new provision to title I of the Clean Air Act which authorizes the Secretary of Health, Education, and Welfare to use 10 percent of the annual amount appropriated to carry out the solid waste disposal title for grants to State and interstate air pollution control agencies in the amount of two-thirds of the costs of making or arranging for surveys of solid waste disposal

practices and problems within the scope of these agencies, and of developing solid waste disposal plans for such areas. We think this latter provision is desirable, but we believe it should be made a part of the solid waste title which will be administered by both this Department and HEW.

The bill authorizes an annual appropriation of $20 million for fiscal years 1966 and 1967.

We believe that S. 306 fully carries out the objectives of President Johnson when he said in his natural beauty message that he recommends legislation to—

"Assist the States in developing comprehensive programs for some forms of solid waste disposal.

"Provide for research and demonstration projects leading to more effective methods for disposing of or salvaging solid wastes."

We strongly recommend its enactment with the amendments suggested by the administration.

The Bureau of the Budget has advised that there is no objection to the presentation of this report from the standpoint of the administration's program.

Sincerely yours,

STEWART L. UDALL,
Secretary of the Interior.

U.S. DEPARTMENT OF LABOR,
OFFICE OF THE SECRETARY,
Washington, June 25, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in reply to your request for the views of the Department of Labor on S. 306 and H.R. 7065, bills to amend the Clean Air Act.

We note with approval that S. 306 contains adequate labor standards provisions applicable to federally financed construction. On the other hand, H.R. 7065 contains no labor standards. The amendments which that bill would make to section 4 of the Clean Air Act would provide grants to municipalities and air pollution control agencies for the acquisition, construction, and installation of devices or facilities designed to reduce or eliminate air pollution. We suggest that the same labor standards provisions be included in H.R. 7065 as are found in section 207 of S. 306.

With regard to other aspects of the bills, we would defer to other agencies more directly concerned.

The Bureau of the Budget advises that there is no objection to the submission of this report from the standpoint of the administration's program.

Sincerely,

W. WILLARD WIRTZ,
Secretary of Labor.

FEDERAL POWER COMMISSION,
Washington, D.C., June 10, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: S. 306, upon which your letter of May 24, 1965, requests us to make a report, would amend the Clean Air Act to require standards for controlling the emission of pollutants from gasoline-powered or diesel-powered vehicles, to authorize construction of a Federal Air Pollution Control Laboratory to contribute to the national air pollution research effort, and to enact the Solid Waste Disposal Act for the purpose of encouraging research and providing technical and financial assistance to solid waste disposal programs.

The Commission appreciates the seriousness of air and water pollution problems. Our report on H.R. 4001, 89th Congress, which is also before your committee, suggests specific areas for intensified research and discusses generally this Commission's interest in these problems. Please treat our report on H.R. 4001, which was transmitted to your committee June 4, as our report on S. 306.

Sincerely,

DAVID S. BLACK, *Acting Chairman.*

GENERAL SERVICES ADMINISTRATION,
Washington, D.C., July 9, 1965.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Your letter dated May 24, 1965, requested the views of the General Services Administration on S. 306, 89th Congress, an act to amend the Clean Air Act to require standards for controlling the emission of pollutants from gasoline-powered or diesel-powered vehicles, to establish a Federal Air Pollution Control Laboratory, and for other purposes.

Title I of the bill, relating to the control of air pollution from motor vehicles, would authorize the Secretary of Health, Education, and Welfare, among other things, to issue regulations, no later than September 1, 1967, prescribing standards, requirements, or limitations applicable to the emission of any kind of substance from any class or classes of new motor vehicles or new motor engines which contribute to or are likely to cause air pollution which endangers the health or welfare of any persons. The Secretary would also be authorized to develop standards for allowable emissions from diesel-powered vehicles manufactured and introduced into interstate commerce or imported into the United States.

The President in his message to the Congress of February 8, 1965, on the subject of "Natural Beauty" stated, among other things, that the Administrator of General Services has already taken steps to assure that motor vehicles purchased by the Federal Government meet minimum standards of exhaust quality. Since that time the administration has indicated its recommendation of legislation along the lines of S. 306. In this connection, we are pleased to advise that GSA has developed a regulation, pursuant to Public Law 88-515, approved August 30, 1964 (78 Stat. 696), and section 206(a)(4) of the Federal Property and Administrative Services Act of 1949, as amended (40 U.S.C. 487(a)), which will establish a Federal standard covering motor vehicle exhaust emission on vehicles purchased by the Federal Government.

This standard is being developed in full collaboration with industry and concerned Government agencies. It was published in the Federal Register on January 26, 1965 (30 Fed. Reg. 801), for comment by interested parties. The proposal is based on the "California Test Procedure and Criteria in Motor Vehicle Exhaust Emission Control" which is the only criteria known at this time. Further development of standards for exhaust emission control will probably be based on limits established by the Department of Health, Education, and Welfare.

The GSA standard will be effective as of September 28, 1966, for the purchase by the Federal Government of the 1967 model series of motor vehicles in accordance with the provisions of section 4 of the act of August 30, 1964.

Specifications developed by GSA for the purchase of automotive vehicles to be used by the Federal Government already have included a requirement that the engines be provided with positive crankcase ventilation systems. These systems route most crankcase emissions back into the combustion chambers of the engines, thereby substantially reducing the pollutants released by the crankcase. Further developments in this area will also probably be based on limits or requirements established by the Department of Health, Education, and Welfare.

In as much as S. 306 would result in the adoption of methods or devices for the elimination of air pollution by motor vehicles as standard equipment on all motor vehicles manufactured in or imported into the United States, GSA recommends the enactment of legislation along the lines of this bill.

We do not anticipate that the enactment of the proposed legislation would affect the budgetary requirements of GSA.

The Bureau of the Budget has advised that, from the standpoint of the administration's program, there is no objection to the submission of this report to your committtee.

Sincerely yours,

LAWSON B. KNOTT, Jr., *Administrator.*

The CHAIRMAN. H.R. 7429 was introduced by me as chairman of the committee. These bills would provide various procedures and programs for Federal air pollution control.

This question of air pollution has been one of great importance over a long period of time. We had in this committee a subcommittee chaired by our former colleague, Mr. Roberts of Alabama. He and the subcommittee gave a lot of time and attention to the problem in its various phases, and particularly with respect to the automobile industry. Consequently, we have a substantial record already made.

The purpose of these hearings now is to determine whether or not there should be further congressional action, and if so, what kind, and what the committee might be able to do in meeting the problems that we expect to be pointed up.

Some of our colleagues who are sponsors of bills have advised me of their interest to testify today or to submit statements for the record.

The first witness on the subject is our colleague, the Honorable Emilio Daddario. We do appreciate your interest, Mr. Daddario, and we are glad to welcome you here with us for this purpose.

STATEMENT OF HON. EMILIO Q. DADDARIO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CONNECTICUT

Mr. DADDARIO. Thank you, Mr. Chairman.

Mr. Chairman and members of the committee, the measures before you are very important—and their concept is one that I heartily support in all phases except for language added to the Senate bill dealing with patents. It is my hope that the committee will eliminate from S. 306, should it act on that bill, language such as that contained in section 204(c) on pages 16, 17, and 18.

In my judgment, this provision is both unnecessary and unwise. Merits of a similar provision were considered by this committee when it originally passed the Clean Air Act, and it was rejected. I applauded that decision, and I urge that it be made by this committee again. A Government-wide patent policy by statute is now under consideration by the Senate Subcommittee on Patents, Copyrights, and Trademarks, under the chairmanship of Senator John L. McClellan, of Arkansas, and it would be unwise to attempt to permit the substitution of a piecemeal approach to this difficult and complex problem to the considered approach being taken by the responsible committees.

The provision of S. 306 which I have identified was not contained in the version considered by the Senate Special Subcommittee on Air and Water Pollution of the Committee on Public Works in Washington and in Detroit in April of this year. It was not discussed adequately in the report (S. Rept. 192, 89th Cong.) which was filed with the Senate on May 14. It was brought in as a committee amendment when the bill was taken up by the Senate, but received no debate considering the complexities of the issue.

The provision has seen some similar action in other legislation in the Senate where the amendment was offered on the floor, where there was no debate, and where the amendment was accepted or approved by voice vote. This process is in defiance of orderly legislative procedure. It has been opposed in relation to specific pieces of legislation, and twice the House acted in the last Congress to strip such amendments of their effect. Within the past 2 weeks, the Senate defeated, by a vote

of 59 to 26 the effort to use this procedure once more to add such an amendment to the NASA authorization bill.

Mr. Chairman, I do not oppose this provision because my goals are different from the sponsors of the amendment. Indeed, they are undoubtedly similar—in essence, the protection of the American public and the improvement of the American economy. But I know from the comprehensive inquiry on space-age patents which our committee was forced to undertake over a period of more than 5 years that this provision will neither protect the public nor improve the economy. Quite the contrary, it is damaging to both.

It is not my intent to take your time today with a long recitation on the pros and cons of Government versus private ownership of inventions. That argument is highly complicated and is set out in great detail in lengthy hearings and reports of our own Subcommittee on Patents and Scientific Inventions, as well as the many studies made by the Patents and Trademark Subcommittee of the Senate Judiciary Committee. But I would like to describe the status and procedures of the matter so that the Members of the House may be aware of how much progress has been made and is being made and how detrimental such provisions as this one are to be objectives of the legislation before you. Indeed, Senator McClellan began hearings on June 2 to determine the best approach to a Government-wide patent policy, considering legislation which would eliminate all piecemeal approaches where they are now in the law. And wherever the executive agencies have been asked to comment on such provisions, the customary reply from almost all has been to oppose such approaches.

Prior to the Atomic Energy Act of 1945, no Federal department or agency was required by its organic act to handle rights to inventions growing out of its activities in any special way. This was left up to the agency, which could bargain for any patent right it wanted. As a matter of practice, it was found most expedient to secure for the Government a royalty-free, irrevocable license to use, make, or employ such inventions—either through the inventor-contractor of any other party chosen by the Government. Today, every entity of Government always secures this right. Usually this is all the Government wants, or can use. In such cases, title to the invention itself is left to the contractor—and he can patent it, if it is patentable, subject always to the Government's right to use it without charge.

Beginning with the creation of the AEC, and as a result of the 100 percent Federal funding of atomic research up to that time, the picture began to change. Security problems and the public equity required greater Federal rights than the usual ones. So Congress wrote in certain requirements for Government ownership of inventions arising out of AEC contracts. When the National Science Foundation was formed in 1950, Congress also put in a "patent clause" but merely directed the NSF to consider all the equities in deciding how to handle inventions arising from its grants. In 1958, the National Aeronautics and Space Act contained a clause somewhat similar to that of the Atomic Energy Act. Except in these three instances, no Federal agencies are under any organic act requirement to handle patents one way or the other—although a number of other laws directed to specific research, such as medical, agricultural or natural resource research and development, do

stipulate the manner of treating rights to federally sponsored inventions.

The patent provision of the NASA Act, which deals not with a limited field, such as atomic energy, but a very broad one, nor with a permissive patent policy such as allowed the National Science Foundation, has caused a great deal of difficulty and endless administrative problems with NASA's contractual relations. As a result, our committee held exhaustive hearings looking for reasonable and effective ways to amend the law. At the same time, the Senate Judiciary Patent Subcommittee has been looking at the same problems across the board for a number of years. Senator's Long's own Small Business Subcommittee has also looked at some phases of the matter. And right now, hearings are being held before the Senate Subcommittee on Antitrust and Monopoly, chaired by Senator Hart, with respect to technical innovation and its place in the economy.

Partly because of this congressional ferment and partly because of growing executive difficulties with a patchwork patent policy, President Kennedy, in October 1963, issued a formal memorandum and guidelines on Government patent policy. The new policy was scheduled to bring a beginning consistency and balance to Federal handling of property rights in inventions arising to some degree through Government contracts. The Kennedy order was not arrived at without wide discussion and advice. In general, it provides well-thought-out guidelines which the executive departments are to follow in determining the equitable disposition of property rights in inventions as between the Government and its contractors. Under it, both the public and private enterprise are protected.

The Kennedy order provided for its own review and regular reevaluation. The first of these has now been completed by the President's Patent Advisory Panel and was issued as an interpretive statement of the order in December 1964. President Johnson has thus endorsed the Kennedy order and designated it as the official guide on patent policy for all executive agencies.

Mr. Chairman, I would like to offer for inclusion in the record at this point a copy of the Presidential order on Government patent policy, together with its interpretive statement.

I am sure it is evident that the administration's balanced effort here is badly undercut by legislative provisions such as the patent amendment in this bill. The fact is that this provision is extremely rigid in its effect and is quite unfair in that it only looks on one side of the coin. Moreover, this amendment does not really prevent "giveaways" as is alleged, but to some extent promotes them, especially in the foreign market and at a time when we are seriously concerned about our balance of payments.

If there is one thing we have learned in our study of the matter, and with which the administration concurs and agrees upon, it is the necessity for flexibility in our patent approach. We must have this, not only in order to be equitable in our relations with industry, agriculture, and labor, but in order to acquire sufficient experience on which to base general patent legislation, if that becomes desirable. Senator McClellan has conducted studies for a number of years in this area, and he recognizes how complex a matter patent policy may be. We cannot be equitable and we cannot gain the necessary experience,

without administrative flexibility. The Senate amendment denies us that resource. It places all property rights in inventions connected with the pollution program in the public domain regardless of the fact that such inventions are freely available to the Government for public use anyhow. Its stipulation that no contractor shall be deprived of his "background rights" is virtually meaningless since there is no fixed definition of "background patents" and, in any case, the Government may find it desirable to allow contractors "foreground" rights in exchange for background privileges in order to make the invention worth while and secure other advantages for the Government in the public interest. Under the Senate amendment, this would not be possible in the field of air pollution research.

What else happens when flexibility is denied?

For one thing, the Government may have to deal with reluctant contractors who tend to compartmentalize their Government research and isolate it from their most promising commercial ideas. We know, for example, that in many instances private contractors will separate their research teams working on Government projects from their other researchers working strictly on commercial ones. This happens mainly because the contractors feel the need for legal protection of their most profitable investments. Hence they do not want to mix their private research talent with personnel working on Government projects. It goes without saying that when this happens, there is little cross-fertilization of ideas, and the Government may find itself receiving research results which have involved only part of a company's best efforts rather than all.

For another, we fail to take into account that different Federal agencies have different missions and must handle their contractors in different ways We need a single standard for guidelines, certainly, but a standard that permits enough flexibility to get the mission done. That is the most important matter.

Let me ask: What would happen if this provision were removed? The answer is that the President's policy would control and special care would be taken to see that the public is protected. Should the Congress enact general patent legislation, following thorough study and debate, that of course would be applied. In either case, full protection would be afforded to the national interest, which is what the provision seeks to accomplish.

Thank you, Mr. Chairman.

The CHAIRMAN. I might say that you may include with your statement a copy of the Presidential order on the Government patent policy. We would be happy to have that in the record.

Mr. DADDARIO. Thank you, Mr. Chairman.

(The material referred to is as follows:)

[For release Oct. 10, 1963, Office of the White House Press Secretary]

THE WHITE HOUSE

TEXT OF A MEMORANDUM FROM THE PRESIDENT ADDRESSED TO THE HEADS OF THE EXECUTIVE DEPARTMENTS AND AGENCIES ON GOVERNMENT PATENT POLICY WITH STATEMENT ATTACHED

Over the years, through Executive and legislative actions, a variety of practices has developed within the executive branch affecting the disposition of rights to inventions made under contracts with outside organizations. It is

not feasible to have complete uniformity of practice throughout the Government in view of the differing missions and statutory responsibilities of the several departments and agencies engaged in research and development. Nevertheless, there is need for greater consistency in agency practices in order to further the governmental and public interests in promoting the utilization of federally financed inventions and to avoid difficulties caused by different approaches by the agencies when dealing with the same class of organizations in comparable patent situations.

From the extensive and fruitful national discussions of Government patent practices, significant common ground has come into view. First, a single presumption of ownership does not provide a satisfactory basis for Government-wide policy on the allocation of rights to inventions. Another common ground of understanding is that the Government has a responsibility to foster the fullest exploitation of the inventions for the public benefit.

Attached for your guidance is a statement of Government patent policy, which I have approved, identifying common objectives and criteria and setting forth the minimum rights that Government agencies should acquire with regard to inventions made under their grants and contracts. This statement of policy seeks to protect the public interest by encouraging the Government to acquire the principal rights to inventions in situations where the nature of the work to be undertaken or the Government's past investment in the field of work favors full public access to resulting inventions. On the other hand, the policy recognizes that the public interest might also be served by according exclusive commercial rights to the contractor in situations where the contractor has an established nongovernmental commercial position and where there is greater likelihood that the invention would be worked and put into civilian use than would be the case if the invention were made more freely available.

Wherever the contractor retains more than a nonexclusive license, the policy would guard against failure to practice the invention by requiring that the contractor take effective steps within 3 years after the patent issues to bring the invention to the point of practical application or to make it available for licensing on reasonable terms. The Government would also have the right to insist on the granting of a license to others to the extent that the invention is required for public use by governmental regulations or to fulfill a health need, irrespective of the purpose of the contract.

The attached statement of policy will be reviewed after a reasonable period of trial in the light of the facts and experience accumulated. Accordingly, there should be continuing efforts to monitor, record, and evaluate the practices of the agencies pursuant to the policy guidelines.

(This memorandum and the statement of policy shall be published in the Federal Register.)

Statement of Government Patent Policy

BASIC CONSIDERATIONS

A. The Government expends large sums for the conduct of research and development which results in a considerable number of inventions and discoveries.

B. The inventions in scientific and technological fields resulting from work performed under Government contracts constitute a valuable national resource.

C. The use and practice of these inventions and discoveries should stimulate inventors, meet the needs of the Government, recognize the equities of the contractor, and serve the public interest.

D. The public interest in a dynamic and efficient economy requires that efforts be made to encourage the expeditious development and civilian use of these inventions. Both the need for incentives to draw forth private initiatives to this end, and the need to promote healthy competition in industry must be weighed in the disposition of patent rights under Government contracts. Where exclusive rights are acquired by the contractor, he remains subjects to the provisions of the antitrust laws.

E. The public interest is also served by sharing of benefits of Government-financed research and development with foreign countries to a degree consistent with our international programs and with the objectives of U.S. foreign policy.

F. There is growing importance attaching to the acquisition of foreign patent rights in furtherance of the interests of U.S. industry and the Government.

G. The prudent administration of Government research and development calls for a Government-wide policy on the disposition of inventions made under Gov-

ernment contracts reflecting common principles and objectives, to the extent consistent with the missions of the respective agencies. The policy must recognize the need for flexibility to accommodate special situations.

POLICY

SECTION 1. The following basic policy is established for all Government agencies with respect to inventions or discoveries made in the course of or under any contract of any Government agency, subject to specific statutes governing the disposition of patent rights of certain Government agencies.

(a) Where—

(1) a principal purpose of the contract is to create, develop or improve products, processes, or methods which are intended for commercial use (or which are otherwise intended to be made available for use) by the general public at home or abroad, or which will be required for such use by governmental regulations; or

(2) a principal purpose of the contract is for exploration into fields which directly concern the public health or public welfare; or

(3) the contract is in a field of science or technology in which there has been little significant experience outside of work funded by the Government, or where the Government has been the principal developer of the field, and the acquisition of exclusive rights at the time of contracting might confer on the contractor a preferred or dominant position; or

(4) the services of the contractor or—

(i) for the operation of a Government-owned research or production facility; or

(ii) for coordinating and directing the work of others,

the Government shall normally acquire or reserve the right to acquire the principal or exclusive rights throughout the world in and to any inventions made in the course of or under the contract. In exceptional circumstances the contractor may acquire greater rights than a nonexclusive license at the time of contracting, where the head of the department or agency certifies that such action will best serve the public interest. Greater rights may also be acquired by the contractor after the invention has been identified, where the invention when made in the course of or under the contract is not a primary object of the contract, provided the acquisition of such greater rights is consistent with the intent of this section 1(a) and is a necessary incentive to call forth private risk capital and expense to bring the invention to the point of practical application.

(b) In other situations, where the purpose of the contract is to build upon existing knowledge or technology to develop information, products, processes, or methods for use by the Government, and the work called for by the contract is in a field of technology in which the contractor has acquired technical competence (demonstrated by factors such as know-how, experience, and patent position) directly related to an area in which the contractor has an established nongovernmental commercial position, the contractor shall normally acquire the principal or exclusive rights throughout the world in and to any resulting inventions, subject to the Government acquiring at least an irrevocable nonexclusive royalty free license throughout the world for governmental purposes.

(c) Where the commercial interests of the contractor are not sufficiently established to be covered by the criteria specified in section 1(b), above, the determination of rights shall be made by the agency after the invention has been identified, in a manner deemed most likely to serve the public interest as expressed in this policy statement, taking particularly into account the intentions of the contractor to bring the invention to the point of commercial application and the guidelines of section 1(a) hereof: *Provided*, That the agency may prescribe by regulation special situations where the public interest in the availability of the inventions would best be served by permitting the contractor to acquire at the time of contracting greater rights than a nonexclusive license. In any case the Government shall acquire at least a nonexclusive royalty-free license throughout the world for governmental purposes.

(d) In the situations specified in sections 1(b) and 1(c), when two or more potential contractors are judged to have presented proposals of equivalent merit, willingness to grant the Government principal or exclusive rights in resulting inventions will be an additional factor in the evaluation of the proposals.

(e) Where the principal or exclusive (except as against the Government) rights in an invention remain in the contractor, he should agree to provide written reports at reasonable intervals, when requested by the Government, on

the commercial use that is being made or is intended to be made of inventions made under Government contracts.

(f) Where the principal or exclusive (except as against the Government) rights in an invention remain in the contractor, unless the contractor, his licensee, or his assignee has taken effective steps within 3 years after a patent issues on the invention to bring the invention to the point of practical application or has made the invention available for licensing royalty free or on terms that are reasonable in the circumstances, or can show cause why he should retain the principal or exclusive rights for a further period of time, the Government shall have the right to require the granting of a license to an applicant on a nonexclusive royalty free basis.

(g) Where the principal or exclusive (except as against the Government) rights to an invention are acquired by the contractor, the Government shall have the right to require the granting of a license to an applicant royalty free or on terms that are reasonable in the circumstances to the extent that the invention is required for public use by governmental regulations or as may be necessary to fulfill health needs, or for other public purposes stipulated in the contract.

(h) Where the Government may acquire the principal rights and does not elect to secure a patent in a foreign country, the contractor may file and retain the principal or exclusive foreign rights subject to retention by the Government of at least a royalty free license for governmental purposes and on behalf of any foreign government pursuant to any existing or future treaty or agreement with the United States.

SEC. 2. Government-owned patents shall be made available and the technological advances covered thereby brought into being in the shortest time possible through dedication or licensing and shall be listed in official Government publications or otherwise.

SEC. 3. The Federal Council for Science and Technology in consultation with the Department of Justice shall prepare at least annually a report concerning the effectiveness of this policy, including recommendations for revision or modification as necessary in light of the practices and determinations of the agencies in the disposition of patent rights under their contracts. A patent advisory panel is to be established under the Federal Council for Science and Technology to—

(a) develop by mutual consultation and coordination with the agencies common guidelines for the implementation of this policy, consistent with existing statutes, and to provide overall guidance as to disposition of inventions and patents in which the Government has any right or interest; and

(b) encourage the acquisition of data by Government agencies on the disposition of patent rights to inventions resulting from federally financed research and development and on the use and practice of such inventions, to serve as basis for policy review and development; and

(c) make recommendations for advancing the use and exploitation of Government-owned domestic and foreign patents.

SEC. 4. *Definitions.*—As used in this policy statement, the stated terms in singular and plural are defined as follows for the purposes hereof:

(a) "Government agency" includes any executive department, independent commission, board, office, agency, administration, authority, or other Government establishment of the executive branch of the Government of the United States of America.

(b) "Invention" or "Invention or discovery" includes any art, machine, manufacture, design, or composition of matter, or any new and useful improvement thereof, or any variety of plant, which is or may be patentable under the patent laws of the United States of America or any foreign country.

(c) "Contractor" means any individual, partnership, public or private corporation, association, institution, or other entity which is a party to the contract.

(d) "Contract" means any actual or proposed contract, agreement, grant, or other arrangement, or subcontract entered into with or for the benefit of the Government where a purpose of the contract is the conduct of experimental, developmental, or research work.

(e) "Made" when used in relation to any invention or discovery means the conception or first actual reduction to practice of such invention in the course of or under the contract.

(f) "Governmental purpose" means the right of the Government of the United States (including any agency thereof, State, or domestic municipal Government) to practice and have practiced (made or have made, used or have used, sold or have sold) throughout the world by or on behalf of the Government of the United States.

(g) "To the point of practical application" means to manufacture in the case of a composition or product, to practice in the case of a process, or to operate in the case of a machine and under such conditions as to establish that the invention is being worked and that its benefits are reasonably accessible to the public.

INTERPRETIVE STATEMENT ON THE PRESIDENT'S MEMORANDUM AND STATEMENT OF GOVERNMENT PATENT POLICY

(Issued by the Patent Advisory Panel of the Federal Council for Science and Technology, December 1964

On January 8, 1965, the Chairman of the Patent Advisory Panel forwarded the attached interpretive statement to the heads of the Federal departments and agencies which have research and development responsibilities. The covering letter contained the following statement:

"The memorandum and statement of Government patent policy issued by the President on October 10, 1963, promulgated a Government-wide policy with respect to rights to inventions resulting from Government-contracted research and development, and set forth basic principles to be followed by all Federal departments and agencies, except where otherwise provided by statute.

"It recognized that the detailed administration and implementation of the policy statement are the responsibilities of the individual departments and agencies. However, the Patent Advisory Panel, established by the policy statement, was called upon 'to develop, by mutual consultation and coordination with the agencies, common guidelines for the implementation of this policy.'

"In order to achieve more uniform interpretation and consistent application of the criteria set forth, the agencies which have research and development responsibilities reached general agreement on common guidelines for use in interpreting the policy statement. The enclosed interpretive statement reflects this agreement, and is forwarded for the guidance and assistance of your agency in the administration of the President's policy statement."

INTRODUCTION

The President's memorandum and statement of Government patent policy issued on October 10, 1963 (28 Federal Register 10942–10946, Oct. 12, 1963), promulgated a Government-wide patent policy to be followed by all Federal departments and agencies, except where otherwise provided by statute. The policy statement provided for the establishment of the Patent Advisory Panel under the Federal Council for Science and Technology for the purpose of (*a*) developing by mutual consultation and coordination with the agencies common guidelines for implementing the policy and providing overall guidance as to the disposition of invention and patent rights, (*b*) encouraging the acquisition of data for use in policy review and development, and (*c*) making recommendations on the use and exploitation of Government-owned domestic and foreign patents.

The Patent Advisory Panel and the subcommittees formed thereunder have been studying the President's memorandum and statement of Government patent policy and its effect on the patent policies of the various Federal departments and agencies. As a result of the panel's activities, it has become apparent that the agencies are experiencing difficulties in interpreting various key phrases and words within the policy statement. Therefore, in order to achieve greater consistency, the Patent Advisory Panel has developed the following interpretations for the guidance of the various departments and agencies.

Various subcommittees of the Patent Advisory Panel are presently considering the application of the President's policy statement to special types of contracting situations. Therefore, additional interpretive statements may be issued in the future as necessary to further interpret or provide guidelines for implementation of the policy statement.

GENERAL APPLICATION OF POLICY STATEMENT

Section 1(a) of the policy statement sets forth contracting situations where the Government normally shoud acquire or reserve the right to acquire principal or exclusive rights to inventions in the public interest. For contracting situations which do not fall within the criteria of section 1(a), section 1(b) defines

the conditions under which the contractor normally retains principal or exclusive rights. Contracting situations which do not fall under section 1(a), and do not meet the conditions of section 1(b), are handled in accordance with the provisions of section 1(c). Sections 1(a) and 1(b) deal with the allocation of patent rights at the time of contracting, whereas section 1(c) prescribes deferment of the patent rights allocation until after the invention has been identified.

PRINCIPAL OR EXCLUSIVE RIGHTS UNDER SECTION 1(a)

"* * * the Government shall normally acquire or reserve the right to acquire principal or exclusive rights throughout the world in and to any inventions made in the course of or under the contract."

Acquiring "principal or exclusive rights" by the Government will mean taking title to the inventions in question in most cases, but, where it appears to be desirable in the public interest, the intent of this phrase can be fulfilled by taking those attributes of ownership to the inventions which will assure the full availability of the inventions to the Government and will assure that the Government can control the inventions, domestically and abroad, subject to the rights reserved to the contractor.

EXCEPTIONAL CIRCUMSTANCES UNDER SECTION 1(a)

"* * * In exceptional circumstances the contractor may acquire greater rights than a nonexclusive license at the time of contracting, where the head of the department or agency certifies that such action will best serve the public interest."

This part of the policy statement recognizes that exceptional circumstances may exist, even though the contracts are of the type defined by subsections 1–4 of section 1(a). Examples of exceptional circumstances of the type contemplated by section 1(a) might be where the objectives of the research would appear to be materially advanced by leaving principal or exclusive rights to the contractor and the public interest is otherwise protected, or where the public interest will be advanced by leaving principal or exclusive rights to a nonprofit educational institution that agrees to administer inventions in a manner deemed by the agency to be consistent with the public interest.

Exceptional circumstances could also be found in regard to inventions identified at the time of contract, for example, when the contractor has established substantial equities at his own expense in the development of the invention.

GREATER RIGHTS UNDER SECTION 1(a)

"* * * Greater rights may also be acquired by the contractor after the invention has been identified, where the invention when made in the course of or under the contract is not a primary object of the contract, *provided* the acquisition of such greater rights is consistent with the intent of this section 1(a) and is a necessary incentive to call forth private risk capital and expense to bring the invention to the point of practical application."

The policy statement also allows greater rights to be given to the contractor after the invention has been identified where (1) the invention is in a technical field which is not directly related to a primary object of the contract, (2) the invention is not of the type intended to be covered by section 1(a), and (3) such rights are a necessary incentive to call forth private risk capital and expense to bring the invention to the point of practical application. Even where the invention is in a technical field which is directly related to a primary object of the contract, but is also susceptible of uses outside of that contemplated by the contract, greater rights could be left with the contractor for such uses provided that, with respect to such uses, the acquisition of greater rights is consistent with the intent of section 1(a) and is a necessary incentive to call forth private risk capital and expense to bring the invention to the point of practical application.

SUBSECTION 1(a)(1)

"* * * a principal purpose of the contract is to create, develop, or improve products, processes, or methods which are intended for commercial use (or which are otherwise intended to be made available for use) by the general public at home or abroad, or which will be required for such use by governmental regulations;"

This subsection is intended to cover those situations where a principal objective of the contract work is the development of knowledge, a product or process for use by the public. On the other hand, when the purpose of a contract is for the development of products or processes intended for military or other Federal Government uses, and not for use by the general public, the contract would not fall within this subsection even though some inventions developed under such contracts may have some incidental commercial uses.

Examples of situations falling within this subsection would be the development by the Government of improved fertilizers, material handling equipment for particular agricultural industries and civil defense equipment.

SUBSECTION 1(a)(2)

"* * * a principal purpose of the contract is for exploration into fields which directly concern the public health or public welfare;"

The principal difference between this subsection and subsection (1) is that this subsection covers contracts whose purpose is to conduct research in fields which directly concern the public health or welfare, and, therefore, it is immaterial whether or not the object to be achieved under the contract is intended for use by the public. Rather, the test is whether the field being explored under the contract is directly concerned with the public health or welfare, and contracts for the development of military items, as well as for civilian items, will be included as long as this test is met.

The phrase "public health or public welfare" is not intended to be so broadly interpreted as to include all research supported by the Federal Government. Health and welfare is intended to cover those fields which directly relate to man's continued existence, as distinguished from his comfort, and therefore would basically include (1) medicines, instruments, and processes for the treatment of disease, (2) those items necessary to his body, as air, water, and food, and (3) items of public safety, as opposed to items of a purely military or governmental nature. Examples in the public health field would be contracts for research on drugs, medical instruments or prosthetic devices. Examples in the public welfare category would include water desalting, air safety, and weather modification and control.

SUBSECTION 1(a)(3)

"* * * the contract is in a field of science or technology in which there has been little significant experience outside of work funded by the Government, or where the Government has been the principal developer of the field, and the acquisition of exclusive rights at the time of contracting might confer on the contractor a preferred or dominant position;"

The application of this subsection requires that two criteria be met: that the contract be in a field of science or technology which has been principally funded or developed by the Government; and that the acquisition of exclusive rights at the time of contracting might confer on the contractor a preferred or dominant position. The intent of this subsection is to guard against the possibility of a contractor being placed in a preferred or dominant position through patents in a scientific or technological field when the same has been wholly or largely developed by the Government. The prime example of the type of situation which was intended to be covered by this subsection was the field of atomic energy. This field was virtually unexplored when the Government took over the entire research and development effort, and for reasons of security and the large scale development costs involved, the basic research and development work was contracted to but a relatively few contractors. To have allowed any company to obtain a dominant position in such a field of science which was almost totally Government supported would have inequitably placed that company in a position of patent dominance in the field of atomic energy merely because of Government contracts.

The scope and application of this subsection will largely depend upon the interpretation of the phrase "field of science or technology," and, therefore, it is important that this phrase be properly construed. If a very narrow construction is given, the approximate scope of the contract work description would constitute the "field of science or technology." Such an interpretation would result in the Government taking principal or exclusive rights in substantially all cases, and would be inconsistent with the intent of the policy statement.

Conversely, the phrase should not be construed in a manner that would place the contractor in a preferred or dominant position in a field of science or technology created at public expense, such as atomic energy.

It should be kept in mind that this subsection deals with the field of science or technology involved in the research and development work to be performed under the contract, and not with the end product of the contract or with the system in which the end product may be incorporated. Accordingly, this subsection would not be applied merely because the contract called for the development of or improvement in military-oriented armaments or systems which have been principally or solely developed by the Government, as missile systems, military aircraft and vessels, or subcomponents thereof, unless the scientific or technological fields on which the research or development is based is of the character defined by this subsection.

The field of science or technology must be one in which "there has been little significant experience outside of work funded by the Government, or where the Government has been the principal developer of the field." This phrase is meant to define those fields of science or technology which, at the time of the contract, have been solely or principally developed by the Government, or which, being new, are without significant commercial or private history. It is, of course, the field of science or technology, as defined above, that must meet this test, and not merely the small portion thereof which may be covered by the work to be performed under the contract.

Because of the difficulties in identifying fields falling within this subsection and because the situation in a field may change, it is recommended that the agencies not leave the determination of such fields to the individual contracting officers, but identify, at the agency level, those fields or areas which should be considered as meeting the criteria of this subsection.

SUBSECTION 1(a)(4)

"* * * the services of the contractor are—

(i) for the operation of a Government-owned research or production facility; or

(ii) for coordinating and directing the work of others. * * *"

This subsection is intended to cover situations where the contractor has little or no equity in inventions, or where retention of principal or exclusive rights would be inconsistent with his responsibility under the contract.

The first situation is where the Government owns research and development facilities, and the contractor is retained to manage and operate such facilities for the Government. This subsection is not intended to include within its scope any contract which incidentally includes the use of some Government-owned materials, facilities, equipment or the like.

The second situation is where the contractor's efforts in the research and development work is in directing and coordinating the work of others. This does not refer to the usual contractor-subcontractor relationship, but refers instead to that type of contract where an organizational conflict of interest might result. An example would be where the contractor is to provide primarily systems engineering and technical direction services in a systems contract, which involves the determination of specifications and the preparation of work statements for other contractors, and where the contractor is to perform little or no research and development work himself but has access to the work of other contractors which he coordinates.

Even though a prime contractor falls within this subsection, this would not prevent a subcontractor from obtaining greater rights where the subcontractor otherwise qualifies under this policy.

SECTION 1(b)

"In other situations, where the purpose of the contract is to build upon existing knowledge or technology to develop information, products, processes, or methods for use by the Government, and the work called for by the contract is in a field of technology in which the contractor has acquired technical competence (demonstrated by factors such as know-how, experience, and patent position) directly related to an area in which the contractor has an established nongovernmental commercial position, the contractor shall normally acquire the principal or exclusive rights throughout the world in and to any resulting

inventions, subject to the Government acquiring at least an irrevocable nonexclusive royalty-free license throughout the world for governmental purposes."

This section is intended to cover situations other than those falling within section 1(a), where the purpose of the contract is to build upon existing knowledge and technology and develop items for use by the Government, and not to develop items for use by the general public as covered in subsection 1(a) (1). This section should be used where the contract meets the criteria above, and where the contractor has technical competence (demonstrated by factors such as know-how, experience, and patent position) in the field of technology covering the work called for by the contract, and has an established nongovernmental commercial position in an area of his business which is directly related to the same field of technology.

The criterion governing the relationship between an area of the contractor's business in which he has a nongovernmental commercial position and the field of technology covering the work called for by the contract is satisfied where (1) the contractor has a commercial business of selling goods or services in the domestic or foreign markets, outside of sales to the U.S. Government, (2) this business is based upon the same knowledge, technology, and scientific principles involved in the field of technology covering the work called for by the contract, and (3) it appears that the contractor's nongovernmental commercial position and business outlets would be directly applicable in the commercial exploitation of the inventions which are likely to result from performance of the contract work.

Where the contractor is a division of a corporation, the criteria of this section may be met even where the division works solely on Government business as long as other divisions of the corporation have nongovernmental commercial (or industrial) positions in the same field of technology. This is to achieve the fullest possible crossflow of commercial background knowledge and know-how from all segments of the corporation to the Government's research problem.

As an illustration, in a contract for the development of an improved nitrogen propellant, this section would be applicable where the contractor had a nongovernmental commercial position in the manufacture and sale of nitrogen chemical compounds, even though he has not previously manufactured and sold propellants. On the other hand, if this contractor's business in the chemical field is solely in the research, development, manufacture, and sale to the Government, then this section would not be applicable even though the contractor may have a nongovernmental commercial position in a nonrelated area, as in the manufacture and sale of commercial machinery. In the first illustration, it is very likely that a company in the business of manufacturing and selling nitrogen chemical compounds could commercially exploit, through his same sales outlets, inventions likely to result from a research and development contract involving propellants. It does not necessarily follow, however, that the contractor of the second illustration could use his commercial outlets for the sale of machinery to exploit inventions in the nitrogen chemistry subdivision of the chemical field.

SECTION 1(c)

"Where the commercial interests of the contractor are not sufficiently established to be covered by the criteria specified in section 1(b), above, the determination of rights shall be made by the agency after the invention has been identified, in a manner deemed most likely to serve the public interest as expressed in this policy statement, taking particularly into account the intentions of the contractor to bring the invention to the point of commercial application and the guidelines of section 1(a) hereof, *provided* that the agency may prescribe by regulation special situations where the public interest in the availability of the inventions would best be served by permitting the contractor to acquire at the time of contracting greater rights than a nonexclusive license. In any case the Government shall acquire at least a nonexclusive royalty-free license throughout the world for governmental purposes."

Where the situations do not fall within section 1(a) or 1(b), section 1(c) stipulates that the disposition of rights normally be made after the invention has been identified.

The guidance given in section 1(c) is that the disposition be made using the policy statement's concept of serving the public interest, and particularly taking into account the guidelines of section 1(a) and the contractor's intentions of bringing the invention to the point of commercial application (meaning

to the point of practical application as defined in sec. 4(g). Even though the contract is not of the type defined in section 1(a), the invention, after it is identified, may be of the type which section 1(a) is attempting to reserve for unrestricted public access, and, in this case, principal or exclusive rights should be acquired by the Government.

On the other hand, where the invention is not the type intended to be covered by section 1(a), and even though the requirements of section 1(b) are not met, the contractor may be given principal or exclusive rights in certain circumstances after the invention has been identified. For example, a contractor could be given principal or exclusive rights where he has a past history of promoting the utilization of inventions through his own commercial use or by means of an active licensing program, or where he has a definite plan for bringing the particular invention to the point of practical application.

Section 1(c) also permits the granting of greater rights to the contractors in inventions resulting from 1(c) types of contracts at the time of contract in special situations prescribed by agency regulations where the public interest in the availability of the inventions would be best served thereby. An example might be where a nonprofit educational institution, which obviously does not have a nongovernmental commercial position, has a reasonable program for promoting the utilization of inventions consistent with the policy. This provision also could be used to stimulate commercial competition by encouraging Government-oriented contractors to direct their efforts toward commercial markets rather than depending solely upon Government business. Special situations may also be found in regard to a particular invention identified at the time of contract where the contractor has established substantial equities at his own expense in the development of the invention.

SECTION 1(h)

"Where the Government may acquire the principal rights and does not elect to secure a patent in a foreign country, the contractor may file and retain the principal or exclusive foreign rights subject to retention by the Government of at least a royalty-free license for governmental purposes and on behalf of any foreign government pursuant to any existing or future treaty or agreement with the United States."

Question has arisen as to the scope of application of this section, since the phrase "Where the Government may acquire the principal rights * * *" seems to apply to situations where the Government has acquired principal or exclusive rights, as well as to situations where the Government had the right to acquire such rights but elected not to do so (for example, under sec. 1(a) or 1(c) where the contractor is given greater rights after identification of the invention). As sections 1(b) and 1(c) set for the license rights that the Government should acquire where the contractor retains principal or exclusive rights, section 1(h) should be interpreted as applying only where the Government actually does acquire principal or exclusive rights under any section but does not elect to secure a patent in particular foreign countries.

SECTION 4(d)

"Contract—means any actual or proposed contract, agreement, grant, or other arrangement, or subcontract entered into with or for the benefit of the Government where the purpose of the contract is the conduct of experimental, developmental, or research work."

The word "contract" is defined to include any "proposed contract," and the question has been raised as to the point in time at which a proposed contract or other arrangement would constitute a contract within the meaning of this definition. It would seem logical, however, that the interpretation be placed on the concept of obtaining rights under a "proposed contract" when there is an understanding between the parties that a contract would be awarded.

SECTION 4(f)

"Governmental purpose—means the right of the Government of the United States (including any agency thereof, State, or domestic municipal government) to practice and have practiced (made or have made, used or have used, sold or have sold) throughout the world by or on behalf of the Government of the United States."

The definition of "governmental purpose" has been interpreted by some as covering a State or municipal government performing a State or municipal function, and by others as covering a State or municipal government only while performing a Federal function. As Federal agencies may finance research and development programs which have as one purpose the assisting of State or municipal governments, it would seem that the full purpose of obtaining a license "for governmental purposes" in these cases could only be achieved by interpreting the license as extending to State and local governments performing not only Federal functions, but also purely State and municipal functions. However, because agencies obtain invention rights under authorities and circumstances other than the President's memorandum and policy statement, and these rights frequently extend only to the Federal Government, it is recommended that when it is intended that the Government's rights extend to State and municipal governments, this should be expressly stated.

The CHAIRMAN. Which bill was it on the floor of the House not too long ago which had this amendment in it?

Mr. DADDARIO. We had the water resources bill last year where the amendment was stricken out in the House, and then added in conference.

In the mass transit bill last year, it was stricken out. And the bill which passed did not include it.

There has been a variation of activity in this regard, Mr. Chairman.

The CHAIRMAN. Was there not a bill this year on the floor of the House where you tried to strike out this amendment and the House failed to do it?

Mr. DADDARIO. That was in the Appalachian bill.

The CHAIRMAN. I knew there was one, but I had forgotten which.

Mr. DADDARIO. That was a bill in which there were no amendments at all added, as you recall.

The CHAIRMAN. Thank you very much. We will give very careful attention and consideration to this matter at the appropriate time.

Mr. DADDARIO. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Green?

Mr. Green, we are glad to have you and to have your bill, H.R. 8398.

STATEMENT OF HON. WILLIAM J. GREEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF PENNSYLVANIA

Mr. GREEN. Thank you, Mr. Chairman, and members of the committee.

I am grateful to have this opportunity to say a few words in behalf of the air pollution control legislation in general.

My written statement, which with your permission, I submit for the record, summarizes the mounting dangers of air pollution which face our Nation as a whole. No doubt this committee is aware of the facts and figures relating to the great damages to health and property which the pollution of our air has already caused as well as the damages that are projected in the near future, so I won't burden you with a recap of those statistics.

I would prefer briefly to state a few facts concerning the problems which air pollution poses to Philadelphia in particular, for I believe in many ways my city is the victim of many of the same problems this subcommittee will uncover while hearing testimony from many cities throughout the country.

Philadelphia's city government has already expended great efforts in an attempt to stave off the perils of air pollution. The city has attacked pollution at both of its major sources, motor vehicles and solid waste disposal. But after small successes, my city has had to face the fact that it does not have the resources or the broad enforcement powers needed to effectively eliminate air pollution as a threat to the well-being of our citizens.

In the field of automotive air pollution, a Public Health Service air monitoring station located in Philadelphia has indicated that the levels of photochemical smog have passed the point where people's eyes were irritated more often and with increasing frequency each year. Last year, there were 17 days when the smog content of the city's air was above this level at which the eyes of the citizens of Philadelphia became seriously irritated.

At present, a quarter of the city's air pollutants come from automotive engines. The Public Health Service predicts that by 1975 half of the city's pollution problem will come from vehicles. Philadelphia now has more than 534,000 cars, and by 1975 it is estimated that the number will reach 845,000.

My city attempts to control air pollution through the air pollution code in our city charter, and through regulations adopted by the air pollution control division of our city health department. One of these regulations prohibits operating any vehicle which emits visible smoke constituting a nuisance after it has traveled 100 yards from its starting point. Enforcement of such legislation is difficult for obvious reasons of manpower and the difficulty of observation. So far the city has sent letters of warning to all such offenders. But smoking cars, while they are a problem, constitute only 5 percent of Philadelphia's cars. And the bulk of the automotive air pollution problems, of course, stems from the other 95 percent.

Considering the limited and hard-pressed resources of a city government, it is difficult to see how more sweeping antipollution measures could be effected in the field of motor vehicles. I do not believe that statewide legislation such as that passed in California would prove sufficiently helpful in my city. A large portion of the cars which daily pass through Philadelphia are registered in New Jersey and Delaware, and as such would be exempt from any statewide legislation that we could pass.

Furthermore, I am opposed to patchwork local legislation which I should think would tremendously compound the problems of both the manufacturers and distributors of the automotive industry.

As to the city's problem in the field of solid waste disposal, Philadelphia, of course, has strict regulations prohibiting the open burning of solid waste. But this in no way stops the surrounding communities in three States from filling the air over our city with pollutants sent up by their open-air burning. Few of the surrounding communities have incinerators, and those incinerators in operation are generally inadequate.

I believe that the Philadelphia city government has done an admirable job in legislating against air pollution, and enforcing its legislation to curb pollution from both of its major sources. But I also believe that the task as shown by the example of Philadelphia is too great and too complex for a municipal or a State government to handle alone.

I believe, therefore, that in many respects the pollution situation in Philadelphia—which is by no means as acute as in many other cities—mirrors the situation in many sections of our own country. I hope its example, which I have briefly tried to outline today, may be of some help to this subcommittee in determining the need of the Nation as a whole for Federal legislation to control pollution through enactment of such a bill as any one of the bills that has been introduced by many Congressmen and Senators. I firmly believe that such legislation is necessary, and in fact, urgently needed, to reverse an alarming trend in our country which can lead to more serious damage to health and property than it has already caused.

I wish to thank this committee very much for giving me the opportunity to testify today.

The CHAIRMAN. I will say to my colleague that your entire statement will be included in the record.

Mr. GREEN. Thank you, Mr. Chairman.

(The complete statement of Mr. Green is as follows:)

STATEMENT OF HON. WILLIAM J. GREEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF PENNSYLVANIA

Chairman Harris and members of the subcommittee, it is a great pleasure for me to appear before you today in support of the legislation which you are considering. You have before you a number of bills relating to a problem in which I am profoundly interested: community air pollution.

I am the author of one of those bills, H.R. 8398. But it is not my purpose to urge favorable action on any specific piece of legislation. Instead, I should like to focus my remarks on the general need for swift action by the Federal Government to control the mounting dangers of the pollution of our air.

As a major segment of the urban corridor stretching unbroken from Boston to Washington, Philadelphia stands threatened with the ravages of sickness and catastrophic property damage which hang poised in the air over every city in America. The pollution of Philadelphia's air may not at this moment be so acute as that in London or Los Angeles or New York. But the problem of contaminated air is already a matter of grave concern to all Philadelphians. And it can only grow worse.

I often make the flight between Washington and Philadelphia. Clearly visible at times is a cloudy, murky substance which seems to cling to the city.

Though often visible from a distance, air pollution is practically invisible to the city dwellers who are forced daily to walk through it, live in it and breathe it. To be sure, a substantial portion of what American city dwellers breathe is still air. But the roster of other, less health-inducing ingredients is frightening. It includes carbon dioxide, hydrocarbons, lead, carbon monoxide, sulfur dioxide, fluorides, hydrogen sulfide and other sulfur compounds, methane, peroxyacetyl nitrate, aldehydes, ammonia, organic acids, metallic oxides, and assorted morsels of just plain garbage. None of these is especially good to breathe. Many are out-and-out poisons. Most of them were put in the air by man—some by the imperfect combustion of gasoline and diesel fuel in our vehicles, some by the incomplete burning of solid waste materials. The pollutants from these two principal manmade sources become mixed in the air. Hence to be effective any legislation must attack the dual source of air pollution as one.

Noxious pollutants such as those named above are being pumped into the air at an ever-quickening pace. Item: for every 1,000 gallons of gasoline consumed by an automobile, 3,000 pounds of carbon monoxide, 200 to 400 pounds by hydrocarbons and 50 to 150 pounds of nitrogen oxides are discharged into the air. This year alone, it is estimated that 92 million tons of deadly carbon monoxide will spout from American tailpipes.

The most direct effect of all these pollutants is to be seen on the city dwellers of America, who represent two-thirds of our total population.

Air pollution harms many interests of this tremendous and all-important segment of our society. But my primary concern today, Mr. Chairman, is the health

of this group. The hydrocarbons produced by motor vehicles are known to produce cancer in animals. Carbon monoxide is, in heavy concentration, a well-known killer. There is a third avenue by which automotive pollutants can damage health. Exhaust gases can undergo a transformation in the atmosphere triggered by sunlight—the so-called photochemical smog reaction—which produces secondary pollutants which are also a cause of concern for public health.

Air pollution has been directly connected with the increased incidence of nonspecific upper respiratory diseases such as pneumonia, chronic bronchitis, chronic constrictive ventilatory disease, pulmonary emphysema, bronchial asthma and lung cancer.

Moerover, air pollution's effect on health is always insidious, hard to detect and almost impossible to reverse once it has done its damage. In Donora, Pa., in 1948, there occurred one of the most dramatic illustrations of this fact. A trick in the weather one day trapped a blanket of smog in the town and held it there for days. People went about their business as usual at first—until they became sickened. In a few days, 6,000 were ill and 20 had died.

The University of Pittsburgh made a study of the survivors of the Donora catastrophe. The researchers found that those who had been sickened and later recovered had a higher eventual death rate than those who suffered no ill effects at the time of the disaster. In other words, Donora proved that a nonlethal dose of air pollution has lasting ill effects on our health.

The silent, invisible way in which air pollution takes lives can also be seen in the fact that it sometimes takes months or even years for people to realize that a given death was, indeed, caused by air pollution. In New York City in 1962, officials discovered that 9 years earlier, in 1953, a period of unusually high air pollution had resulted in 200 otherwise unaccountable deaths.

And in London, where the pea-soup fog of 1952 caused the city's weekly death rate to jump 4,000, it was not for several months that health officials recognized the direct connection between the fog and the increase in deaths.

One further example of the insidious way in which air pollution attacks our health is what I will call the rush-hour factor. This results from the combination of a common weather phenomenon and the national habit of driving to and from work en masse at 9 a.m. and 5 p.m. The weather phenomenon is inversion, the "trick" which precipitated the Donora disaster. This occurs whenever the air nearest the ground is cooler, and thus heavier, than the air above it—so that instead of rising, the bottom layer is trapped against the earth. In the presence of moderate sunlight, this condition cannot exist, because the sun warms the earth, which in turn heats the air nearest the ground, making it rise and setting up a healthy convection flow which carries a large proportion of man-made pollutants up into the atmosphere where they are dispersed.

Unfortunately, our society drives to and from work when the ground is cool and inversion is much more likely to occur. Because commuting creates heavy traffic, millions of Americans are trapped twice daily, often at a standstill in bumper-to-bumper traffic, in a rich mixture of poisonous and highly dangerous pollutants.

Damages to health aside, the list of the secondary harmful effects of air pollution is long. For example, air pollution damages plants ranging from leafy vegetables to pine trees. At least 27 States have shown the effects of damage to their vegetation caused by motor vehicle air pollution alone. Economic losses resulting from lower crop yields, lowered market values and crop failures cost this Nation millions each year.

Another significant national loss resulting from the pollution of our air is property damage. The damage done to buildings, cars, machinery—practically all substances known to man—costs the country an estimated $11 or $12 billion a year.

A side effect of air pollution, Mr. Chairman, and one which could greatly increase in the years to come, is the dangers created by poor visibility in smog. Fatal accidents in Pennsylvania and on the New Jersey Turnpike near Philadelphia have clearly been caused by near zero visibility on the roadway, in turn caused by a combination of fog, automotive exhaust and fumes from nearby plants. Last year the New Jersey Turnpike was closed to all traffic many days due to what was loosely termed "fog."

An effect of air pollution remote in time but nonetheless unnerving has been raised by Dr. Chauncey D. Leake, chairman of the board of the American Association for the Advancement of Science. The increase in carbon dioxide in the air tends to raise the air temperature and, according to Dr. Leake, may in time

melt the polar icecaps. This melting would in turn greatly raise the level of the oceans, thus dangerously shrinking the earth's land surface area.

In my city, great efforts have been expended to stave off the perils of air pollution. The city government has attacked it at both its major sources—motor vehicles and solid waste disposal—but, after a modicum of success, my city has had to face the fact that it does not possess the resources or the broad enforcement powers needed effectively to eliminate air pollution as a threat to the well-being of Philadelphians.

In the field of automotive air pollution, the city has had the benefit of an air monitoring station operated in Philadelphia by the Public Health Service for the past 3½ years. In that time, photo-chemical smog levels reached or passed the point at which people's eyes were irritated on 4 days in 1962, 12 days in 1963, and 17 days last year. Although we are just now entering the period most conducive to smog formation, Philadelphia has already reported 4 days with eye-irritating smog levels.

I am told by Dr. Walter E. Jackson, board chairman of the city health department's air pollution control division, that a quarter of the city's air pollutants come from automotive engines. And the number of automobiles in the city is growing fast. In 1960 it was 534,000; by 1975, it is estimated that the number will reach 845,000. The Public Health Service estimates that by that time half the city's total air pollution problem will come from automobiles.

Philadelphia has incorporated an air pollution code in its city charter, outlawing the emission of pollutants or the burning of solid wastes which could reasonably be deemed a nuisance.

The board of directors of the air pollution control division has adopted more specific regulations. One of these outlaws any car driven in Philadelphia which gives off excessive visible smoke after its has traveled 100 yards after starting up. License numbers are taken down by police or health department officials and letters are sent to the offenders advising them to correct the faulty condition of their cars. No arrests have been made as yet pursuant to this section of the regulations. The problem with such a regulation is that it is difficult to enforce and that most of the city's pollution problem comes not from the visibly smoking cars, but from the cars which do not create a visible nuisance—and these constitute at least 95 percent of Philadelphia's automobiles.

Considering the limited and hard-pressed resources of a city government, it is difficult to see how more sweeping antipollution measures could be applied and enforced in the field of motor vehicles. Even statewide legislation along the lines of that recently passed in California, specifying control devices for all automobiles sold in the State, would have little effect on Philadelphia's pollution problem. A large portion of the cars which daily pass through Philadelphia are registered in New Jersey and Delaware, and would thus defeat the purpose of any Pennsylvania statute. Furthermore, I am opposed to patchwork legislation applying varied standards to the automotive industry, because this would tremendously compound the problems of manufacture and distribution in this industry.

The city's regulations also apply strict rules prohibiting the burning of wastes in the open air, and authorize city inspections of all private incinerators and their pollution control devices. But two factors tend to defeat the city's efforts in the area of solid waste disposal.

One is the fact that Philadelphia has no control over the pollutants pumped into its air by surrounding communities. And the suburbs of the metropolitan area still utilize open burning dumps. The few incinerators available in these areas are absolete, inadequate units which add their contribution of fly ash and smoke to that generated by the burning dumps.

In the city itself, there are six incinerators. More are needed to eliminate the necessity of disposing of some wastes in sanitary landfill sites. There is no need here to reemphasize the fact that the land available in a great city for such purposes is sorely limited. Furthermore, four of the city's six incinerators have inadequate pollution control devices. Thus the second problem facing Philadelphia in the area of solid waste disposal is the lack of financial resources to cope with its own disposal problems within the city. And these problems are growing: since the end of World War II there has been a 2-percent annual increase per capita in refuse production.

The city government in Philadelphia has done an admirable job in legislating and enforcing its legislation against air pollution from both its major sources. But, as I have tried to indicate, the task is too great for a municipal govern-

ment in view of great research costs, interstate enforcement problems and the basic nature of the air around us, which knows no boundaries, State or municipal. I believe that Philadelphia's situation accurately mirrors the situation of the vast majority of the people and the municipalities of this country. I hope its example can be of some help to the subcommittee in determining the needs of the Nation as a whole for Federal legislation to control pollution at its two sources through enactement of such a bill as H.R. 8398.

Mr. Chairman, I feel that the case for prompt and effective national control of automotive air pollution is closed. When California last year set in motion legal machinery that will require new cars sold in that State beginning this fall to be equipped with control systems, the automotive industry announced that it could comply with the law. In fact, industry spokesmen have stated that, if Federal legislation requires them to do so, they can modify all new cars to control pollutant emissions by the fall of 1967.

I say that the Congress has a clear responsibility and a great opportunity to see to it that the entire country benefits from motor vehicle pollution control. The several legislative proposals now before this subcommittee offer a sound approach to solution of this important part of the total air pollution problem.

Clearly, the problems of disposal of solid wastes are too big and too complex to be handled merely at the local level. Federal support is needed in this area as well, with its application guided and utilized through local agencies.

In summation, Mr. Chairman, I strongly urge that this subcommittee approve a Federal program of the type provided by H.R. 8398 for the control of air pollution from both its principal sources.

I heartily commend this subcommittee for its informed interest in this area, and for its graciousness in consenting to hear my views today.

The CHAIRMAN. We want to thank you for your contributions to the problem, calling attention to the problems of Philadelphia. It is just one of the many examples that I am sure will be brought to the attention of the committee in connection with this legislation.

Mr. GREEN. Thank you, Mr. Chairman.

The CHAIRMAN. It is very good to have you.

Mr. Rogers?

Mr. ROGERS of Florida. I appreciate the testimony of the gentleman, and I have gone over his bill, and I think it is interesting to note that you are trying to encourage the States to have some inspection of another bill.

Mr. GREEN. Yes, I think this is necessary.

Mr. ROGERS of Florida. And I think some program has to be worked out along these lines because it does not do much good to have a device put on by the manufacturer, and yet there is no way to do it on used cars, and unless you have some type of installation, then I am afraid you would not meet the problem at all.

So I commend the gentleman for his thinking and for the contribution he has made to the solution of this problem.

Mr. GREEN. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much.

Our colleague, Mr. Halpern, has come in, and we would be glad to hear from him at this point.

STATEMENT OF HON. SEYMOUR HALPERN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. HALPERN. Thank you, Mr. Chairman. I am grateful to you for hearing me at this time.

Mr. Chairman, I would like to thank you for the opportunity to present to this distinguished subcommittee my views on the responsibility of the Congress to take positive action to control the pollution

of our air. This is a growing problem affecting all Americans, which can only be ameliorated by the enactment of strong legislation at the national level. This subcommittee has before it a number of excellent bills, bills which I heartily support. I should like, however, to concentrate my remarks today on the need for the enactment of my bill, H.R. 463, which I introduced at the beginning of this session.

The problem of air pollution, though aggravated in urban areas, is not peculiar to our largest cities. Today, two-thirds of our population lives on 10 percent of the landmass of the United States, and this problem confronts the vast majority of our people. Though, traditionally, air pollution control has been within the province of State and local governments, two factors impinge the problem on us. First, if States were left to establish independent standards for automobile exhaust emission, for example, chaos would ensue. Manufacturers would be burdened with producing cars which would have to meet 50 different standards, and if an automobile owner moved from 1 State to another, his vehicle would have to be overhauled. Second, if one State were to promulgate and enforce effective pollution control regulations, and a neighboring State were lax, the former would still have to contend with the dirt, foreign particles, and noxious fumes carried by the wind from the latter State. And this could be for as far as 150 miles. Thus, uniformity is absolutely necessary, and the Congress must accept this responsibility, and should welcome the opportunity to help our people purify their air.

Mr. Harris, the distinguished chairman of the parent committee, has a splendid bill in H.R. 7429. This bill, which I fully support, would require that new Federal buildings and automobiles be equipped with air pollution control devices. I think this is a good bill because I believe that the Federal Government should be a leader in this field, and that we should not ask industry and private citizens to do what we ourselves are not prepared to do.

Senator Muskie's bill is addressed to another aspect in seeking to provide needed assistance to States for the development of solid waste disposal programs. Mr. Lindsay's proposal is designed, among other things, to provide tax allowances to businesses for the acquisition, construction, and installation of air and water pollution control devices.

I favor all these fine measures, and I think that their variety indicates the concern of the Congress and the breadth of the problem at hand. For my part, I have tried to concentrate my attention and efforts on what I consider to be the most pressing and the most serious single area—the pollution which results from the fumes of buses, trucks, and automobiles.

In its report of October 1964, the Senate Committee on Public Works estimated that fully 50 percent of the Nation's air pollution is attributable to motor vehicle exhaust. In our metropolitan areas, this exhaust combines with smoke from incinerators, powerplants, industrial factories and the like, and poses a very real menace to health. In addition, it reduces visibility thereby producing dangerous aviation conditions; it destroys the finish on autos, and it soils the appearance of buildings. Mr. Arthur Benline, the able commissioner of New York City's Department of Air Pollution Control, has estimated that air pollution accounts for an economic loss to New York property owners of $520 million annually. Since the greatest single

contributor to air pollution is the noxious exhaust of the Nation's 84 million motor vehicles, I believe that this is the place to start. Consequently, I introduced a bill in January of this year which, quite briefly, would authorize the Secretary of Health, Education, and Welfare to establish safety standards governing the emission of exhaust from motor vehicles. Automobile manufacturers would be given 1 year from the publication of these standards to equip all new cars with devices which could reduce the harmful exhaust to the safe level. I firmly believe that the necessity and feasibility of this legislation is beyond doubt.

In the Clean Air Act of 1963, we provided for the appointment, by the Secretary of Health, Education, and Welfare, of a technical committee to evaluate the progress in development of fuels and automotive devices to prevent automotive exhaust pollution. The committee, by statute, was to consist of representatives of the automobile industry, and manufacturers of exhaust control devices, and fuels. Many independent studies were also carried out, and on the basis of these, I am personally convinced that there are available effective devices which can be economically employed, to limit exhaust emissions of air pollutants (primarily hydrocarbons and carbon monoxide). Mr. Celebrezze, the Secretary of Health, Education, and Welfare, has endorsed this proposal, and has stated that it would be technologically feasible to apply adequate control systems to the vehicles produced in the 1968 model year. And spokesmen for the automotive industry agree. Primarily, hydrocarbons and monoxide, at least so I have been informed by the director of the Automobile Manufacturers Association.

Mr. Chairman, I should like to emphasize that my bill seeks to encourage a studied approach to this problem, while precluding unnecessary delay. The Secretary of HEW would have 6 months from the date of enactment to promulgate regulations, and the auto industry would have an additional year to comply. This is time enough. Between 1950 and 1959, the number of cars on the Nation's highways increased at a rate double the population growth. If we project this, we can see that by 1970, we will have over 103 million gas-burning vehicles. Each year of delay brings literally millions of new cars, and I believe these cars should be equipped with protective devices.

These devices would not be expensive to the car buyer. The Chrysler Corp. says its device will add $13–$24 to the price of a new car. This is a small fraction of the savings to the consuming public which result from the repeal of the excise tax on automobiles. Industry sources have estimated that the more complex devices which will be offered by General Motors and Ford may cost as much as $45–$60. But I contend that this is a small price indeed for clean air.

Even though no direct causal relationship has been established between automotive exhaust and any particular disease, ample evidence is being accumulated which would link air pollution to various respiratory ailments. For example, a definite relationship has been demonstrated between asthma attacks and the level of sulfur dioxide in urban air, and a similar correlation has been shown to exist between lung cancer and urban air pollution. I think that if we can provide for control of the pollution caused by cars and trucks, we will be taking a giant stride forward in safeguarding the health of all Americans.

My bill would also require the installation of similar devices on diesel-powered vehicles, but would not require the regulations to be published within a 6-month period, since this aspect will warrant more present study. Ample provision is made so that the regulations governing both gasoline- and diesel-powered vehicles can be updated in the future as continued technological advances are recorded.

Mr. Chairman, I thank you and your distinguished colleagues on the subcommittee for your attention and interest. I have tried to show that my bill is a vitally needed measure which, at the same time, is altogether feasible. I sincerely trust that this subcommittee will give this proposal the serious consideration it deserves, and that it will approve the measure, so that the House can take the positive action required to protect and promote the health of the American people.

Again, Mr. Chairman, may I express my thanks for giving me this courtesy this morning.

The CHAIRMAN. Thank you, Mr. Halpern.

I assume from what you have said that you are willing to undertake this program realizing that it will cost the public so much money in additional automobile costs in order to have this device.

Mr. HALPERN. Yes; I would, Mr. Chairman. It is an infinitesimal cost in the overall cost of an automobile.

The CHAIRMAN. Do you think it would be as much as $50 for the increased cost of an automobile?

Mr. HALPERN. I think it would. To my knowledge there has not been any protest in California where a law is in effect, and where the consumer is absorbing this cost. I do think over the course of time that this cost, in the spirit of competition that we have and American manufacturing know-how, will be absorbed in the cost of a car, and that it will practically amount to nothing. I do not believe there will be much of a cost at all.

The CHAIRMAN. I think California starts this year.

Mr. HALPERN. 1966, that is right.

The CHAIRMAN. They haven't had a bill yet. We always have to wait until they get a bill.

Mr. HALPERN. There is usually a lot of advance agitation when something costs something and I haven't heard of any protest on the part of the buying public.

The CHAIRMAN. I recall we——

Mr. HALPERN. I think the cost is extremely reasonable considering what will be gained by it.

The CHAIRMAN. I recall that we developed and reported a bill that would require manufacturers of television sets to include UHF as well as VHF on all receiving sets. We were told that it would increase the cost by a number of dollars, I think anywhere from $12 or $15 up to $35 or $40 more.

I was down in my district and was in one of the businesses and the owner, the salesman, was endeavoring to sell a television set. He looked back at me and pointed down to that one and said we call this the Harris edition.

I gathered that he didn't think too much of it.

I also recall that this committee was primarily responsible for safety belts in automobiles and I think we must give credit where credit is due to our former colleague, Ken Roberts, who kept after that problem

for year after year after year and he finally talked the automobile industry into it.

We had suggestions, I believe, made to us that this increased cost would be $20 to $25. If I remember correctly, they have been advertising all around the lot that they would install these seat belts for $9. Sometimes we just don't know what the cost will be.

I had a representative of one of the automobile industries come by to see me and he laid it on the line and made it pretty certain, that to manufacture these things would take a minimum of $50.

Mr. HALPERN. You are referring to exhaust equipment?

The CHAIRMAN. Well, that will take a long time. I am not going into that now because we will encroach upon the other time. It goes a lot further than the exhaust. The exhaust is, I think, about 49 percent of it. You have got the crankcase and various other places around the engine where the fumes come from and you can't hope to do anything by just controlling the exhaust. That is the tail end of the pipe.

You have got to—as a matter of fact, the gadget that they have as I understand is attached to the engine, not necessarily on the tail end of the exhaust at all—but that is getting a little beyond me.

Mr. HALPERN. If I may say, Mr. Chairman, the cost, as I mentioned, Chrysler—and I said it in my testimony—estimated that the cost would not be beyond, say, from $15 to $20. Now, if the manufacturer makes that estimate at this very early stage I really feel that in proportion to the cost of the car, the average car probably costing $3,000, that an extra $15 to $20 and even if it did go as high as $50 in this early stage is a very cheap investment and an extremely good investment on the part of the consumer, and certainly is well worth it. For many years, Mr. Chairman, I was chairman of the Joint Legislative Committee on Motor Vehicles Problems in New York State while I served as a State senator, and in that capacity we passed many laws to enhance the safety of the public and many of these, for example, the requirement for directional signals on automobiles and other equipment, was mandated in New York State and there was always the protest that it might cost more money, but we noticed it didn't affect the overall cost of the car and whatever the cost was, it was for the safety of the buying public and it was a good investment, but we didn't notice any of the—any exorbitant cost at all.

If anything, it would seem to be completely absorbed.

The CHAIRMAN. Thank you very much. We appreciate your appearance.

Mr. HALPERN. Thank you, Mr. Chairman.

The CHAIRMAN. The next witness is our colleague from Ohio, the Honorable Thomas Ashley. Mr. Ashley, we will be glad to hear you at this time.

STATEMENT OF HON. THOMAS L. ASHLEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OHIO

Mr. ASHLEY. Mr. Chairman, I appreciate this opportunity to appear before your subcommittee this morning to testify in behalf of my bill, H.R. 8800, to improve and strengthen the Clean Air Act of 1964. There is no doubt that unless there is an increased Federal effort in air pollution control, the situation existing today will become aggravated

to a point unwarranted by any standard of commonsense. We must extend and increase present programs of Federal leadership and assistance with respect to air pollution research, training, and development of measurement and control techniques.

The question has often been asked, Mr. Chairman, why must we Americans always wait for disaster before we do something about dangers we have been aware of for years—even decades? What major catastrophe must befall this Nation to get action on controlling the pollution in our air?

The city of Los Angeles, of course, has been the area of most concern when we talk about air pollution. That city and its surrounding metropolitan area has had a very serious problem over a long period of time. But it is no exaggeration to say that today every major metropolitan area and most smaller communities in the United States are suffering the harmful effects of polluted, poisoned air. The very characteristics of a modern society—increasing population, industrial development, rising standards of living, advancing technology, mass transportation—have resulted in nearly 200 million Americans presently living at the bottom of a sea of air which is becoming burdened with an ever-increasing amount and complex variety of polluting agencies.

The tragedies which hit the heavily industrialized community of Donora, Pa., in 1948 and New York City in 1953 are isolated, dramatic incidents which illustrate the seriousness of air pollution as America's No. 1 health problem. In 5 days of dense, choking smog, 43 percent of the people in Donora became ill from the smoke and poisonous gases that streamed from the factory smokestacks. The town's death toll: 20.

Five years later in New York City, a similar "temperature inversion" occurred and for 10 days, the stagnant mass trapped the metropolitan area's pollutants and "smaze" hung over the city. By the time it blew out to sea, more than 240 people were dead.

In 1962, at almost the same time that a London "smog" 3,000 miles away took 340 lives, a stagnant air mass over the northeastern United States caused a steady alarming increase in pollution from Richmond to Boston. If this mass of contaminated air had not blown out over the ocean in time, the United States might have suffered the worst air pollution calamity in history.

There have been other notable air pollution episodes in many cities of the country. In New Orleans and in Weirton, W.Va., thousands of people have become ill from breathing dirty air. Right here in Washington, D.C., a city with little industry and few smokestacks, the sulfur dioxide level was more than 0.3 parts per million of air for more than 8 hours on February 6, 1963. In Los Angeles, a "smog" alert goes into effect when the sulfur dioxide levels reach 3 parts per million.

On the occasion of the lethal fogs that settled over Donora, New York City, and London, the increased mortality rate involved chiefly the aged and those with a history of pulmonary disorder. Who knows what damage is done to a normally healthy pair of lungs by 20 or 30 or 40 years exposure to and inhalation of filthy air. Physicians and health authorities have long held, and the evidence is over-

whelming that polluted air is a contributing factor, and perhaps one of the major causes of lung cancer, as well as heart ailments, asthma, tuberculosis, bronchitis, pulmonary emphysema, and other respiratory ailments. Moreover, the economic toll is considerable in terms of the damaging effects on building materials, trees, ornamental shrubs, farm produce, and on other substances.

New York City's trees and foliage are suffering from the toxic effects of exhaust from the millions of buses, trucks, and automobiles which daily jam its streets. The New York Botanical Garden's senior plant pathologist, Dr. P. P. Pirone, has observed trees, particularly at stoplights and intersections, become partly, then completely denuded of foliage and ultimately killed. Interestingly enough, as one approaches the middle of the block, trees get progressively healthier.

Another example—again in New York. For 6 weeks recently, an electrically driven giant breathing machine was installed at the curb of Herald Square. It inhaled, during that brief time, 5,000 cubic meters of New York's air—the same air all New Yorkers breathe. Afterward, scientists at the Sloan-Kettering Institute removed the filters from the machine, coated with soot, metals, and organic gum which they dissolved in chemicals and separated into several factions. This material was painted on the backs of mice. After a several months waiting period, 90 percent of the mice had developed skin cancer. The scientists who performed and participated in the experiment said they anticipated the result. Obviously, the cancer-causing properties of New York's air should raise a cautionary note although it is stated that the mouse findings cannot directly be related to human beings.

Again, what major disaster, what national catastrophe, are we waiting for before we take the necessary steps to control the filth being poured into our air. The time is now for Congress to show its responsibility by requiring others to meet their responsibility in this area, the Federal Government, State, and local governments, private industry, automobile manufacturers, and owners.

There was a time—not too far back in memory really—when billows of smoke streaming out from factories and smokestacks over our cities was regarded as a good sign—a sign of good times and prosperity. This is no longer true. Now these are warning signals, as clear as a skull and bones, of the poison in the air we breathe and that unless we adopt stringent measures to control pollution of our air this health hazard will assume even more gigantic proportions in the years ahead.

To review the provisions of H.R. 8800 which I introduced with a number of my colleagues, I'd like to take just a few more moments. Title I directs the Secretary of Health, Education, and Welfare to set standards for emission of air pollutants for new gasoline-powered vehicles, effective not later than September 1, 1967. This will mean that the 1968 models must carry devices for controlling motor and gas exhaust. In addition, this title directs the Secretary to recommend legislation to regulate pollution from diesel-powered vehicles by January 31, 1967. It prohibits the manufacture and sale of any vehicle or engine not in conformity with the regulations and provides up to $1,000 fine for any violation and provides for inspection to assure compliance with the regulations. It makes provision for air pollu-

tion affecting a foreign country and authorizes research on control of automotive pollutants as part of HEW's air pollution research program. The bill also authorizes construction of a Federal Air Pollution Control Laboratory.

It provides for a new act—the Solid Waste Disposal Act—to begin a national research and development program for new and improved methods of solid waste disposal and provides for technical and financial aid to State and local governments to develop, establish, and conduct solid waste disposal programs; provides for grants-in-aid or contracts with public and private agencies, institutions, and individuals for research and training projects and authorizes grants to State, municipal, interstate, and intermunicipal agencies for solid waste demonstration projects. The bill authorizes appropriations of $20 million annually for fiscal 1966 and 1967 to carry out the Solid Waste Disposal Act.

This legislation represents a good beginning in the steps to abate and control pollution in the air. No matter how onerous, no matter how costly, enactment of the legislation before us is imperative.

The CHAIRMAN. Are there any questions? If not, we thank you for your testimony, Mr. Ashley.

Mr. ASHLEY. Thank you for the opportunity, Mr. Chairman.

The CHAIRMAN. Our next witness is our colleague from New Jersey, the Honorable Henry Helstoski. Mr. Helstoski, we welcome you to the committee.

STATEMENT OF HON. HENRY HELSTOSKI, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

Mr. HELSTOSKI. Mr. Chairman and members of the Subcommittee on Public Health and Welfare, I am most grateful for the opportunity you have given me to testify before this committee on legislation to amend the Clean Air Act.

The Clean Air Act of 1963, Public Law 206 of the 88th Congress, was signed by President Johnson on December 17, 1963, and set into motion a process for stimulating our national efforts to control and abate the pollution of our Nation's air.

Although this act was far reaching in its effects, such as financial aid for control programs, expanded research into the sources and control of air pollution from the gaseous emissions of automobiles and fuel consumption of industrial plants, it was only the beginning of a program which requires the attention of Congress to further enhance the effectiveness of the present law.

The legislation being discussed by the committee today would help meet the objectives as proposed by President Johnson that we end "the poisoning of the air we breathe" and called upon us to "prevent the pollution of our air before it happens."

The millions of motor vehicles which jam the highways and expressways of this country are the main culprits in the pollution of our air and some efforts should be taken to reduce these pollutants.

Our national air pollution, at the present time, is due chiefly to automobile exhausts, smoke discharges from industrial plants, and disposal of solid wastes.

Our increasing population, the expansion of urban and suburban areas, the additional consumption of energy-producing fuels and industrial development and expansion have all added to the creation of solid wastes which are disposed of by burning in open dumps or land fills. These methods are a prime factor in creating a polluted atmosphere for miles around such a disposal facility.

The provisions of the various bills presently under consideration by this committee will provide the necessary stimulus to aid in the proper disposal of these solid wastes.

Another problem which we must face and take every effort to correct is the emission of fumes and smoke from industrial plants. It is a major factor in the pollution of air in the communities in which such industry is located and costly to the residents of these areas because of the corrosion effect on buildings and paints.

The soot, ash, and chemical components of the smoke and fumes emitted by the smokestacks of industrial concerns cause many respiratory ailments. We must take action to make sure that these industrial concerns will be the beneficiaries of some incentive to install devices which will lessen or completely eliminate this particular source of air pollution.

In my own district, the ninth of New Jersey, there are 39 separate communities. Each of them have the same common problem of combating air pollution, which constitutes a substantial everyday experience. Any assistance which the Federal Government can give these communities will be a great step forward in the development of systems which will curtail or greatly diminish the air pollution created by harmful emissions of various types of pollutants.

Any money that the Government spends for research and development is money well spent and can be justified when the research and development is for the benefit of all the citizens of this country.

Polluted air combined with stagnant air is not only costly, but hazardous. Such a combination, by reducing visibility, creates a very real danger to air and land transportation.

As an example, the New Jersey Turnpike Authority is compelled to close that superhighway at least 20 times a year when smog aggravates conditions already made bad by weather conditions. Where the turnpike continues through the highly industrialized northeast section of the State, smog causes many motorists to miss their desired exits.

Last November, a two-car collision on the turnpike was blamed directly on poor visibility because of smog. And, there were many incidents where car pileups occurred because the visibility was reduced to zero. And who was the villain in these incidents? Smog—a combination of smoke and fog.

Aircraft operations out of Newark were also hampered by reduced visibility. As far back as 1946, a survey was conducted on this matter and it showed that smoke, alone or in a combination with fog, lowered the visibility to less than 6 miles every second day of the year.

Aggravation of poor weather conditions by pollution results in delays in landings and takeoffs at busy airports. At times entire flights are canceled because of the difficulty of making a safe takeoff due to poor visibility. This is an inconvenience to the traveling businessman and very costly to the carrier.

The average individual, on the streets of any community in these United States, does not care to take up the fight for the principle of clean air. We are surrounded not only by dirty air but by public apathy. Because of this, we, as Members of Congress, representing the people of the entire United States should take the initiative and provide for legislation which will clean up the air we breathe at the rate of 15,000 gallons per day.

For a richer and healthier life, under clean skies, we should take a three-step approach to this problem.

First: Impress upon the automobile manufacturers to install anti-pollutant devices upon every motor vehicle leaving the factory. If this cannot be done on a voluntary basis then Congress should enact legislation to make such installations mandatory.

Second: Take steps to find a method to reduce the sulfur content in fuels used by industry which contribute so much to the pollution of the air around these industrial centers.

Third: Waste disposal problems should be solved in such a way so as to end the overburdening of our cities' incinerators and the open burning of rubbish.

If we do anything less than this we are neglectful in our duty to the people of our Nation. I am sure that this committee fully understands the problem of air pollution and will take early and favorable action on the bills pending before it, which would be far reaching toward finding a solution of this problem.

Mr. Chairman and members of the committee, I wish to thank you for the time you have given me to present my observations on a problem of great benefit to the people of this Nation for the betterment of a healthier climate around us.

The CHAIRMAN. Are there any questions? If not, we thank you for your appearance, Mr. Helstoski.

Mr. HELSTOSKI. Thank you, Mr. Chairman.

The CHAIRMAN. The next witness is our colleague from Colorado, the Honorable Roy McVicker. Mr. McVicker, we will be glad to hear you at this time.

STATEMENT OF HON. ROY H. McVICKER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. MCVICKER. Mr. Chairman, my name is Roy McVicker. I represent the Second District of Colorado, and I am appearing on behalf of my bill, H.R. 7394, to amend the Clean Air Act of 1963.

The purpose of this measure is to meet the problems of air pollution which all areas of our country find to be an increasing problem. The contamination of the atmosphere has become a critical national problem. Smog and other forms of pollution have pervaded the air, in varying degrees, in nearly every large metropolitan area in our country, and in many of our smaller cities. The air pollution problem is national in scope and it demands a national remedy. Our fresh air supply is one of our most precious, and indeed one of our most limited, natural resources. It deserves and requires our protection and conservation.

Last year when I was serving as a member of the Colorado State Legislature, State Senator Roland Mapelli and I introduced an air pollution bill which was designed to put real teeth into an air pollu-

tion control program and to make its requirements regional in scope, a provision necessary to its practical operation.

At that time we noted that a number of companies which we investigated, notably the Public Service Co. of Colorado, were on their own initiative spending their own resources for installations of air control systems.

We stated, at that time, that we felt that a special tax incentive was in order inasmuch as these efforts in a great majority of cases were not inuring to the benefit of these companies nor adding directly to their operations but were essentially contributions to the welfare of the community.

It is a real pleasure for me, therefore, to include in this bill this tax incentive provision which in my opinion will operate to the advantage of both industry and the public.

In recent years this country has been so preoccupied with realizing an unprecedented rate of industrial growth that we have largely neglected the great residue of waste which has been left in the wake of industrial progress. Industrial prosperity does not necessarily exact the price of waste and pollution. We are now capable of reducing or eliminating nearly all forms of air pollution. Such a project will be costly. It will require a limited economic sacrifice on the part of certain industries and additional expenditures by State and municipal authorities throughout the country. And it will require the Federal Government to give meaningful financial and technological assistance to local governments and private industry.

Much has been written to alert us of the health hazards from exposure to normal pollution conditions and there is a plethora of statistics available on the number of persons who have died from heavy concentrations of pollutants. A 1948 episode of pollution in Donora, Pa., left 20 inhabitants dead and more than 4,000 acutely ill. In 1952, one of London's smogs was responsible for more than 4,000 deaths in a single week. For a period of 1 week in 1953, New York City was enveloped by an inversion of air pollution which resulted in the death of more than 200 inhabitants. There is evidence that even the normal concentration of pollution found in many of our cities has an adverse effect on health. The incidence of several varieties of upper respiratory and pulmonary disease, ranging from asthma and chronic bronchitis to emphysema and lung cancer, shows a measurable increase under normal pollution conditions.

The health of our citizens is not the only consideration when dealing with air pollution; there are economic reasons as well. It is well established that air pollution substances such as sulfur dioxide, ozone, and fluorides have caused extensive damage to vegetation. Various sulfur gases react with moisture to form an acidic mist which corrodes metals, rubber, leather, and most other common materials. The estimated annual cost to the Nation of all property damage resulting from air pollution is over $11 billion.

The first identifiable Federal program in air pollution came with the enactment of the Air Pollution Control Act of 1955, which authorized a program of research and technical assistance by the Federal Government to State and local air pollution control agencies. In this act, Congress set forth the policy that the primary responsibility for regulatory control rests with the State and local governments, and the

Federal role is to support them with financial and technical assistance and training.

The Clean Air Act was enacted in 1963 as an amendment to the 1955 act. It provides for grants to local and interstate air pollution control agencies in amounts up to two-thirds and three-fourths, respectively, of the costs of developing air pollution control programs, for the abatement of air pollution under certain circumstances, and for the encouragement of efforts to eliminate automobile exhaust emissions.

The provisions of the Clean Air Act were based on the fact that there were no technological answers to many of the recognized air pollution problems. It therefore concentrated on providing additional and more intensified research. That research has paid great dividends. It has shown us that technological means are now available to control some of the most pernicious sources of air pollution and that failure to act quickly may pose a serious threat to human health. It is now time to move further. New legislation is required to supplement and extend the policy of the Clean Air Act.

Generally, I endorse the objectives of Senator Muskie's bill, S. 306, in which he was joined by 19 of his colleagues. His bill supplements the existing legislation in a meaningful way. I feel, however, that certain aspects of air pollution control require different treatment. The bill which I introduced, H.R. 7394, incorporates many of the substantive provisions of Senator Muskie's bill. It would adopt a national standard for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, and it would provide for the accelerated research programs which Senator Muskie proposes. My bill adds a provision, unlike S. 306, to afford private industry a financial inducement to control the emission of air pollutants from solid waste disposal facilities by amending the Internal Revenue Code to permit expenditures to be deducted and an increased investment credit to be taken for the acquisition, construction, or installation of water and air pollution control devices. It would also direct the Surgeon General to study and report to Congress the effect of air pollution from all sources on human health, and in particular whether it has a causal relationship to lung cancer.

A. AUTOMOTIVE EMISSIONS

The most far-reaching proposal in Senator Muskie's bill would prescribe a national standard for allowable emissions of pollutants from gasoline-powered vehicles. The Secretary of Health, Education, and Welfare would be directed to prescribe the standards adopted by California and publish them in the Federal Register. Senator Muskie's bill would amend section 6—which relates to automotive vehicle and fuel pollution—of the Clean Air Act to provide that within 1 year after the enactment of the amendment crankcase emissions must be limited to 0.15 percent hydrocarbons by weight of the supplied fuel, and that after November 1, 1967, allowable exhaust emissions must be limited to 275 parts hydrocarbons per million and 1.5 percent carbon monoxide by volume, as measured by nondispersive infrared spectrometers.

It is my feeling that the arbitrary 1-year deadline may prove to be impractical. My bill allows for a certain flexibility in the date on

which devices must be installed in automobiles. Rather than impose a limit of 1 year, I chose to say that the Secretary shall require "as soon as practicable (but not later than November 1, 1967)." I believe that this provision will allow time for the Government and the auto industry to profit from the experimental program which the State of California has established.

California law now requires that all new cars registered in California beginning with the 1966 models must be equipped with crankcase and exhaust control devices or otherwise meet California's automotive emission standards. Another consideration is that at this time the Public Health Service is arranging with the General Services Administration to equip all federally owned vehicles with the same blowby device and in this way they will get an excellent evaluation of all of these systems regarding their performance in varying climates.

If more flexibility were permitted in the time schedule, allowing an opportunity to make alterations or modifications in the pollution devices as a result of these initial experiments, I feel that our action to control air pollution might well be made more meaningful.

I should now like to include in my testimony a more detailed analysis of the other principal provisions of my bill:

(1) Contract research on gasoline-powered vehicles to reduce emissions of exides of nitrogen and aldehydes from the crankcase and exhaust and also hydrocarbons from gasoline evaporation in carburetors and fuel tanks.

(2) Conduct research to reduce emissions of pollutants from diesel-powered vehicles.

(3) Conduct research to reduce pollutants emitted from jet aircraft and missiles.

(4) Conduct research for development of efficient and low-cost methods of collecting and disposing of municipal solid wastes.

(5) Carry out program to inform and advise eligible air pollution control agencies and eligible persons of the provisions of this act.

(6) Establish a Federal Air Pollution Control Laboratory within the Department of Health, Education, and Welfare.

(7) Provide that the Secretary shall appoint a technical committee to encourage development of improved low-cost techniques to remove sulfur from sulfur-bearing fuels and reduce emissions of oxides of sulfur produced by combustion of sulfur-bearing fuels.

(8) Provide that the Secretary shall set standards for allowable emissions from gasoline-powered vehicles and require all new automobiles to be equipped with blowby systems from crankcases not later than November 1, 1967.

(9) Require imported gasoline-powered vehicles to be so equipped with a blowby system.

(10) Set penalties for violations at not more than $1,000 or 6 months' imprisonment or both.

(11) Provide controls over air pollution from the exhaust of federally owned automotive vehicles.

(12) The Secretary will establish criteria for allowable emissions from diesel-powered vehicles.

(13) To insure proper inspection and maintenance the Secretary will enter into agreements with and make grants to State agencies to carry out these standards.

(14) Provide that the Secretary may establish potential pollution sources for Federal agencies and departments having jurisdiction over any buildings, and authorize inspection of such property.

(15) Permits appropriations for control devices, where required, on buildings and installations over which the Federal Government has jurisdiction.

(16) Permits training of Federal personnel necessary to assure appropriate maintenance and operations of such devices installed on buildings under Federal jurisdiction.

(17) Require a thorough study and report by Surgeon General of the Public Health Service to determine effects of air pollutants from all sources on human health. Report to be submitted not later than 2 years from enactment.

B. TAX INCENTIVES

(18) Amends Internal Revenue Code by adding a new section to afford a substantial tax benefit to individuals or private industry who would acquire, construct, or install, certified air pollution control devices. The same treatment would apply to water pollution control devices. Amends Internal Revenue Code of 1954 by adding a new section 183 relating to expenditures for such devices. Taxpayer could elect to treat such expenditures as having been paid or incurred in any of the 3 taxable years preceding, or in any of the 5 taxable years following, the taxable year in which such expenses were paid or incurred. A deduction with respect to any air or water pollution control agency had certified to the Secretary that such device had been acquired, constructed or installed in conformity with State requirements. This amendment shall apply to taxable years beginning after December 31, 1963. Allowance is made if the taxpayer realizes income from the operation of any certified air or water pollution control device.

It may be many years before firm and irrefutable evidence confirms the probability that air pollution is a serious threat to the health and lives of human beings. It would be a tragedy if we should wait until that conclusive proof is available. On the basis of the very convincing statistical evidence that air pollution is indeed a serious threat to human health, Congress must take further action. The appropriate resources of the Federal Government must be enlisted in the fight to reduce and eliminate every source of air pollution. The bill which I have introduced would accomplish these necessary goals.

The CHAIRMAN. Are there any questions? If not, we thank you for your testimony, Mr. McVicker.

Mr. MCVICKER. Thank you, Mr. Chairman.

The CHAIRMAN. Our next witness is our colleague from California, the Honorable James Roosevelt. Mr. Roosevelt, we welcome you to the committee.

STATEMENT OF HON. JAMES ROOSEVELT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. ROOSEVELT. Mr. Chairman, members of the committee, thank you very much for allowing me to present testimony in support of legislation to give attention to the nationwide problem of solid waste

disposal. As you know, I am not an engineer, nor am I a specialist in the various ways of disposing of the mountains of solid waste accumulated each day in our country. I became interested in the subject, however, because the problem is daily becoming more acute in California and in other States which are experiencing rapid growth in terms of population, agriculture, industry, and commerce.

Last year I expressed my concern by introducing H.R. 11236, the Solid Waste Disposal Act of 1964, a bill identical to H.R. 10807 introduced earlier in 1964 by my former colleague, the Honorable John Lesinski. This year, on the opening day of this 89th Congress, I introduced H.R. 890, which, like the earlier bills, provides for Federal expenditures of $43.5 million for a 4-year period to support a comprehensive program of research, demonstrations, surveys, and technical assistance, plus grants to States and communities to assist them in developing and carrying out solid waste management programs.

In my remarks in the Congressional Record of May 20, 1964, and February 8 of this year, I described the national solid waste situation in some detail, based on information I had received from conversations with, and through reading articles by, many people who know most about this problem, and I would like to share with you the essence of what I have learned.

We have within our means the technological resources to grapple with the problem and work toward a solution. What we do not have, however, is an organized national program, modestly financed with Federal funds, to provide a Federal-State-local nucleus for action. If the Congress can provide a national nucleus for action against air pollution, water pollution, and radiological health problems—as we have done and are doing—certainly we can do the same for a problem as pressing in all respects, for we must not overlook the fact that solid waste disposal problems are parallel and related to our air and water pollution problems.

In the United States we spend nearly $3 billion a year for solid waste disposal services, but we are spending practically nothing for research into the underlying problem—how to dispose of such waste economically and efficiently without destruction of, or even harm to, our land, air, and water resources. Total expenditures for research in the area of liquid wastes run about $10 million a year. In contrast, the total of research money spent for solid waste collection and disposal does not exceed half a million dollars a year from both Government and private sources. Thus, it would seem our interest in the solid wastes problem is one-twentieth of our interest in liquid wastes; yet the two are interrelated.

In California we have become so concerned about the environment of the future that in January of 1964 we held a "Conference on Man in California: 1980's." Over 500 leaders, drawn from Government, science, and private enterprise, met for the first joint discussion of current environmental trends and their implications for life in the 1980's. The proliferation of solid wastes—domestic, agricultural, industrial—were discussed with the same degree of seriousness attending the discussions on air and water pollution, food supply, land use, transportation, and employment.

As it is in California, so it is across the Nation. I am convinced, from my study of the problem, that if we do not now face up to and challenge the issue, in 10 years the question of solid waste control and abatement will appear almost insoluble, and the cost of an appropriate program then will be astronomical.

As I stated before, I do not pretend to know all the answers on the subject of solid waste disposal; in fact, I am willing to admit I do not even know all the questions. I do know, however, that the subject is in urgent need of attention as quickly as we can get to it, and I most earnestly recommend that this committee give favorable consideration to the legislation I have proposed so that the experts can begin.

The CHAIRMAN. We appreciate your appearance and testimony Mr. Roosevelt.

Mr. ROOSEVELT. Thank you for the opportunity, Mr. Chairman.

The CHAIRMAN. We will hear now from our colleague from Maryland, the Honorable Clarence Long.

TESTIMONY OF HON. CLARENCE D. LONG, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MARYLAND

Mr. LONG. Mr. Chairman, I appear today before this distinguished subcommittee to urge approval of my bill, H.R. 2105, to curb air pollution by requiring that manufacturers install exhaust-control devices on all new motor vehicles. Standards for these devices would be established by the U.S. Surgeon General; failure to comply with them would be punished by a fine of up to $25 per vehicle sold without proper equipment.

Everyone, including the automakers, agrees that exhaust fumes from cars, trucks, and buses pollute the air around us. In testimony early this year before the Illinois Motor Vehicle Laws Commission, a spokesman for the Automobile Manufacturers Association admitted: "The motor vehicle manufacturers recognize that the over 85 million motor vehicles now registered in the United States do contribute to air pollution."

Motor exhaust fouls our cities and towns. Smoke and soot from such fumes cause as much as $5 billion a year in plant and property damage. Corrosion and soiling caused by motor exhaust has been estimated to cost the average person $30 a year. The damage that these fumes can do is evident to anyone who has inspected an automobile exhaust pipe after several thousand miles of use.

Exhaust fumes sicken pedestrians and motorists alike and may even cause death. These fumes offend our noses; irritate our eyes; and foul the air we breathe. Auto exhaust has been shown to cause cancer in mice; scientists fear that it produces the same disease in humans.

Beginning next year, the General Services Administration will demand that all the cars bought by the Government be equipped with exhaust control devices; California now requires that such devices be installed on new vehicles sold in that State.

With these exceptions, motor exhaust is the only major source of air pollution not under some degree of local or Federal regulation. The time for such regulation is now. Motor vehicles already dump 92 million tons of carbon nonoxide alone into the air. Within the next decade, the number of automobiles trailing this lethal gas and

other harmful pollutants along our roads and highways will increase by a third. The air around us is an exhaustible resource which must be protected and conserved. To prevent increasing damage to property and health from exhaust fumes and to insure that our children and grandchildren will have clean air to breathe, we must begin the moves needed to stop this fouling of our environment now.

The CHAIRMAN. Thank you for your testimony, Mr. Long.

Mr. LONG. Thank you, Mr. Chairman.

The CHAIRMAN. We have the Honorable James M. Quigley, Assistant Secretary of the Department of Health, Education, and Welfare.

I believe you have with you, Mr. Quigley, Mr. Dean W. Coston, a deputy from your office of Legislative Services.

STATEMENT OF HON. JAMES M. QUIGLEY, ASSISTANT SECRETARY OF HEALTH, EDUCATION, AND WELFARE; ACCOMPANIED BY DEAN W. COSTON, DEPUTY ASSISTANT SECRETARY FOR LEGISLATIVE SERVICES; VERNON G. MacKENZIE, ASSISTANT SURGEON GENERAL, CHIEF, DIVISION OF AIR POLLUTION, PUBLIC HEALTH SERVICE; AND WESLEY E. GILBERTSON, CHIEF, DIVISION OF ENVIRONMENTAL ENGINEERING AND FOOD PROTECTION SERVICE, PUBLIC HEALTH SERVICE

Mr. QUIGLEY. Thank you, Mr. Chairman.

I am also accompanied by Mr. Vernon G. MacKenzie, on my left, who is the Chief of the Division of Air Pollution, Public Health Service; and Mr. Wesley E. Gilbertson, who is Chief of the Public Health Division of Environmental Engineering and Food Protection.

Mr. Chairman, I, Mr. MacKenzie, and Mr. Gilbertson all have statements which we will submit for the record, or read, or we will proceed in any way which will most suit your convenience and that of the committee.

The CHAIRMAN. Very well. We are glad to have all of you gentlemen. And, Mr. Secretary, I suggest that you proceed as you desire.

Mr. QUIGLEY. I will begin by reading my statement. I think theirs tends to be more specific, whereas mine, I hope, is a general overall view of the problem as we see it.

Mr. Chairman, I welcome the opportunity to be here on behalf of the Department of Health, Education, and Welfare to discuss the several legislative proposals now before the subcommittee dealing with the problem of air pollution.

The subject with which these hearings are concerned, air pollution, is an environmental problem of prime national importance. The extent to which this problem is increasing in the United States and the undeniable threat to the public health and welfare posed by air pollution demand that this problem be dealt with to the fullest degree which our knowledge and skills permit, not only today but in the years ahead.

The Clean Air Act of 1963, which this subcommittee had a major part in developing, is helping to create a new era in our Nation's efforts to arm itself against the air pollution foe. The various amend-

ments and supplements to the Clean Air Act contained in the bills you have under consideration are intended to further strengthen and accelerate the national attack on air pollution. The Department of Health, Education, and Welfare is, therefore, emphatically in agreement with the major objectives sought by these legislative proposals. As our report to the chairman indicates, we recommend certain modifications in the proposed legislation, modifications which Mr. MacKenzie and Mr. Gilbertson will discuss in some detail. We feel that the modifications which are being recommended for your consideration and approval would serve to improve the pending legislation by giving the Federal Government greater flexibility and additional essential tools for its broad pursuit of better air pollution control and solid waste disposal which would enable the Federal Government to be of even greater assistance to the State and local governments upon whom rests a major responsibility for the control of pollution.

In the 18 months since President Johnson signed the Clean Air Act, and especially in the 9 months since funds became available with which to implement the major new activities which the act calls for, I believe we have begun to see concrete evidence of the forging of a new national air pollution control effort, the central goal toward which the act is directed. In less than a year, the level of spending by State and local governments for air pollution control activities has increased by some 40 percent, chiefly as a result of the stimulus provided by the awarding, on a matching basis, of Federal grants-in-aid to State and local air pollution control agencies. Moreover, the Clean Air Act has helped to focus substantially increased attention on a number of aspects of the total air pollution problem, particularly the control of emissions associated with motor vehicles, Federal facilities, and the disposal of solid wastes.

These are, of course, among the areas with which pending legislation is primarily concerned, and they are unquestionably areas in which more progress—and legislation—are needed.

There is every reason to believe that the problem of automotive air pollution can be brought substantially under control by the adoption and enforcement of Federal standards limiting motor vehicle emissions. There are no longer any insoluble technical obstacles which prohibit real progress toward motor vehicle emission control. The State of California, by statute, has directed that virtually all new cars sold in that State beginning with the 1966 model year—and that means only about 3 months from now—be equipped with exhaust control systems limiting the amount of hydrocarbons and carbon monoxide that may be discharged into the atmosphere. The automobile manufacturing industry has said it can comply with the California law and, moreover, that it could, if required by Federal law, equip all new cars with control systems by the 1968 model year, in other words, by the fall of 1967.

We have no doubt that such a great stride toward better air pollution control is in general technically feasible. Evaluation of the California experience during the next year, as well as evaluation of automobiles purchased for the Federal Government by the General Services Administration, which will be equipped with the same types of control systems slated for California, should give us valuable techni-

cal information needed to guide both industry and government in the nationwide application of motor vehicle exhaust control systems.

We also feel, as our report indicates and as Mr. MacKenzie will discuss more fully, that the Secretary of Health, Education, and Welfare should be authorized to establish and amend such motor vehicle standards by regulation, as provided in the Senate bill, S. 306, which is now before this committee. To include in the law numerical standards on specific pollutants and, furthermore, to specify the technical means by which pollutant emissions should be measured would, we feel, make it difficcult, perhaps impossible, for the Nation to take prompt advantage of improvements in technology which can be expected to occur.

In the same connection, we believe that the proposed legislation on control of motor vehicle pollution would be strengthenned if the distinction between gasoline-powered and diesel-powered vehicles and engines were dropped. Although the type of engine and the type of fuel the engine is designed to use impose some differences in pollutional discharges and in the methods of controlling them, there would seem to be no need to postpone legislative authority for the establishment of standards for diesel-powered vehicles. We would favor treating the total motor vehicle population as a broad category of air pollution source. In this way the Secretary, without seeking additional legislative authority, could prescribe standards on broad classes of vehicles as soon as such standards are technically feasible.

The long-range effectiveness of motor vehicle pollution control will depend substantially upon proper maintenance and inspection of control systems incorporated in motor vehicles. The Federal Government should be prepared to assist State governments in developing the means for implementing inspection programs. At the present time, we are seeking through research the development of methods for simple and economical exhaust emission measurements suitable for incorporation in such inspection programs. We, therefore, recommend that consideration of means of federally stimulating the initiation of inspection systems be deferred.

Mr. Chairman, I think we are on the verge of a major, unprecedented advance in our efforts to cope with the contemporary air pollution problem. If we act decisively and prudently, we will begin to see progressively more broad and effective control of the motor vehicle as a source of air pollution. The adoption of S. 306, as modified in line with the Department's recommendations, would mark an important forward step toward freeing this Nation of the mounting smog burden, and the incalculable price we pay for it in terms of hazards to the public health and welfare. If we fail to take this step, we can surely look forward to a nationwide smog problem whose proportions none of us would care to contemplate.

The Clean Air Act contains a clear mandate to Federal agencies and departments to control pollution sources at Federal installations and facilities. The Federal Government has a responsibility to demonstrate by example the best results that can be achieved through proper application of air pollution control techniques and equipment. We are, therefore, in agreement with legislative proposals which would enable the Department of Health, Education, and Welfare to

cooperate more effectively with and assist other Federal departments and agencies in their air pollution control efforts. The present Clean Air Act contains authority for establishment of a permit system for classes of Federal pollution sources designated by the Secretary of of the Department of Health, Education, and Welfare. Several of the bills before you would eliminate the permit system from the Department's legislative authority. We recommend that such action be taken only if the performance standard setting authority implicit in the present law is otherwise provided.

We feel that the provision contained in several of the bills under consideration which would allocate all Federal air pollution control funds to the Department of Health, Education, and Welfare, for redistribution to other agencies and departments, imposes a complex and administratively impractical step in the Federal budget process. It is our recommendation that, as proposed in the chaiman's bill, budget items for air pollution control be included in the appropriations authorized for expenditure by the individual agencies. This is, in our opinion, a more workable approach to the problem, and we recommend that this concept be incorporated in legislation to amend the Clean Air Act.

The Department has no objection to the directives contained in several of the bills before this subcommittee, to make training available to Federal personnel responsible for air pollution control, to evaluate control operations at Federal facilities and installations, and to gather and periodically transmit to Congress information on the status of air pollution control activities at Federal installations, all of which we consider helpful in strengthening the control of air pollution arising from Federal installations. The essential authority for these functions is included now in the Clean Air Act.

In our experience, the air pollution control problems at Federal installations are generally comparable to those encountered outside the Federal Government. They involve chiefly fuel combustion for heat and power, manufacturing, and refuse disposal. If we are sucessful in bringing Federal air pollution sources under the highest practicable degree of control, we will both eliminate sources of air pollution which add to the total pollution burdens in many American communities and we will demonstrate for all to see that the control of air pollution sources can be accomplished promptly and economically. We have, in short, a great opportunity to provide leadership by deed as well as by word.

I have asked Mr. Gilbertson to be here today to discuss in detail our recommendations with respect to a program to encourage needed progress in the important area of solid waste disposal, but I should like first to offer some general comments in this area.

President Johnson has recommended solid waste disposal legislation and the Solid Waste Disposal Act transmitted with our report is the administration's proposal. We urge its prompt consideration and enactment.

The solid refuse disposal needs of our Nation, particularly in the urban areas where the great majority of Americans live, have far outstripped not only our facilities to dispose of refuse safely and economically but also our knowledge of how this task can be met. If we are not to bury our cities in mountains of refuse and worsen. rather than improve, such environmental problems as air and water pollu-

tion, soil contamination, and pest control, we must do more than simply expand and proliferate presently used methods of refuse disposal. We must seek new methods of meeting this challenge and above all we must view this problem comprehensively. Its full scope entails more than the elimination of refuse by whatever means seems convenient, for this approach has contributed to the serious problem before us. We must instead consider solid waste disposal in all of its complex ramifications. It is not prudent to destroy usable materials along with unwanted wastes as we move into the future; we may wish to harness the power inherent in the heat of incinerator fires and to return to the earth those deposits which would enrich rather than despoil it. To explore this complex problem which we have neglected for much too long already, we need a national program of research, demonstrations, and technical and planning assistance.

From this point of view, there is no question that the Federal Government needs new authorities and resources to assist States and local governments in giving long overdue attention to the problem of solid-waste disposal. Basically, we favor the approach to this objective contained in title II of S. 306 as it was approved by the Senate. However, we are offering for your consideration a number of modifications proposed in the administration's draft bill which we believe would improve upon that language. Mr. Gilbertson will develop our recommendations more fully in his presentation.

The various bills before the subcommittee contain a number of additional provisions, which are dealt with in the Department's report, and on which I should like to comment briefly at this time.

We are certainly in agreement with the general objective of that provision in several of the bills which would increase the Department's laboratory and research facilities. We feel, however, that rather than a specific Federal air pollution control laboratory, the Congress should authorize the Secretary to establish, staff, and equip such facilities as he deems necessary to carry out the Department's responsibilities under the Clean Air Act. There is no question that the Division of Air Pollution is hampered by inadequate facilities at the present time, and that this inadequacy will become more critical as the pace of air pollution control nationally quickens. We feel that the Secretary should be authorized to establish additional facilities in recognition of the broad and changing needs of the Federal air pollution program. These should include, in addition to laboratories, space, and equipment for training, for evaluation of automotive and other air pollution control systems and for administration of expanding technical assistance and grant-in-aid programs.

We favor in principle proposals to encourage increased private expenditures for air pollution control. Since the proposals to encourage private expenditures for control now before this committee are directly related to national tax policy we would defer to the Department of the Treasury in this connection.

Several of the bills under consideration call for the establishment of additional technical advisory committees relating to specific portions of the Federal air pollution program. We recommend that these proposals be deleted from the legislation. The Department now makes use of consultants from within the Federal Government, from State and local governments, from industry, and from the field of research. Establishing additional committees by statute would not, in our opin-

ion, make the consultative process more productive; and it would tend to have the undesirable effect of compartmentalizing the Federal program in an arbitrary, and possibly restrictive manner.

Closely related to the proposed addition of advisory committees are the various legislative proposals which would direct the Secretary to initiate research programs on specific aspects of the total air pollution problem. We are confident that the Clean Air Act provides sufficient authority to the Department to pursue essential and promising paths of research, to shift research emphasis in response to changing needs and potentialities, and to bring promptly to the attention of Congress through already established reporting procedures, any problem areas which our legislative authority and resources may not enable us to reckon with. We, therefore, recommend that these provisions be omitted from the legislation this subcommittee develops.

In connection with the proposals for additional periodic reports to Congress on elements of the Department's air pollution program, we recommend strongly that those reports for which we are now responsible under the Clean Air Act, together with the additional reports that are called for in proposed amendments to the act, be consolidated into one comprehensive annual report by the Secretary. In addition to providing the detailed information desired by the Congress, a single report would be able to show and discuss interrelationships among areas of the total air pollution control effort in which the Congress has shown particular interest.

Mr. Chairman, the Department of Health, Education, and Welfare welcomes the keen and perceptive interest which the Congress has shown not only in the Federal air pollution program but also in the total national control effort. The development of the Clean Air Act demonstrated that well conceived Federal legislation can provide the framework for the building of a sound national program to reduce the burden of contamination in the air and reverse the trend toward more serious health, economic, and esthetic injuries resulting from polluted air. The amendments to the Clean Air Act, which the Senate has approved and which this subcommittee is now considering, would carry forward by several long strides the progress that has already been made, and they would bring this Nation considerably closer to realization of President Johnson's goal of an environment "pleasing to the senses and healthy to live in." We urge the prompt enactment of S. 306 amplified with the provisions of H.R. 7429, with the modifications we have suggested.

If it is agreeable with the chairman and the members of the committee, I would answer any questions or call on Mr. MacKenzie to present his statement, or whatever you wish.

The CHAIRMAN. I suppose the better procedure would be to present the entire program, because questions may be directed to the other phases. You may proceed as you desire.

Mr. MACKENZIE. Mr. Chairman, in the interests of conserving the time of the committee, I have a statement that I would like to submit for the record and from which I will attempt to make summarization.

The CHAIRMAN. Very well. Your statement will be included in the record.

Mr. MACKENZIE. I am happy to have an opportunity to supplement the testimony presented by Mr. Quigley and to make some further comments.

The need for a nationwide attack on the motor vehicle pollution problem is beyond question. More than 85 million motor vehicles are now in use in the United States and their number increases with every passing year. The pollutants they release into the atmosphere include highly toxic substances such as carbon monoxide, as well as hydrocarbons and nitrogen oxides, which are the principal gases from which photochemical smog is produced. Air sampling studies conducted over the last several years by the Public Health Service and by various State and local agencies leave no doubt that automotive smog is occurring with increasing frequency and severity in urban areas throughout the United States.

There is ample evidence that the adverse effects of motor vehicle pollution constitute a serious and worsening hazard to public health and the national welfare.

Detailed information on the known and suspected health effects of vehicular pollution is contained in reports to the Congress in 1962 from the Surgeon General of the Public Health Service, and in December 1964 from the Secretary of Health, Education, and Welfare.

Techniques and equipment are now available for reducing emissions from automobile exhaust tailpipes, the major source of motor vehicle pollutants. The automobile industry has indicated that exhaust control systems will be supplied on cars for distribution in California beginning with the 1966 model year, in compliance with California law, and that such systems could be supplied on all new cars manufactured in the United States by the 1968 model year if required by Federal law.

We have made arrangements for extensive testing of the performance of the systems to be available on the 1966 models under a broad range of environmental and operating conditions in cooperation with General Services Administration.

It is important technically, in our opinion, that there be flexibility in the authority to establish pollutant emission standards relating to the discharges from motor vehicles.

Under the provisions of S. 306 which would authorize the Secretary to establish and revise standards for control of motor vehicle pollution, the Federal Government could make timely revisions and adjustments of emission standards and related regulations to meet changing national needs for control of motor vehicle pollution and to take prompt advantage of improvements in technology for control of vehicular emissions as these improvements are developed.

We believe furthermore, that the Secretary should have broad authority, as provided in S. 306, to determine the types of pollutants for which standards should be established and enforced, that his authority should not be limited to hydrocarbons and carbon monoxide as is spelled out in some of the bills before your committee.

In connection with the control of emissions from motor vehicles, there is no doubt in our opinion that consideration must be given to inspection procedures designed to insure proper maintenance of motor vehicle emission control systems which would be installed in compliance with established standards.

However, we do not have the technical capability at the present time to provide the procedures and equipment that would be required in implementing such inspection programs. Research is needed to develop these. Instruments and procedures will need to be found which

would enable technicians to perform relatively complex technical analyses quickly and accurately. These do not now exist.

We are engaged in research efforts which are pointed toward the development of instruments and procedures capable of large-scale application for this purpose. I would like to emphasize, however, that we do not believe that the control requirements should be delayed pending the development of these inspection procedures.

In this summarization I would like to comment on only one provision of the various proposals pertaining to the control of air pollution from Federal establishments and buildings which are included in several of the bills pending before the committee.

This relates to the permit system which is currently authorized under section 7(b) of the act. We recommend that the permit system now contained in the existing legislation be deleted only if in its place the Secretary is authorized to establish performance standards for Federal facilities and installations.

Mr. Quigley has already presented our views regarding new authority for the establishment of a Federal air pollution control laboratory as proposed in several of the bills before the committee. I would like to emphasize the need of this from a technical standpoint and to point out that, in addition to comments that have been made regarding the inadequacy of our existing facilities, this reemphasizes a conclusion that was reached several years ago by a Committee on Environmental Health Problems that was appointed by the Surgeon General of the Public Health Service to review overall needs and activities in this broad area.

Mr. Chairman, I appreciate the opportunity to submit the statement in amplification of the recommendations that Mr. Quigley has made. We have based our recommendations on the best available technical knowledge in this field. The modifications of the bills that we are recommending would, we feel certain, accelerate and strengthen sound air pollution control activities at all levels of government.

I will be glad to answer any questions or provide any additional information on portions of the legislation concerned with air pollution controls, Mr. Chairman.

The CHAIRMAN. Thank you very much.

(The attachments follow:)

THE DISTRIBUTION OF VEHICULAR AIR POLLUTION IN THE UNITED STATES

(By Robert M. Brice and John H. Ludwig, Laboratory of Engineering and Physical Sciences, Division of Air Pollution, Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio, presented at the annual meeting of the Air Pollution Control Association, Toronto, Canada, June 1965)

ABSTRACT

The contribution of automotive vehicular emissions to air pollution and the magnitude of the effects of these emissions have been well documented in Los Angeles County and to a lesser extent throughout the State of California. Data are presented which show the presence of photochemical "smog" in a number of communities outside California. The severity and prevalence of "smog" in eastern communities is not as high as in Los Angeles; however, evidence from most large cities where atmospheric pollutants have been measured shows some photochemical activity with production of oxidants throughout the year and severe "smog" when adverse meteorological conditions occur. Plant damage of the types associated with photochemical pollutants has been observed in many areas throughout the country and further indicates the presence of adverse levels of motor-vehicle-derived pollutants. Source surveys in a number of cities

in the United States show that motor vehicles are responsible for very appreciable amounts of the total emissions of hydrocarbons, nitrogen oxides, and carbon monoxide.

The facts presented clearly point to potential problems under current conditions and problems of increasing severity as population densities and use of motor vehicles increase.

Key words:

Vehicular air pollution.
Photochemical smog.
Total oxidant.
Carbon monoxide.
Vehicular emissions.
Effects of vehicle pollution.

INTRODUCTION

The contribution of automotive vehicular emissions to air pollution and the extent of effects attributable to photochemical smog has been well documented and publicized in Los Angeles County and throughout the State of California. A growing body of information is also available on the distribution and prevalence of vehicular emissions and their effects in other parts of the United States.

Much of this information comes from air quality data produced by the continuous air monitoring program (CAMP) of the Public Health Service. CAMP data give the levels of primary vehicular pollutants (hydrocarbons, carbon monoxide, and nitric oxide) and of secondary pollutants (total oxidants and nitrogen dioxide) most commonly produced by photochemical reactions in the atmosphere. Pertinent air quality data are also being obtained in other Public Health Service studies, in State and local networks, and in other research investigations. The occurrence of photochemical smog has also been documented by observation of the unique vegetation damage it causes. Finally, some insight as to the importance of vehicular emissions in specific areas can be obtained by comparing the magnitude of vehicular emissions of hydrocarbons, carbon monoxides of nitrogen to estimated total emissions of these contaminants from all sources.

This report brings together data from several sources relative to the occurence and prevalence of vehicle emissions or their effects on the atmosphere or plants. It presents a clear picture of the importance of motor vehicles as pollution sources in urban areas throughout the country.

SUMMARY

Data from a number of communities outside of California provide ample evidence of photochemical smog. The severity and prevalence of smog in eastern communities is not as high as in Los Angeles. The evidence shows, however, that in large cities where measurements have been made, photochemical activity with production of oxidants occurs throughout the year and significant smog occurs many times a year under adverse meteorological conditions. Furthermore, source surveys indicate that in cities throughout the country, motor vehicles are responsible for about half the emissions of hydrocarbons and nitrogen oxides and nearly all the emissions of carbon monoxide. The facts points to potential serious problems under current conditions and problems of increasing severity as population densities and use of motor vehicles increase.

CONCENTRATIONS OF SIGNIFICANCE

Experimental studies in the laboratory as well as observations of air pollution occurrences throughout the country have shown that photochemical smog products known to be present in polluted air cause eye irritation, (*1–4*) plant damage, (*5–9, 28*) and visibility reduction.

Ozone and peroxyacyl nitrates (included in "total oxidants") are produced through photochemical reactions and are agents known to damage vegetation (*10–18*). Precursors of these oxidants are nitrogen oxides and hydrocarbons, whose major sources of emission are motor vehicles. The concentrations of significance vary with the specific type of plant, with location, and with other environmental conditions.

Summaries of statements pointing out harmful concentrations are cited from several reports. The technical report of the California standards for ambient air quality and motor vehicle exhaust (*19*) concludes: "Visible plant damage of economic importance can be expected from 1 hour exposure at 0.20 parts per million of oxidant (potassium iodide (KI) method) in the laboratory. In the

field, similar injury occurs at levels of from 0.12 to 0.15 parts per million. Impairment of yield and quality occurs with even lesser dosage." This report further states: "The data indicate that a progressive increase in eye irritation begins to occur at from 0.07 to 0.12 parts per million of oxidant by the potassium iodide method and from 0.20 to 0.24 parts per million by the phenolphthalin method." The State of California, recognizing the potential hazards from photochemical pollutants has set 0.15 parts per million oxidant (KI method) as the level at which eye irritation, damage to vegetation, and reduction in visibility will occur.

The Colorado Air Pollution Advisory Committee has recommended the following ambient air quality standards (*20*).

Total oxidant (KI method): 0.10 parts per million for 1 hour (1 percent of time during any 3-month period).

Oxides of nitrogen: 0.10 parts per million for 1 hour (1 percent of time during any 3-month period).

The annual report of the Metropolitan Washington Council of Governments Oxidant Sampling Network, October 1961 to September 1962 (*21*), states that the first signs of smog odor occur at an oxidant concentration of approximately 0.15 parts per million (phenolphthalin [PHTH] method) and the level that produces eye irritation, vegetation damage, and visibility reduction is approximately 0.25 parts per million (PHTH method).

EXTENT OF PLANT DAMAGE

The widespread evidence of plant damage throughout the United States has been shown by several studies, of which the following are examples:

Middleton (*22*) reported evidence of plant damage from photochemical air pollution in 23 States and the District of Columbia. The data in table 1 were taken from Dr. Middleton's report. The areas have been classified by census region and State, showing that such damage occurs in nearly all regions of the country.

Daines (*23*) has reported foliage markings of the oxidant type on 35 types of plants in New Jersey. Oxidant concentrations above about 0.05 parts per million were considered levels at which tobacco leaves may be marked.

Went (*24*) stated that unmistakable smog damage to vegetation was found in or near Los Angeles, San Francisco, New York, Philadelphia, and Baltimore.

Berry and Ripperton (*25*) state that attacks of emergence tip-burn on white pine occurred in Pocohantas County, W. Va., in the summer of 1961 during a period of high atmospheric oxidant concentration. The authors state that oxidant concentrations as high as 0.065 parts per million were recorded.

TABLE 1.—*Areas of occurrence of plant damage from photochemical air pollution in the United States* (*22*)

New England:	South Atlantic—Continued
Connecticut	Maryland
Massachusetts	Virginia
Middle Atlantic:	West Virginia
New Jersey	North Carolina
New York	Florida
Pennsylvania	East South Central: Tennessee
East North Central:	Mountain:
Illinois	Arizona
Ohio	Colorado
West North Central:	Utah
Kansas	Pacific:
Missouri	California
South Atlantic:	Oregon
Delaware	Washington
District of Columbia	

Heggestad (*29*) has reported that damage to a sensitive species of shade-grown tobacco was caused by a single 2-hour fumigation with 0.07 parts per million ozone as measured by a Mast instrument.

Sechtler, et al. (*30*), have reported damage to small grain species in 2-hour greenhouse fumigations with 0.08 parts per million of ozone (Mast).

Newbury (*46*) has reported increasing incidence of weather fleck in tobacco in an area along the northern shore of Lake Erie which is about 70 miles from any known major pollution sources. It has been postulated that the damage

results from aged photochemical "smog" originating in these distant sources and transported under light wind conditions and surface inversion created by the relatively cool lake.

AIR QUALITY MEASUREMENTS

The most serious known problem with photochemical "smog" is in Los Angeles County. A great amount of work has been done and much information has been obtained on the problem in this area. In other areas of the country, a large quantity of air quality data obtained by the continuous air monitoring program (CAMP) and other sources indicates that current or potential problems of photochemical "smog" are widespread throughout the United States.

Table 2 summarizes data on concentrations of total oxidant (KI method) obtained at CAMP locations. The summary gives yearly means; maximum monthly, daily, and hourly averages; and maximum 5-minute concentrations of this pollutant in each of seven cities where CAMP monitoring was carried out during 1964. Maximum 1-hour average concentrations of oxidant in parts per million were 0.13 (Chicago), 0.26 (Cincinnati), 0.46 (Los Angeles), 0.20 (Philadelphia), 0.17 (San Francisco), 0.26 (St. Louis), and 0.20 (Washington, D.C.). These levels are significantly high and leave little doubt as to the occurrence of photochemical "smog" in eastern cities as well as California cities.

Data in table 2 indicate the occurrence of high oxidant values in the cities where CAMP monitoring was done. The data in table 3, based on CAMP values obtained during 1964, indicate the prevalence of elevated oxidant concentrations in these cities. In all the cities the maximum hourly oxidant equalled or exceeded 0.1 part per million on a significant number of days; in all cities except San Francisco maximum hourly oxidant concentrations were 0.05 part per million or greater on at least 43 percent of the total days for which valid data were available.

Tables 1 and 2 include data on oxidant concentrations monitored by the CAMP at its site in Washington, D.C. The Metropolitan Washington Council of Governments Oxidant Sampling Network includes seven stations in the metropolitan area at which oxidant samples are taken. Table 4 summarizes data for the period October 1962 through September 1963 (*26*). These values were determined by the phenolphthalin method; multiplying by a factor of 0.5 gives the approximate values yielded by the CAMP instrumentation (KI method). The data in table 4 are especially interesting for two reasons. First, they substantiate previously cited CAMP data in showing that on an appreciable number of days there were periods when the oxidant level in the Washington area exceeded levels that could potentially cause smog odor, eye irritation, or plant damage. Secondly, the data indicate the significant variation in concentrations at different locations within a metropolitan area. It seems reasonable to expect that high oxidant concentrations may be localized phenomena; these data support that belief. Since current continuous air monitoring of oxidant concentrations is usually done at only one location within metropolitan areas, the frequency of periods of high oxidant concentrations at other localized areas within a city may be higher than is indicated by the CAMP data in table 3; conversely, in other areas it may be lower.

TABLE 2.—*Atmospheric concentrations*[1] *of total oxidants (KI method) from continuous air monitoring program—1964*

City	Number days valid data	Year mean	Maximum monthly mean	Maximum daily mean	Maximum hour mean	Maximum 5-min. value
Chicago	254	0.03	0.05	0.08	0.13	0.15
Cincinnati	303	0.03	0.05	0.08	0.26	0.32
Los Angeles	349	0.04	0.06	0.15	0.46	0.51
Philadelphia	289	0.02	0.04	0.09	0.20	0.25
St. Louis[2]	253	0.03	0.04	0.07	0.26	[3] 0.85 0.50
San Francisco	298	0.02	0.03	0.05	0.17	0.22
Washington, D.C.	293	0.03	0.04	0.08	0.20	0.24

[1] Based on preliminary data analysis.
[2] Station began operation in March 1964.
[3] Occurred 8:40 p.m. Nearby source is being investigated for explanation. Next highest value occurred at 7 p.m.

TABLE 3.—*Prevalence of elevated oxidant concentrations*[1]*—Continuous air monitoring program*

[Days on which maximum hourly oxidant (KI) concentration was equal to or greater than concentration shown, January–December 1964]

City	Days of valid data	≧0.15 p.p.m.		≧0.10 p.p.m.		≧0.05 p.p.m.	
		Number of days	Percent of total	Number of days	Percent of total	Number of days	Percent of total
Chicago	254	0	0	15	6	149	59
Cincinnati	303	5	2	36	12	137	45
Los Angeles	349	83	24	149	42	221	63
Philadelphia	289	9	3	37	13	124	43
St. Louis[2]	253	6	2	26	10	156	62
San Francisco	298	1	<1	13	4	72	24
Washington, D.C.	293	4	1	40	14	163	56

[1] Based on preliminary data analysis.
[2] Station began operation in March.

TABLE 4.—*Occurrence of elevated oxidant*[1] *concentrations in Washington, D.C., area (26)*

[Metropolitan Washington Council of Governments oxidant sampling network]

Location	Number of sampling days	Number of sampling days ≧0.15 p.p.m. occurred	Percent of sampling days ≧0.15 p.p.m.	Number of sampling days ≧0.25 p.p.m. occurred	Percent of sampling days ≧0.25 p.p.m.	Maximum oxidant concentration, p.p.m.
District of Columbia Municipal Center[3]	159	57	36	19	12	0.47
District of Columbia Public Health Service[2] (CAMP)	265	55	21	14	5	.52
Alexandria	116	1	<1		0	.16
Fairfax[3]	119	35	30	1	<1	.25
Arlington[3]	102	4	4		0	.22
Rockville[3]	148	11	7		0	.23
Beltsville[4]	126	18	14		0	.24
Cheverly[3]	133	27	20	5	4	.28

[1] Phenolphthalin (PHTH) method; values are approximately double the values obtained by potassium iodide (KI) method.
[2] October 1962–August 1963 only. Highest daily 10-minute sample as recorded by Beckman continuous oxidant analyzer (KI method) multiplied by 2.
[3] 1 10-minute sample each day, Monday through Friday, May through September, and 1 10-minute sample each Tuesday and Friday, October through April.
[4] 1 20-minute sample, routine as (3), through June 1963. 1 10-minute sample, routing as (2) beginning July 1963.

The Colorado Department of Public Health has obtained oxidant values by use of a Mast instrument in Denver. The Mast is a coulometric instrument, sensitive to several oxidants found in the air. Data from the Colorado study (27) show that during May, June, and July of 1964 periods when the oxidant concentration was equal to or greater than 0.05 part per million occurred on approximately 21 percent of the sampling days. The State of Colorado considers approximately 0.03 part per million oxidant as the possible natural background level and concentrations above that as evidence of photochemical activity. A report to the legislature on air pollution in Colorado (Colorado State Department of Public Health) states that the oxidant level reached a high of 0.13 part per million (KI method) on October 17, 1963. The report concluded that a potential for photochemical "smog" is present.

Daines (Rutgers University) has taken oxidant samples at a number of locations in New Jersey for several years. In 1964 (*23*), he reported oxidant values of 0.05 part per million (KI method) and higher at Carlstadt, N.J. The data,

summarized in table 5, are based on samples taken daily over the 4-hour period 1100 to 1500 from May 5, 1961, through November 7, 1963; they probably represent the daily maximum 4-hour concentrations of oxidant for this period. Carlstadt is located 3 or 4 miles west of New York City in an area where some crop production still occurs. These data, table 5, show that on 86 days, or 9.7 percent of the total of 885 sampling days in the period, the 4-hour average concentration of oxidant equaled or exceeded 0.05 part per million (KI). On 23 days, or 2.5 percent of the sampling days, the concentration equaled or exceeded 0.10 part per million. The maximum value recorded during the approximately 3-year study was 0.32 part per million.

A review of literature published to July 1963 shows maximum reported oxidant values in a number of communities. Many of these values, listed in table 6, approach or exceed what is generally considered the adverse level of approximately 0.10 to 0.15 part per million oxidant by the potassium iodide method (approximately 0.20 to 0.30 part per million by phenolphthalein method).

TABLE 5.—*Days in Carlstadt, N.J. (May 18, 1961, through Nov. 7, 1963) when oxidant concentration*[1] *equaled or exceeded 0.05 p.p.m. (23)*

Number of days when oxidant≧0.05 p.p.m	86
Percent of sampling days when oxidant≧0.05 p.p.m.[2]	9.7
Number of days when oxidant≧0.10 p.p.m	23
Percent of sampling days when oxidant≧0.10 p.p.m.[2]	2.5
Maximum concentration (p.p.m.)	0.32

[1] Analyses done by potassium iodide method (KI). Samples taken daily between 1100 and 1500.
[2] 885 sampling days in this period.

TABLE 6.—*Maximum oxidant values reported in a number of American cities*

City	Maximum reported total oxidant, p.p.m.	Method	Reference
Atlanta, Ga	0.14	Phenolphthalein	51
Birmingham, Ala	.20	do	52
Denver, Colo	.13	Potassium iodide	53
Detroit, Mich	.27	do	54
Jacksonville, Fla	.16	Phenolphthalein	55
Louisville, Ky	.58	Potassium iodide	56
Minneapolis, Minn	.39	do	57
Nashville, Tenn	.16	do	58
Phoenix, Ariz	.13	Phenolphthalein	59
Providence, R.I	.27	do	40
Spartanburg, S.C	.10	do	41
Tucson, Ariz	.13	do	42
Do	.23	do	43
Washington, D.C	.41	do	44
Do	.25	do	45

DIURNAL PATTERNS

Figure 1 shows plots of 2-year (1962–63) average concentrations of total hydrocarbon total oxidant, nitric oxide, and nitrogen dioxide in Cincinnati. These data, taken at the CAMP station located in the downtown area, show a diurnal pattern typical of photochemical smog development. This pattern is similar to those occurring in other eastern cities as well as in Los Angeles. The buildup in oxidant is preceded by a buildup in nitrogen dioxide and a decrease in nitric oxide and hydrocarbons.

Figures 2 and 3 are plots of time versus concentrations of nitric oxide, hydrocarbon, oxidant, and nitrogen dioxide in the ambient air at CAMP stations in Cincinnati and Washington, D.C. Photochemical "smog" occurred on the dates represented in these graphs; the data were selected as examples of such inci-

dents, which are not uncommon among cities monitored by the CAMP. These naturally occurring patterns of photochemical smog reactions are typical of laboratory irradiation chamber patterns, such as the example shown in figure 4.

NITROGEN DIOXIDE

The atmospheric concentration of nitrogen dioxide is useful as an indicator of photochemical activity; it has been well established that nitrogen dioxide is formed rapidly in "smog" reactions from the primary exhaust pollutant, nitric oxide. Table 7 shows the mean yearly concentrations; maximum monthly, daily, and hourly averages; and maximum 5-minute concentrations of nitrogen dioxide measured in seven cities by CAMP instrumentation. Table 8 lists the maximum 24-hour concentrations of nitrogen dioxide for 1962 or 1963 and the average 24-hour values for 1962 and 1963 in several cities. These data in table 8 are from the National Air Sampling Network (NASN), which samples on a random schedule 1 day in each 2-week period. The concentrations reach significantly high levels in a number of cities.

CARBON MONOXIDE

Carbon monoxide also is considered an excellent source indicator for pollution of the air by motor vehicle exhaust. Tables 7 and 9, based on CAMP data, show average concentrations in seven cities for 1962 and/or 1963 and for 1964. These data indicate that although the magnitude of the problem varies from one area to another, motor vehicles produce appreciable contamination in communities that are widely separated geographically.

EMISSION ESTIMATES

Emission estimates help to reveal important sources of air pollutants. Nitrogen oxides, carbon monoxide, and hydrocarbons are major gaseous pollutants emitted by motor vehicles, although they are also emitted in various amounts by other sources in urban areas. Table 10 has been prepared from published material to allow an evaluation of the relative importance of vehicular contributions to the total emissions of these gases in several urban communities. Typically, in large metropolitan areas, motor vehicles account for 30 to 50 percent of the nitrogen oxides, 40 to 80 percent of the hydrocarbons, and almost all of the carbon monoxide.

SUMMARY AND CONCLUSIONS

The evidence of photochemical smog reaction products in metropolitan areas outside of California is clear. Data from large urban areas other than Los Angeles indicate that oxidant concentrations equaling or exceeding 0.10 p.p.m. occurred for at least 1 hour on 4 to 14 percent of the days during 1964. This condition occurred on 42 percent of the days in Los Angeles.

Significantly high concentrations of carbon monoxide and nitrogen oxides are now occurring in all metropolitan areas where pollutants are monitored.

Diurnal patterns of concentrations of photochemical "smog" precursors and reaction products in eastern cities are similar to those in Los Angeles.

Plant damage from oxidants have been reported in most regions of the United States.

Current evidence indicates the widespread occurrence of photochemically produced pollutants and their deleterious effects. The problem is significant now and will become more severe with increases in population density and use of automobiles. The projected large increase in urban population depicted in figure 5 will greatly intensify the pollution problem, since levels of "smog" pollutants as well as other pollutants are known to rise with increasing concentrations of human activity. Figure 6 projects a much greater increase in urban than in rural travel and further emphasizes the potential aggravation of pollution problems throughout the country. Present and projected automobile registrations and miles of travel shown in figure 7 also point to a serious increase in problems from pollution by automotive vehicles.

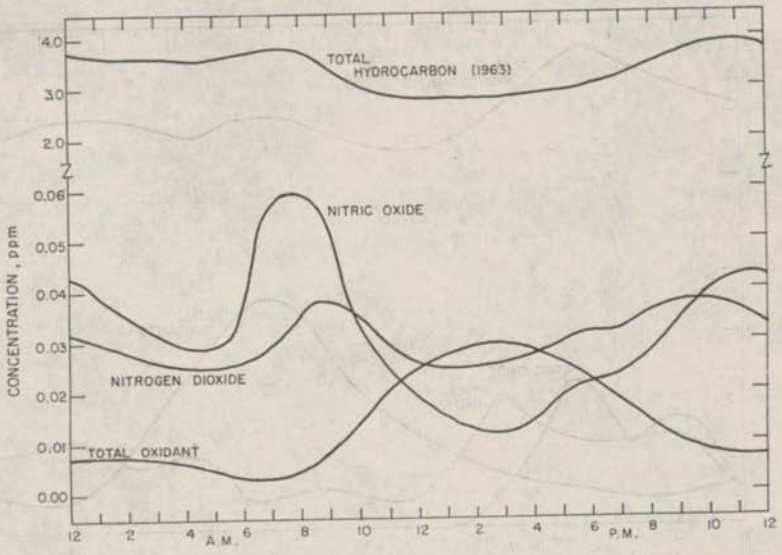


Figure 1. Diurnal variation patterns for 2 year average in Cincinnati, 1962–1963.

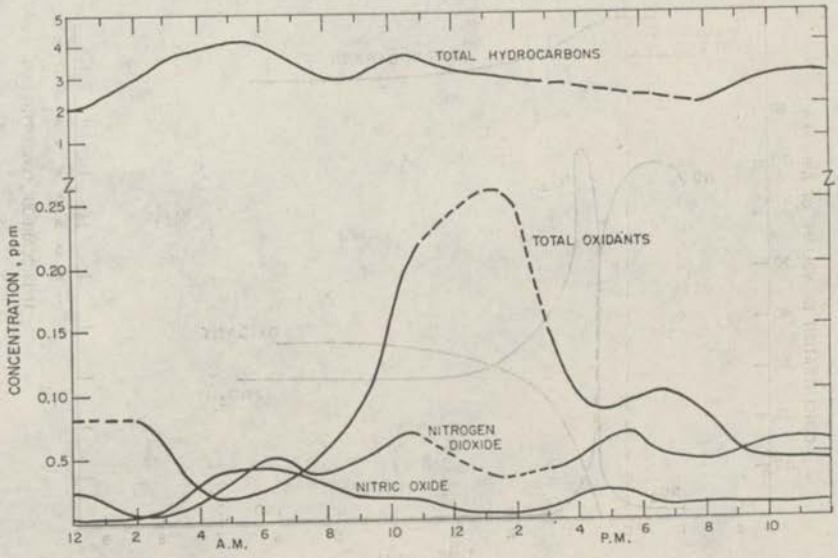


Figure 2. Photochemical "Smog" incident in Cincinnati, July 21, 1964

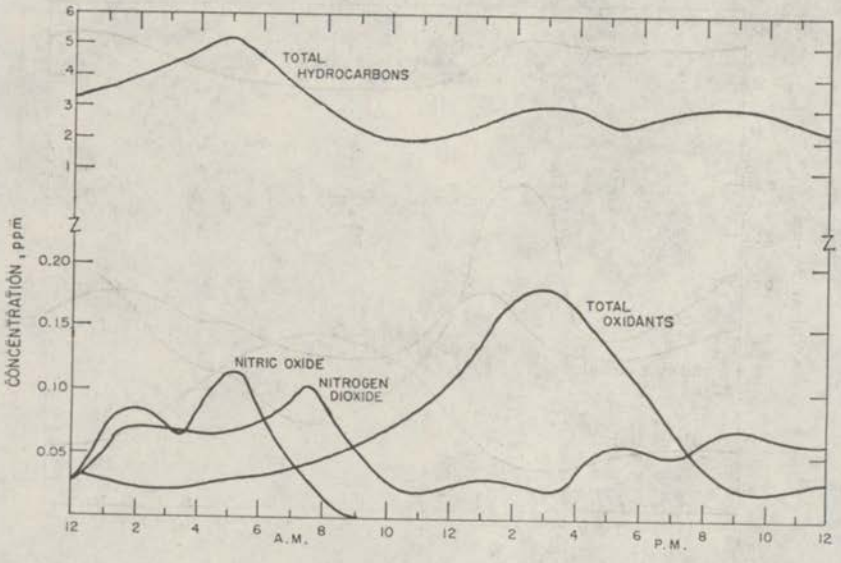


Figure 3. Photochemical "Smog" incident in Washington, D.C., June 26, 1964

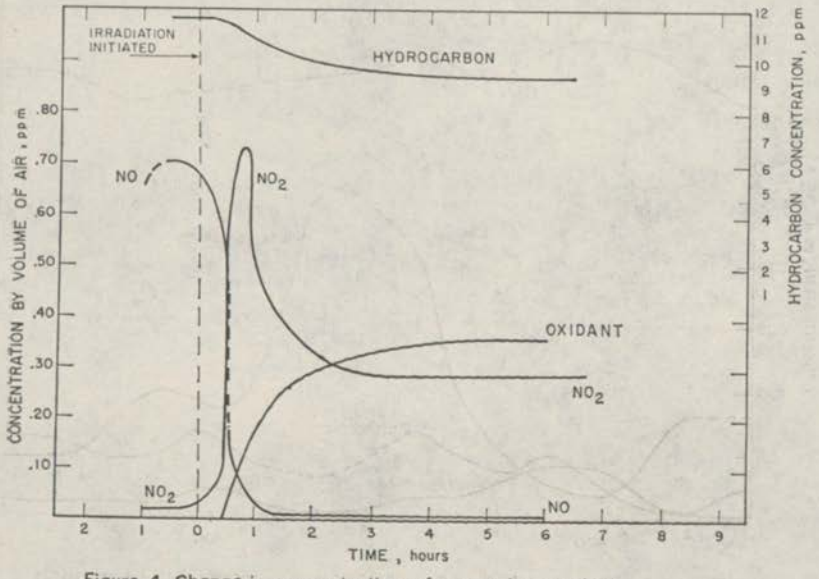


Figure 4. Change in concentration of gases in a typical irradiation chamber test

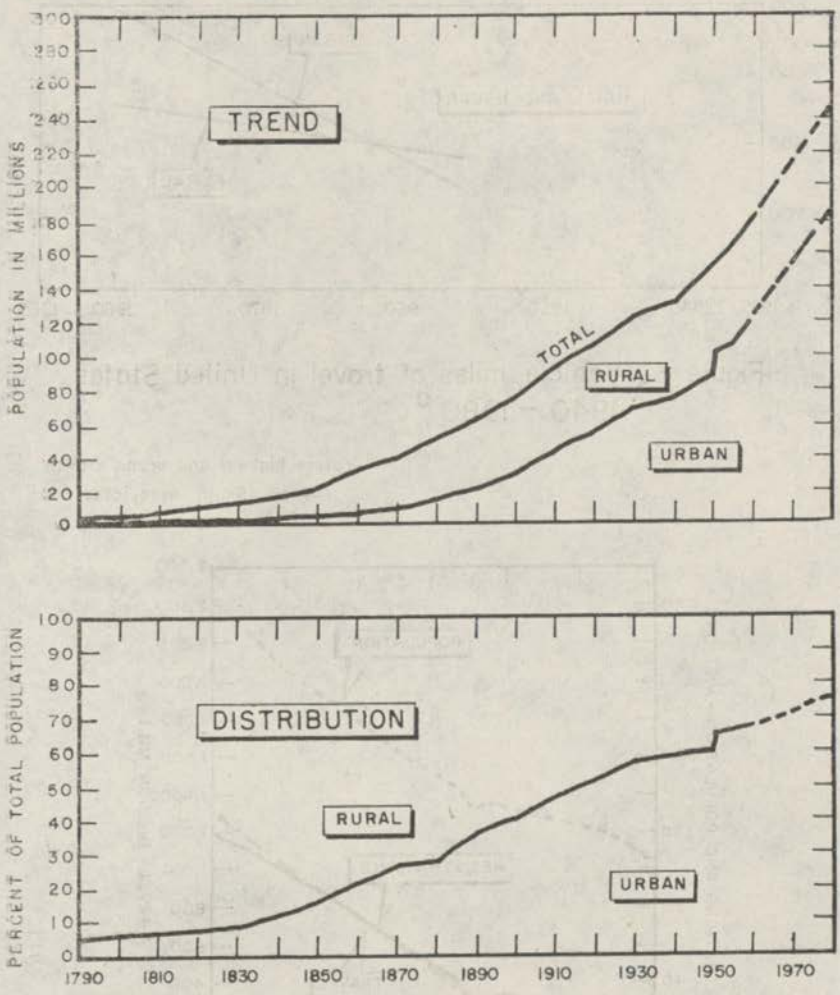


Figure 5. Population trend in United States, 1790 - 1980[a]

[a] "Future highway and urban growth" Wilbur Smith Associates

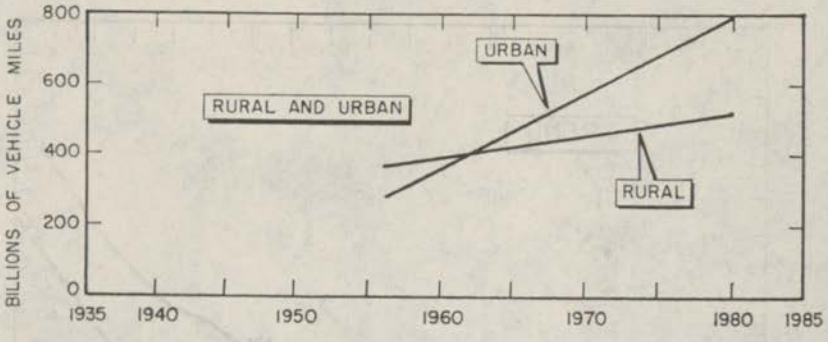


Figure 6. Vehicle miles of travel in United States, 1940 – 1980 [a]

[a] "Future highway and urban growth" Wilbur Smith Associates

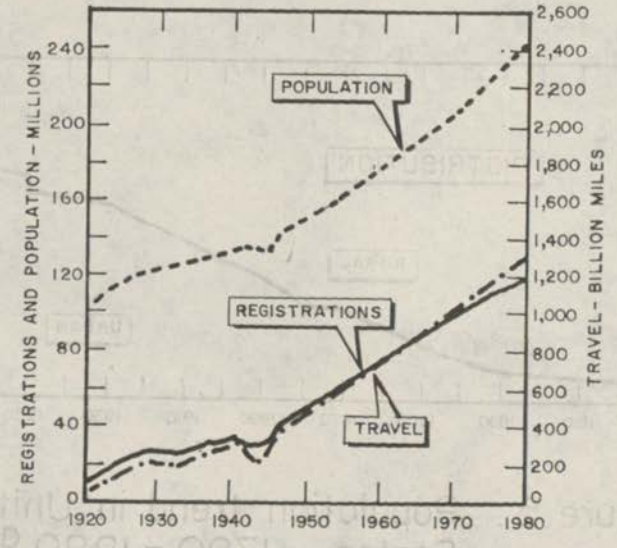


Figure 7. Automobile registration and travel trend in United States

[a] "Future highway and urban growth" Wilbur Smith Associates

TABLE 7.—*Summary of atmospheric concentrations of nitric oxide, nitrogen dioxide, and carbon monoxide from continuous air monitoring program, January–December 1964*

[Concentrations in parts per million]

City	Number days valid data	Year mean	Maximum monthly mean	Maximum daily mean	Maximum hourly mean	Maximum 5-minute value
	nitric oxide					
Chicago	331	0.10	0.16	0.34	0.91	0.97
Cincinnati	347	.04	.10	.30	.65	.68
Los Angeles	339	.08	.21	.45	1.30	1.35
Philadelphia	329	.04	.09	.24	1.15	1.35
San Francisco	317	.09	.13	.29	.77	.85
St. Louis [1]	274	.04	.06	.12	.75	.84
Washington, D.C.	331	.03	.08	.28	.86	.90
	nitrogen dioxide					
Chicago	320	0.05	0.07	0.15	0.47	0.79
Cincinnati	313	.03	.05	.10	.24	.30
Los Angeles	339	.06	.09	.26	.70	.77
Philadelphia	304	.04	.05	.10	.26	.37
San Francisco	304	.06	.08	.18	.41	.52
St. Louis [1]	270	.03	.04	.12	.22	.31
Washington, D.C.	331	.04	.04	.10	.23	.24
	carbon monoxide					
Chicago	297	12	17	27	46	60
Cincinnati	218	6	11	17	22	49
Los Angeles	353	11	14	22	47	50
Philadelphia	311	7	13	21	37	46
San Francisco	326	5	6	10	22	40
St. Louis [1]	295	6	9	17	25	45
Washington, D.C.	253	6	6	13	28	37

[1] Station began operation in March.

TABLE 8.—*Nitrogen dioxide concentrations measured by the national air sampling network* [1]

[Concentrations in parts per million]

City	Maximum, 1962 or 1963	Average, 1962 and 1963	City	Maximum, 1962 or 1963	Average, 1962 and 1963
Los Angeles, Calif.	0.26	0.11	Birmingham, Ala.	.13	.06
Newark, N.J.	.22	.07	St. Louis, Mo.	.13	.05
Philadelphia, Pa.	.19	.08	Tulsa, Okla.	.13	.06
Hartford, Conn.	.17	.06	New York, N.Y.	.12	.06
Pittsburgh, Pa.	.16	.06	San Francisco, Calif.	.12	.08
Columbus, Ohio	.15	.06	Wilmington, Del.	.12	.05
Portland, Oreg.	.14	.05	Cleveland, Ohio	.12	.06

[1] Sampling is done on a random schedule 1 day in each 2-week period.

TABLE 9.—*Average carbon monoxide concentration—Continuous air monitoring program*

[Concentrations in parts per million]

City	Year 1962–63	Year 1964
Chicago	8	12
Cincinnati	7	6
Los Angeles	[1] 11	11
New Orleans	[1] 4	[2]
Philadelphia	11	7
San Francisco	7	5
St. Louis [3]		6
Washington, D.C.	6	6

[1] 1963 only.
[2] Not available.
[3] Station began operation March 1964.

TABLE 10.—*Emissions estimates with percent vehicular contribution* [1]

City	Date	1960 population	NO_x (as NO_2)		CO		Hydrocarbons	
			Tons per day	Percent from vehicles	Tons per day	Percent from vehicles	Tons per day	Percent from vehicles
Chicago [2]	Recent	Urban area, 5,969,000	580	31.4			770	[3] 61.2
Lewiston, Idaho	Late 1950's	2 towns,[4] 18,900	25	24	975	19	38	49
Clarkston, Wash								
Dade County, Fla.[2]	1962	Urban area, 853,000	87	58	1,260	99	216	64
Jacksonville, Fla	Summer, 1961	Urban, 373,000	13	14	360	98	182	23
Do	Winter, 1961	Urban, 373,000	13	7	360	98	208	19
Portland, Oreg	Heating season, 1963.	Urban area, 652,000	134	63			533	62
Polk-Hillsborough Counties, Fla.	Recent	2 counties, 592,000		51		99.5		60
Berlin, N.H	1962	17,800	17.8	41			42	50
Philadelphia, Pa. (city)	1958	2,000,000	300	14			1,350	40
Pittsburgh, Pa	1958	Urban area, 1,804,000	62.6	27			275	80
Reading, Pa	1958	Urban area, 160,000	13.7	23			64.3	73
Harrisburg, Pa	1958	Urban area, 209,500	13.4	23			65.5	73
Media, Pa	1958	5,800	.38	42			3.0	88
North Charleroi, Pa	1958	2,260	.19	63			1.5	73
Cincinnati, Ohio			168	35			295	58
Washington, D.C			289	55			616	78
Los Angeles County	1960	6,038,771	[5] 550 [6] 690	64 [7] 51	[8] 8,600	[8] 84	[8] 1,179	[8] 64

[1] Technical Assistance Branch, Division of Air Pollution, PHS.
[2] Includes process losses.
[3] Without diesel—30.7 percent NO_x, 60.9 percent HC.
[4] One-industry town—pulpmill.
[5] Summer.
[6] Winter.
[7] Emissions of oxides of nitrogen from stationary sources in Los Angeles County, Report No. 4, APCD, County of Los Angeles.
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whelming that polluted air is a contributing factor, and perhaps one of the major causes of lung cancer, as well as heart ailments, asthma, tuberculosis, bronchitis, pulmonary emphysema, and other respiratory ailments. Moreover, the economic toll is considerable in terms of the damaging effects on building materials, trees, ornamental shrubs, farm produce, and on other substances.

New York City's trees and foliage are suffering from the toxic effects of exhaust from the millions of buses, trucks, and automobiles which daily jam its streets. The New York Botanical Garden's senior plant pathologist, Dr. P. P. Pirone, has observed trees, particularly at stoplights and intersections, become partly, then completely denuded of foliage and ultimately killed. Interestingly enough, as one approaches the middle of the block, trees get progressively healthier.

Another example—again in New York. For 6 weeks recently, an electrically driven giant breathing machine was installed at the curb of Herald Square. It inhaled, during that brief time, 5,000 cubic meters of New York's air—the same air all New Yorkers breathe. Afterward, scientists at the Sloan-Kettering Institute removed the filters from the machine, coated with soot, metals, and organic gum which they dissolved in chemicals and separated into several factions. This material was painted on the backs of mice. After a several months waiting period, 90 percent of the mice had developed skin cancer. The scientists who performed and participated in the experiment said they anticipated the result. Obviously, the cancer-causing properties of New York's air should raise a cautionary note although it is stated that the mouse findings cannot directly be related to human beings.

Again, what major disaster, what national catastrophe, are we waiting for before we take the necessary steps to control the filth being poured into our air. The time is now for Congress to show its responsibility by requiring others to meet their responsibility in this area, the Federal Government, State, and local governments, private industry, automobile manufacturers, and owners.

There was a time—not too far back in memory really—when billows of smoke streaming out from factories and smokestacks over our cities was regarded as a good sign—a sign of good times and prosperity. This is no longer true. Now these are warning signals, as clear as a skull and bones, of the poison in the air we breathe and that unless we adopt stringent measures to control pollution of our air this health hazard will assume even more gigantic proportions in the years ahead.

To review the provisions of H.R. 8800 which I introduced with a number of my colleagues, I'd like to take just a few more moments. Title I directs the Secretary of Health, Education, and Welfare to set standards for emission of air pollutants for new gasoline-powered vehicles, effective not later than September 1, 1967. This will mean that the 1968 models must carry devices for controlling motor and gas exhaust. In addition, this title directs the Secretary to recommend legislation to regulate pollution from diesel-powered vehicles by January 31, 1967. It prohibits the manufacture and sale of any vehicle or engine not in conformity with the regulations and provides up to $1,000 fine for any violation and provides for inspection to assure compliance with the regulations. It makes provision for air pollu-

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tion affecting a foreign country and authorizes research on control of automotive pollutants as part of HEW's air pollution research program. The bill also authorizes construction of a Federal Air Pollution Control Laboratory.

It provides for a new act—the Solid Waste Disposal Act—to begin a national research and development program for new and improved methods of solid waste disposal and provides for technical and financial aid to State and local governments to develop, establish, and conduct solid waste disposal programs; provides for grants-in-aid or contracts with public and private agencies, institutions, and individuals for research and training projects and authorizes grants to State, municipal, interstate, and intermunicipal agencies for solid waste demonstration projects. The bill authorizes appropriations of $20 million annually for fiscal 1966 and 1967 to carry out the Solid Waste Disposal Act.

This legislation represents a good beginning in the steps to abate and control pollution in the air. No matter how onerous, no matter how costly, enactment of the legislation before us is imperative.

The CHAIRMAN. Are there any questions? If not, we thank you for your testimony, Mr. Ashley.

Mr. ASHLEY. Thank you for the opportunity, Mr. Chairman.

The CHAIRMAN. Our next witness is our colleague from New Jersey, the Honorable Henry Helstoski. Mr. Helstoski, we welcome you to the committee.

STATEMENT OF HON. HENRY HELSTOSKI, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY

Mr. HELSTOSKI. Mr. Chairman and members of the Subcommittee on Public Health and Welfare, I am most grateful for the opportunity you have given me to testify before this committee on legislation to amend the Clean Air Act.

The Clean Air Act of 1963, Public Law 206 of the 88th Congress, was signed by President Johnson on December 17, 1963, and set into motion a process for stimulating our national efforts to control and abate the pollution of our Nation's air.

Although this act was far reaching in its effects, such as financial aid for control programs, expanded research into the sources and control of air pollution from the gaseous emissions of automobiles and fuel consumption of industrial plants, it was only the beginning of a program which requires the attention of Congress to further enhance the effectiveness of the present law.

The legislation being discussed by the committee today would help meet the objectives as proposed by President Johnson that we end "the poisoning of the air we breathe" and called upon us to "prevent the pollution of our air before it happens."

The millions of motor vehicles which jam the highways and expressways of this country are the main culprits in the pollution of our air and some efforts should be taken to reduce these pollutants.

Our national air pollution, at the present time, is due chiefly to automobile exhausts, smoke discharges from industrial plants, and disposal of solid wastes.

Our increasing population, the expansion of urban and suburban areas, the additional consumption of energy-producing fuels and industrial development and expansion have all added to the creation of solid wastes which are disposed of by burning in open dumps or land fills. These methods are a prime factor in creating a polluted atmosphere for miles around such a disposal facility.

The provisions of the various bills presently under consideration by this committee will provide the necessary stimulus to aid in the proper disposal of these solid wastes.

Another problem which we must face and take every effort to correct is the emission of fumes and smoke from industrial plants. It is a major factor in the pollution of air in the communities in which such industry is located and costly to the residents of these areas because of the corrosion effect on buildings and paints.

The soot, ash, and chemical components of the smoke and fumes emitted by the smokestacks of industrial concerns cause many respiratory ailments. We must take action to make sure that these industrial concerns will be the beneficiaries of some incentive to install devices which will lessen or completely eliminate this particular source of air pollution.

In my own district, the ninth of New Jersey, there are 39 separate communities. Each of them have the same common problem of combating air pollution, which constitutes a substantial everyday experience. Any assistance which the Federal Government can give these communities will be a great step forward in the development of systems which will curtail or greatly diminish the air pollution created by harmful emissions of various types of pollutants.

Any money that the Government spends for research and development is money well spent and can be justified when the research and development is for the benefit of all the citizens of this country.

Polluted air combined with stagnant air is not only costly, but hazardous. Such a combination, by reducing visibility, creates a very real danger to air and land transportation.

As an example, the New Jersey Turnpike Authority is compelled to close that superhighway at least 20 times a year when smog aggravates conditions already made bad by weather conditions. Where the turnpike continues through the highly industrialized northeast section of the State, smog causes many motorists to miss their desired exits.

Last November, a two-car collision on the turnpike was blamed directly on poor visibility because of smog. And, there were many incidents where car pileups occurred because the visibility was reduced to zero. And who was the villain in these incidents? Smog—a combination of smoke and fog.

Aircraft operations out of Newark were also hampered by reduced visibility. As far back as 1946, a survey was conducted on this matter and it showed that smoke, alone or in a combination with fog, lowered the visibility to less than 6 miles every second day of the year.

Aggravation of poor weather conditions by pollution results in delays in landings and takeoffs at busy airports. At times entire flights are canceled because of the difficulty of making a safe takeoff due to poor visibility. This is an inconvenience to the traveling businessman and very costly to the carrier.

The average individual, on the streets of any community in these United States, does not care to take up the fight for the principle of clean air. We are surrounded not only by dirty air but by public apathy. Because of this, we, as Members of Congress, representing the people of the entire United States should take the initiative and provide for legislation which will clean up the air we breathe at the rate of 15,000 gallons per day.

For a richer and healthier life, under clean skies, we should take a three-step approach to this problem.

First: Impress upon the automobile manufacturers to install anti-pollutant devices upon every motor vehicle leaving the factory. If this cannot be done on a voluntary basis then Congress should enact legislation to make such installations mandatory.

Second: Take steps to find a method to reduce the sulfur content in fuels used by industry which contribute so much to the pollution of the air around these industrial centers.

Third: Waste disposal problems should be solved in such a way so as to end the overburdening of our cities' incinerators and the open burning of rubbish.

If we do anything less than this we are neglectful in our duty to the people of our Nation. I am sure that this committee fully understands the problem of air pollution and will take early and favorable action on the bills pending before it, which would be far reaching toward finding a solution of this problem.

Mr. Chairman and members of the committee, I wish to thank you for the time you have given me to present my observations on a problem of great benefit to the people of this Nation for the betterment of a healthier climate around us.

The CHAIRMAN. Are there any questions? If not, we thank you for your appearance, Mr. Helstoski.

Mr. HELSTOSKI. Thank you, Mr. Chairman.

The CHAIRMAN. The next witness is our colleague from Colorado, the Honorable Roy McVicker. Mr. McVicker, we will be glad to hear you at this time.

STATEMENT OF HON. ROY H. McVICKER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. McVICKER. Mr. Chairman, my name is Roy McVicker. I represent the Second District of Colorado, and I am appearing on behalf of my bill, H.R. 7394, to amend the Clean Air Act of 1963.

The purpose of this measure is to meet the problems of air pollution which all areas of our country find to be an increasing problem. The contamination of the atmosphere has become a critical national problem. Smog and other forms of pollution have pervaded the air, in varying degrees, in nearly every large metropolitan area in our country, and in many of our smaller cities. The air pollution problem is national in scope and it demands a national remedy. Our fresh air supply is one of our most precious, and indeed one of our most limited, natural resources. It deserves and requires our protection and conservation.

Last year when I was serving as a member of the Colorado State Legislature, State Senator Roland Mapelli and I introduced an air pollution bill which was designed to put real teeth into an air pollu-

tion control program and to make its requirements regional in scope, a provision necessary to its practical operation.

At that time we noted that a number of companies which we investigated, notably the Public Service Co. of Colorado, were on their own initiative spending their own resources for installations of air control systems.

We stated, at that time, that we felt that a special tax incentive was in order inasmuch as these efforts in a great majority of cases were not inuring to the benefit of these companies nor adding directly to their operations but were essentially contributions to the welfare of the community.

It is a real pleasure for me, therefore, to include in this bill this tax incentive provision which in my opinion will operate to the advantage of both industry and the public.

In recent years this country has been so preoccupied with realizing an unprecedented rate of industrial growth that we have largely neglected the great residue of waste which has been left in the wake of industrial progress. Industrial prosperity does not necessarily exact the price of waste and pollution. We are now capable of reducing or eliminating nearly all forms of air pollution. Such a project will be costly. It will require a limited economic sacrifice on the part of certain industries and additional expenditures by State and municipal authorities throughout the country. And it will require the Federal Government to give meaningful financial and technological assistance to local governments and private industry.

Much has been written to alert us of the health hazards from exposure to normal pollution conditions and there is a plethora of statistics available on the number of persons who have died from heavy concentrations of pollutants. A 1948 episode of pollution in Donora, Pa., left 20 inhabitants dead and more than 4,000 acutely ill. In 1952, one of London's smogs was responsible for more than 4,000 deaths in a single week. For a period of 1 week in 1953, New York City was enveloped by an inversion of air pollution which resulted in the death of more than 200 inhabitants. There is evidence that even the normal concentration of pollution found in many of our cities has an adverse effect on health. The incidence of several varieties of upper respiratory and pulmonary disease, ranging from asthma and chronic bronchitis to emphysema and lung cancer, shows a measurable increase under normal pollution conditions.

The health of our citizens is not the only consideration when dealing with air pollution; there are economic reasons as well. It is well established that air pollution substances such as sulfur dioxide, ozone, and fluorides have caused extensive damage to vegetation. Various sulfur gases react with moisture to form an acidic mist which corrodes metals, rubber, leather, and most other common materials. The estimated annual cost to the Nation of all property damage resulting from air pollution is over $11 billion.

The first identifiable Federal program in air pollution came with the enactment of the Air Pollution Control Act of 1955, which authorized a program of research and technical assistance by the Federal Government to State and local air pollution control agencies. In this act, Congress set forth the policy that the primary responsibility for regulatory control rests with the State and local governments, and the

Federal role is to support them with financial and technical assistance and training.

The Clean Air Act was enacted in 1963 as an amendment to the 1955 act. It provides for grants to local and interstate air pollution control agencies in amounts up to two-thirds and three-fourths, respectively, of the costs of developing air pollution control programs, for the abatement of air pollution under certain circumstances, and for the encouragement of efforts to eliminate automobile exhaust emissions.

The provisions of the Clean Air Act were based on the fact that there were no technological answers to many of the recognized air pollution problems. It therefore concentrated on providing additional and more intensified research. That research has paid great dividends. It has shown us that technological means are now available to control some of the most pernicious sources of air pollution and that failure to act quickly may pose a serious threat to human health. It is now time to move further. New legislation is required to supplement and extend the policy of the Clean Air Act.

Generally, I endorse the objectives of Senator Muskie's bill, S. 306, in which he was joined by 19 of his colleagues. His bill supplements the existing legislation in a meaningful way. I feel, however, that certain aspects of air pollution control require different treatment. The bill which I introduced, H.R. 7394, incorporates many of the substantive provisions of Senator Muskie's bill. It would adopt a national standard for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, and it would provide for the accelerated research programs which Senator Muskie proposes. My bill adds a provision, unlike S. 306, to afford private industry a financial inducement to control the emission of air pollutants from solid waste disposal facilities by amending the Internal Revenue Code to permit expenditures to be deducted and an increased investment credit to be taken for the acquisition, construction, or installation of water and air pollution control devices. It would also direct the Surgeon General to study and report to Congress the effect of air pollution from all sources on human health, and in particular whether it has a causal relationship to lung cancer.

A. AUTOMOTIVE EMISSIONS

The most far-reaching proposal in Senator Muskie's bill would prescribe a national standard for allowable emissions of pollutants from gasoline-powered vehicles. The Secretary of Health, Education, and Welfare would be directed to prescribe the standards adopted by California and publish them in the Federal Register. Senator Muskie's bill would amend section 6—which relates to automotive vehicle and fuel pollution—of the Clean Air Act to provide that within 1 year after the enactment of the amendment crankcase emissions must be limited to 0.15 percent hydrocarbons by weight of the supplied fuel, and that after November 1, 1967, allowable exhaust emissions must be limited to 275 parts hydrocarbons per million and 1.5 percent carbon monoxide by volume, as measured by nondispersive infrared spectrometers.

It is my feeling that the arbitrary 1-year deadline may prove to be impractical. My bill allows for a certain flexibility in the date on

which devices must be installed in automobiles. Rather than impose a limit of 1 year, I chose to say that the Secretary shall require "as soon as practicable (but not later than November 1, 1967)." I believe that this provision will allow time for the Government and the auto industry to profit from the experimental program which the State of California has established.

California law now requires that all new cars registered in California beginning with the 1966 models must be equipped with crankcase and exhaust control devices or otherwise meet California's automotive emission standards. Another consideration is that at this time the Public Health Service is arranging with the General Services Administration to equip all federally owned vehicles with the same blowby device and in this way they will get an excellent evaluation of all of these systems regarding their performance in varying climates.

If more flexibility were permitted in the time schedule, allowing an opportunity to make alterations or modifications in the pollution devices as a result of these initial experiments, I feel that our action to control air pollution might well be made more meaningful.

I should now like to include in my testimony a more detailed analysis of the other principal provisions of my bill:

(1) Contract research on gasoline-powered vehicles to reduce emissions of exides of nitrogen and aldehydes from the crankcase and exhaust and also hydrocarbons from gasoline evaporation in carburetors and fuel tanks.

(2) Conduct research to reduce emissions of pollutants from diesel-powered vehicles.

(3) Conduct research to reduce pollutants emitted from jet aircraft and missiles.

(4) Conduct research for development of efficient and low-cost methods of collecting and disposing of municipal solid wastes.

(5) Carry out program to inform and advise eligible air pollution control agencies and eligible persons of the provisions of this act.

(6) Establish a Federal Air Pollution Control Laboratory within the Department of Health, Education, and Welfare.

(7) Provide that the Secretary shall appoint a technical committee to encourage development of improved low-cost techniques to remove sulfur from sulfur-bearing fuels and reduce emissions of oxides of sulfur produced by combustion of sulfur-bearing fuels.

(8) Provide that the Secretary shall set standards for allowable emissions from gasoline-powered vehicles and require all new automobiles to be equipped with blowby systems from crankcases not later than November 1, 1967.

(9) Require imported gasoline-powered vehicles to be so equipped with a blowby system.

(10) Set penalties for violations at not more than $1,000 or 6 months' imprisonment or both.

(11) Provide controls over air pollution from the exhaust of federally owned automotive vehicles.

(12) The Secretary will establish criteria for allowable emissions from diesel-powered vehicles.

(13) To insure proper inspection and maintenance the Secretary will enter into agreements with and make grants to State agencies to carry out these standards.

(14) Provide that the Secretary may establish potential pollution sources for Federal agencies and departments having jurisdiction over any buildings, and authorize inspection of such property.

(15) Permits appropriations for control devices, where required, on buildings and installations over which the Federal Government has jurisdiction.

(16) Permits training of Federal personnel necessary to assure appropriate maintenance and operations of such devices installed on buildings under Federal jurisdiction.

(17) Require a thorough study and report by Surgeon General of the Public Health Service to determine effects of air pollutants from all sources on human health. Report to be submitted not later than 2 years from enactment.

B. TAX INCENTIVES

(18) Amends Internal Revenue Code by adding a new section to afford a substantial tax benefit to individuals or private industry who would acquire, construct, or install, certified air pollution control devices. The same treatment would apply to water pollution control devices. Amends Internal Revenue Code of 1954 by adding a new section 183 relating to expenditures for such devices. Taxpayer could elect to treat such expenditures as having been paid or incurred in any of the 3 taxable years preceding, or in any of the 5 taxable years following, the taxable year in which such expenses were paid or incurred. A deduction with respect to any air or water pollution control agency had certified to the Secretary that such device had been acquired, constructed or installed in conformity with State requirements. This amendment shall apply to taxable years beginning after December 31, 1963. Allowance is made if the taxpayer realizes income from the operation of any certified air or water pollution control device.

It may be many years before firm and irrefutable evidence confirms the probability that air pollution is a serious threat to the health and lives of human beings. It would be a tragedy if we should wait until that conclusive proof is available. On the basis of the very convincing statistical evidence that air pollution is indeed a serious threat to human health, Congress must take further action. The appropriate resources of the Federal Government must be enlisted in the fight to reduce and eliminate every source of air pollution. The bill which I have introduced would accomplish these necessary goals.

The CHAIRMAN. Are there any questions? If not, we thank you for your testimony, Mr. McVicker.

Mr. MCVICKER. Thank you, Mr. Chairman.

The CHAIRMAN. Our next witness is our colleague from California, the Honorable James Roosevelt. Mr. Roosevelt, we welcome you to the committee.

STATEMENT OF HON. JAMES ROOSEVELT, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. ROOSEVELT. Mr. Chairman, members of the committee, thank you very much for allowing me to present testimony in support of legislation to give attention to the nationwide problem of solid waste

disposal. As you know, I am not an engineer, nor am I a specialist in the various ways of disposing of the mountains of solid waste accumulated each day in our country. I became interested in the subject, however, because the problem is daily becoming more acute in California and in other States which are experiencing rapid growth in terms of population, agriculture, industry, and commerce.

Last year I expressed my concern by introducing H.R. 11236, the Solid Waste Disposal Act of 1964, a bill identical to H.R. 10807 introduced earlier in 1964 by my former colleague, the Honorable John Lesinski. This year, on the opening day of this 89th Congress, I introduced H.R. 890, which, like the earlier bills, provides for Federal expenditures of $43.5 million for a 4-year period to support a comprehensive program of research, demonstrations, surveys, and technical assistance, plus grants to States and communities to assist them in developing and carrying out solid waste management programs.

In my remarks in the Congressional Record of May 20, 1964, and February 8 of this year, I described the national solid waste situation in some detail, based on information I had received from conversations with, and through reading articles by, many people who know most about this problem, and I would like to share with you the essence of what I have learned.

We have within our means the technological resources to grapple with the problem and work toward a solution. What we do not have, however, is an organized national program, modestly financed with Federal funds, to provide a Federal-State-local nucleus for action. If the Congress can provide a national nucleus for action against air pollution, water pollution, and radiological health problems—as we have done and are doing—certainly we can do the same for a problem as pressing in all respects, for we must not overlook the fact that solid waste disposal problems are parallel and related to our air and water pollution problems.

In the United States we spend nearly $3 billion a year for solid waste disposal services, but we are spending practically nothing for research into the underlying problem—how to dispose of such waste economically and efficiently without destruction of, or even harm to, our land, air, and water resources. Total expenditures for research in the area of liquid wastes run about $10 million a year. In contrast, the total of research money spent for solid waste collection and disposal does not exceed half a million dollars a year from both Government and private sources. Thus, it would seem our interest in the solid wastes problem is one-twentieth of our interest in liquid wastes; yet the two are interrelated.

In California we have become so concerned about the environment of the future that in January of 1964 we held a "Conference on Man in California: 1980's." Over 500 leaders, drawn from Government, science, and private enterprise, met for the first joint discussion of current environmental trends and their implications for life in the 1980's. The proliferation of solid wastes—domestic, agricultural, industrial—were discussed with the same degree of seriousness attending the discussions on air and water pollution, food supply, land use, transportation, and employment.

As it is in California, so it is across the Nation. I am convinced, from my study of the problem, that if we do not now face up to and challenge the issue, in 10 years the question of solid waste control and abatement will appear almost insoluble, and the cost of an appropriate program then will be astronomical.

As I stated before, I do not pretend to know all the answers on the subject of solid waste disposal; in fact, I am willing to admit I do not even know all the questions. I do know, however, that the subject is in urgent need of attention as quickly as we can get to it, and I most earnestly recommend that this committee give favorable consideration to the legislation I have proposed so that the experts can begin.

The CHAIRMAN. We appreciate your appearance and testimony Mr. Roosevelt.

Mr. ROOSEVELT. Thank you for the opportunity, Mr. Chairman.

The CHAIRMAN. We will hear now from our colleague from Maryland, the Honorable Clarence Long.

TESTIMONY OF HON. CLARENCE D. LONG, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MARYLAND

Mr. LONG. Mr. Chairman, I appear today before this distinguished subcommittee to urge approval of my bill, H.R. 2105, to curb air pollution by requiring that manufacturers install exhaust-control devices on all new motor vehicles. Standards for these devices would be established by the U.S. Surgeon General; failure to comply with them would be punished by a fine of up to $25 per vehicle sold without proper equipment.

Everyone, including the automakers, agrees that exhaust fumes from cars, trucks, and buses pollute the air around us. In testimony early this year before the Illinois Motor Vehicle Laws Commission, a spokesman for the Automobile Manufacturers Association admitted: "The motor vehicle manufacturers recognize that the over 85 million motor vehicles now registered in the United States do contribute to air pollution."

Motor exhaust fouls our cities and towns. Smoke and soot from such fumes cause as much as $5 billion a year in plant and property damage. Corrosion and soiling caused by motor exhaust has been estimated to cost the average person $30 a year. The damage that these fumes can do is evident to anyone who has inspected an automobile exhaust pipe after several thousand miles of use.

Exhaust fumes sicken pedestrians and motorists alike and may even cause death. These fumes offend our noses; irritate our eyes; and foul the air we breathe. Auto exhaust has been shown to cause cancer in mice; scientists fear that it produces the same disease in humans.

Beginning next year, the General Services Administration will demand that all the cars bought by the Government be equipped with exhaust control devices; California now requires that such devices be installed on new vehicles sold in that State.

With these exceptions, motor exhaust is the only major source of air pollution not under some degree of local or Federal regulation. The time for such regulation is now. Motor vehicles already dump 92 million tons of carbon nonoxide alone into the air. Within the next decade, the number of automobiles trailing this lethal gas and

other harmful pollutants along our roads and highways will increase by a third. The air around us is an exhaustible resource which must be protected and conserved. To prevent increasing damage to property and health from exhaust fumes and to insure that our children and grandchildren will have clean air to breathe, we must begin the moves needed to stop this fouling of our environment now.

The CHAIRMAN. Thank you for your testimony, Mr. Long.

Mr. LONG. Thank you, Mr. Chairman.

The CHAIRMAN. We have the Honorable James M. Quigley, Assistant Secretary of the Department of Health, Education, and Welfare.

I believe you have with you, Mr. Quigley, Mr. Dean W. Coston, a deputy from your office of Legislative Services.

STATEMENT OF HON. JAMES M. QUIGLEY, ASSISTANT SECRETARY OF HEALTH, EDUCATION, AND WELFARE; ACCOMPANIED BY DEAN W. COSTON, DEPUTY ASSISTANT SECRETARY FOR LEGISLATIVE SERVICES; VERNON G. MacKENZIE, ASSISTANT SURGEON GENERAL, CHIEF, DIVISION OF AIR POLLUTION, PUBLIC HEALTH SERVICE; AND WESLEY E. GILBERTSON, CHIEF, DIVISION OF ENVIRONMENTAL ENGINEERING AND FOOD PROTECTION SERVICE, PUBLIC HEALTH SERVICE

Mr. QUIGLEY. Thank you, Mr. Chairman.

I am also accompanied by Mr. Vernon G. MacKenzie, on my left, who is the Chief of the Division of Air Pollution, Public Health Service; and Mr. Wesley E. Gilbertson, who is Chief of the Public Health Division of Environmental Engineering and Food Protection.

Mr. Chairman, I, Mr. MacKenzie, and Mr. Gilbertson all have statements which we will submit for the record, or read, or we will proceed in any way which will most suit your convenience and that of the committee.

The CHAIRMAN. Very well. We are glad to have all of you gentlemen. And, Mr. Secretary, I suggest that you proceed as you desire.

Mr. QUIGLEY. I will begin by reading my statement. I think theirs tends to be more specific, whereas mine, I hope, is a general overall view of the problem as we see it.

Mr. Chairman, I welcome the opportunity to be here on behalf of the Department of Health, Education, and Welfare to discuss the several legislative proposals now before the subcommittee dealing with the problem of air pollution.

The subject with which these hearings are concerned, air pollution, is an environmental problem of prime national importance. The extent to which this problem is increasing in the United States and the undeniable threat to the public health and welfare posed by air pollution demand that this problem be dealt with to the fullest degree which our knowledge and skills permit, not only today but in the years ahead.

The Clean Air Act of 1963, which this subcommittee had a major part in developing, is helping to create a new era in our Nation's efforts to arm itself against the air pollution foe. The various amend-

ments and supplements to the Clean Air Act contained in the bills you have under consideration are intended to further strengthen and accelerate the national attack on air pollution. The Department of Health, Education, and Welfare is, therefore, emphatically in agreement with the major objectives sought by these legislative proposals. As our report to the chairman indicates, we recommend certain modifications in the proposed legislation, modifications which Mr. MacKenzie and Mr. Gilbertson will discuss in some detail. We feel that the modifications which are being recommended for your consideration and approval would serve to improve the pending legislation by giving the Federal Government greater flexibility and additional essential tools for its broad pursuit of better air pollution control and solid waste disposal which would enable the Federal Government to be of even greater assistance to the State and local governments upon whom rests a major responsibility for the control of pollution.

In the 18 months since President Johnson signed the Clean Air Act, and especially in the 9 months since funds became available with which to implement the major new activities which the act calls for, I believe we have begun to see concrete evidence of the forging of a new national air pollution control effort, the central goal toward which the act is directed. In less than a year, the level of spending by State and local governments for air pollution control activities has increased by some 40 percent, chiefly as a result of the stimulus provided by the awarding, on a matching basis, of Federal grants-in-aid to State and local air pollution control agencies. Moreover, the Clean Air Act has helped to focus substantially increased attention on a number of aspects of the total air pollution problem, particularly the control of emissions associated with motor vehicles, Federal facilities, and the disposal of solid wastes.

These are, of course, among the areas with which pending legislation is primarily concerned, and they are unquestionably areas in which more progress—and legislation—are needed.

There is every reason to believe that the problem of automotive air pollution can be brought substantially under control by the adoption and enforcement of Federal standards limiting motor vehicle emissions. There are no longer any insoluble technical obstacles which prohibit real progress toward motor vehicle emission control. The State of California, by statute, has directed that virtually all new cars sold in that State beginning with the 1966 model year—and that means only about 3 months from now—be equipped with exhaust control systems limiting the amount of hydrocarbons and carbon monoxide that may be discharged into the atmosphere. The automobile manufacturing industry has said it can comply with the California law and, moreover, that it could, if required by Federal law, equip all new cars with control systems by the 1968 model year, in other words, by the fall of 1967.

We have no doubt that such a great stride toward better air pollution control is in general technically feasible. Evaluation of the California experience during the next year, as well as evaluation of automobiles purchased for the Federal Government by the General Services Administration, which will be equipped with the same types of control systems slated for California, should give us valuable techni-

cal information needed to guide both industry and government in the nationwide application of motor vehicle exhaust control systems.

We also feel, as our report indicates and as Mr. MacKenzie will discuss more fully, that the Secretary of Health, Education, and Welfare should be authorized to establish and amend such motor vehicle standards by regulation, as provided in the Senate bill, S. 306, which is now before this committee. To include in the law numerical standards on specific pollutants and, furthermore, to specify the technical means by which pollutant emissions should be measured would, we feel, make it difficcult, perhaps impossible, for the Nation to take prompt advantage of improvements in technology which can be expected to occur.

In the same connection, we believe that the proposed legislation on control of motor vehicle pollution would be strengthenned if the distinction between gasoline-powered and diesel-powered vehicles and engines were dropped. Although the type of engine and the type of fuel the engine is designed to use impose some differences in pollutional discharges and in the methods of controlling them, there would seem to be no need to postpone legislative authority for the establishment of standards for diesel-powered vehicles. We would favor treating the total motor vehicle population as a broad category of air pollution source. In this way the Secretary, without seeking additional legislative authority, could prescribe standards on broad classes of vehicles as soon as such standards are technically feasible.

The long-range effectiveness of motor vehicle pollution control will depend substantially upon proper maintenance and inspection of control systems incorporated in motor vehicles. The Federal Government should be prepared to assist State governments in developing the means for implementing inspection programs. At the present time, we are seeking through research the development of methods for simple and economical exhaust emission measurements suitable for incorporation in such inspection programs. We, therefore, recommend that consideration of means of federally stimulating the initiation of inspection systems be deferred.

Mr. Chairman, I think we are on the verge of a major, unprecedented advance in our efforts to cope with the contemporary air pollution problem. If we act decisively and prudently, we will begin to see progressively more broad and effective control of the motor vehicle as a source of air pollution. The adoption of S. 306, as modified in line with the Department's recommendations, would mark an important forward step toward freeing this Nation of the mounting smog burden, and the incalculable price we pay for it in terms of hazards to the public health and welfare. If we fail to take this step, we can surely look forward to a nationwide smog problem whose proportions none of us would care to contemplate.

The Clean Air Act contains a clear mandate to Federal agencies and departments to control pollution sources at Federal installations and facilities. The Federal Government has a responsibility to demonstrate by example the best results that can be achieved through proper application of air pollution control techniques and equipment. We are, therefore, in agreement with legislative proposals which would enable the Department of Health, Education, and Welfare to

cooperate more effectively with and assist other Federal departments and agencies in their air pollution control efforts. The present Clean Air Act contains authority for establishment of a permit system for classes of Federal pollution sources designated by the Secretary of of the Department of Health, Education, and Welfare. Several of the bills before you would eliminate the permit system from the Department's legislative authority. We recommend that such action be taken only if the performance standard setting authority implicit in the present law is otherwise provided.

We feel that the provision contained in several of the bills under consideration which would allocate all Federal air pollution control funds to the Department of Health, Education, and Welfare, for redistribution to other agencies and departments, imposes a complex and administratively impractical step in the Federal budget process. It is our recommendation that, as proposed in the chaiman's bill, budget items for air pollution control be included in the appropriations authorized for expenditure by the individual agencies. This is, in our opinion, a more workable approach to the problem, and we recommend that this concept be incorporated in legislation to amend the Clean Air Act.

The Department has no objection to the directives contained in several of the bills before this subcommittee, to make training available to Federal personnel responsible for air pollution control, to evaluate control operations at Federal facilities and installations, and to gather and periodically transmit to Congress information on the status of air pollution control activities at Federal installations, all of which we consider helpful in strengthening the control of air pollution arising from Federal installations. The essential authority for these functions is included now in the Clean Air Act.

In our experience, the air pollution control problems at Federal installations are generally comparable to those encountered outside the Federal Government. They involve chiefly fuel combustion for heat and power, manufacturing, and refuse disposal. If we are sucessful in bringing Federal air pollution sources under the highest practicable degree of control, we will both eliminate sources of air pollution which add to the total pollution burdens in many American communities and we will demonstrate for all to see that the control of air pollution sources can be accomplished promptly and economically. We have, in short, a great opportunity to provide leadership by deed as well as by word.

I have asked Mr. Gilbertson to be here today to discuss in detail our recommendations with respect to a program to encourage needed progress in the important area of solid waste disposal, but I should like first to offer some general comments in this area.

President Johnson has recommended solid waste disposal legislation and the Solid Waste Disposal Act transmitted with our report is the administration's proposal. We urge its prompt consideration and enactment.

The solid refuse disposal needs of our Nation, particularly in the urban areas where the great majority of Americans live, have far outstripped not only our facilities to dispose of refuse safely and economically but also our knowledge of how this task can be met. If we are not to bury our cities in mountains of refuse and worsen. rather than improve, such environmental problems as air and water pollu-

tion, soil contamination, and pest control, we must do more than simply expand and proliferate presently used methods of refuse disposal. We must seek new methods of meeting this challenge and above all we must view this problem comprehensively. Its full scope entails more than the elimination of refuse by whatever means seems convenient, for this approach has contributed to the serious problem before us. We must instead consider solid waste disposal in all of its complex ramifications. It is not prudent to destroy usable materials along with unwanted wastes as we move into the future; we may wish to harness the power inherent in the heat of incinerator fires and to return to the earth those deposits which would enrich rather than despoil it. To explore this complex problem which we have neglected for much too long already, we need a national program of research, demonstrations, and technical and planning assistance.

From this point of view, there is no question that the Federal Government needs new authorities and resources to assist States and local governments in giving long overdue attention to the problem of solid-waste disposal. Basically, we favor the approach to this objective contained in title II of S. 306 as it was approved by the Senate. However, we are offering for your consideration a number of modifications proposed in the administration's draft bill which we believe would improve upon that language. Mr. Gilbertson will develop our recommendations more fully in his presentation.

The various bills before the subcommittee contain a number of additional provisions, which are dealt with in the Department's report, and on which I should like to comment briefly at this time.

We are certainly in agreement with the general objective of that provision in several of the bills which would increase the Department's laboratory and research facilities. We feel, however, that rather than a specific Federal air pollution control laboratory, the Congress should authorize the Secretary to establish, staff, and equip such facilities as he deems necessary to carry out the Department's responsibilities under the Clean Air Act. There is no question that the Division of Air Pollution is hampered by inadequate facilities at the present time, and that this inadequacy will become more critical as the pace of air pollution control nationally quickens. We feel that the Secretary should be authorized to establish additional facilities in recognition of the broad and changing needs of the Federal air pollution program. These should include, in addition to laboratories, space, and equipment for training, for evaluation of automotive and other air pollution control systems and for administration of expanding technical assistance and grant-in-aid programs.

We favor in principle proposals to encourage increased private expenditures for air pollution control. Since the proposals to encourage private expenditures for control now before this committee are directly related to national tax policy we would defer to the Department of the Treasury in this connection.

Several of the bills under consideration call for the establishment of additional technical advisory committees relating to specific portions of the Federal air pollution program. We recommend that these proposals be deleted from the legislation. The Department now makes use of consultants from within the Federal Government, from State and local governments, from industry, and from the field of research. Establishing additional committees by statute would not, in our opin-

ion, make the consultative process more productive; and it would tend to have the undesirable effect of compartmentalizing the Federal program in an arbitrary, and possibly restrictive manner.

Closely related to the proposed addition of advisory committees are the various legislative proposals which would direct the Secretary to initiate research programs on specific aspects of the total air pollution problem. We are confident that the Clean Air Act provides sufficient authority to the Department to pursue essential and promising paths of research, to shift research emphasis in response to changing needs and potentialities, and to bring promptly to the attention of Congress through already established reporting procedures, any problem areas which our legislative authority and resources may not enable us to reckon with. We, therefore, recommend that these provisions be omitted from the legislation this subcommittee develops.

In connection with the proposals for additional periodic reports to Congress on elements of the Department's air pollution program, we recommend strongly that those reports for which we are now responsible under the Clean Air Act, together with the additional reports that are called for in proposed amendments to the act, be consolidated into one comprehensive annual report by the Secretary. In addition to providing the detailed information desired by the Congress, a single report would be able to show and discuss interrelationships among areas of the total air pollution control effort in which the Congress has shown particular interest.

Mr. Chairman, the Department of Health, Education, and Welfare welcomes the keen and perceptive interest which the Congress has shown not only in the Federal air pollution program but also in the total national control effort. The development of the Clean Air Act demonstrated that well conceived Federal legislation can provide the framework for the building of a sound national program to reduce the burden of contamination in the air and reverse the trend toward more serious health, economic, and esthetic injuries resulting from polluted air. The amendments to the Clean Air Act, which the Senate has approved and which this subcommittee is now considering, would carry forward by several long strides the progress that has already been made, and they would bring this Nation considerably closer to realization of President Johnson's goal of an environment "pleasing to the senses and healthy to live in." We urge the prompt enactment of S. 306 amplified with the provisions of H.R. 7429, with the modifications we have suggested.

If it is agreeable with the chairman and the members of the committee, I would answer any questions or call on Mr. MacKenzie to present his statement, or whatever you wish.

The CHAIRMAN. I suppose the better procedure would be to present the entire program, because questions may be directed to the other phases. You may proceed as you desire.

Mr. MACKENZIE. Mr. Chairman, in the interests of conserving the time of the committee, I have a statement that I would like to submit for the record and from which I will attempt to make summarization.

The CHAIRMAN. Very well. Your statement will be included in the record.

Mr. MACKENZIE. I am happy to have an opportunity to supplement the testimony presented by Mr. Quigley and to make some further comments.

The need for a nationwide attack on the motor vehicle pollution problem is beyond question. More than 85 million motor vehicles are now in use in the United States and their number increases with every passing year. The pollutants they release into the atmosphere include highly toxic substances such as carbon monoxide, as well as hydrocarbons and nitrogen oxides, which are the principal gases from which photochemical smog is produced. Air sampling studies conducted over the last several years by the Public Health Service and by various State and local agencies leave no doubt that automotive smog is occurring with increasing frequency and severity in urban areas throughout the United States.

There is ample evidence that the adverse effects of motor vehicle pollution constitute a serious and worsening hazard to public health and the national welfare.

Detailed information on the known and suspected health effects of vehicular pollution is contained in reports to the Congress in 1962 from the Surgeon General of the Public Health Service, and in December 1964 from the Secretary of Health, Education, and Welfare.

Techniques and equipment are now available for reducing emissions from automobile exhaust tailpipes, the major source of motor vehicle pollutants. The automobile industry has indicated that exhaust control systems will be supplied on cars for distribution in California beginning with the 1966 model year, in compliance with California law, and that such systems could be supplied on all new cars manufactured in the United States by the 1968 model year if required by Federal law.

We have made arrangements for extensive testing of the performance of the systems to be available on the 1966 models under a broad range of environmental and operating conditions in cooperation with General Services Administration.

It is important technically, in our opinion, that there be flexibility in the authority to establish pollutant emission standards relating to the discharges from motor vehicles.

Under the provisions of S. 306 which would authorize the Secretary to establish and revise standards for control of motor vehicle pollution, the Federal Government could make timely revisions and adjustments of emission standards and related regulations to meet changing national needs for control of motor vehicle pollution and to take prompt advantage of improvements in technology for control of vehicular emissions as these improvements are developed.

We believe furthermore, that the Secretary should have broad authority, as provided in S. 306, to determine the types of pollutants for which standards should be established and enforced, that his authority should not be limited to hydrocarbons and carbon monoxide as is spelled out in some of the bills before your committee.

In connection with the control of emissions from motor vehicles, there is no doubt in our opinion that consideration must be given to inspection procedures designed to insure proper maintenance of motor vehicle emission control systems which would be installed in compliance with established standards.

However, we do not have the technical capability at the present time to provide the procedures and equipment that would be required in implementing such inspection programs. Research is needed to develop these. Instruments and procedures will need to be found which

would enable technicians to perform relatively complex technical analyses quickly and accurately. These do not now exist.

We are engaged in research efforts which are pointed toward the development of instruments and procedures capable of large-scale application for this purpose. I would like to emphasize, however, that we do not believe that the control requirements should be delayed pending the development of these inspection procedures.

In this summarization I would like to comment on only one provision of the various proposals pertaining to the control of air pollution from Federal establishments and buildings which are included in several of the bills pending before the committee.

This relates to the permit system which is currently authorized under section 7(b) of the act. We recommend that the permit system now contained in the existing legislation be deleted only if in its place the Secretary is authorized to establish performance standards for Federal facilities and installations.

Mr. Quigley has already presented our views regarding new authority for the establishment of a Federal air pollution control laboratory as proposed in several of the bills before the committee. I would like to emphasize the need of this from a technical standpoint and to point out that, in addition to comments that have been made regarding the inadequacy of our existing facilities, this reemphasizes a conclusion that was reached several years ago by a Committee on Environmental Health Problems that was appointed by the Surgeon General of the Public Health Service to review overall needs and activities in this broad area.

Mr. Chairman, I appreciate the opportunity to submit the statement in amplification of the recommendations that Mr. Quigley has made. We have based our recommendations on the best available technical knowledge in this field. The modifications of the bills that we are recommending would, we feel certain, accelerate and strengthen sound air pollution control activities at all levels of government.

I will be glad to answer any questions or provide any additional information on portions of the legislation concerned with air pollution controls, Mr. Chairman.

The CHAIRMAN. Thank you very much.

(The attachments follow:)

THE DISTRIBUTION OF VEHICULAR AIR POLLUTION IN THE UNITED STATES

(By Robert M. Brice and John H. Ludwig, Laboratory of Engineering and Physical Sciences, Division of Air Pollution, Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio, presented at the annual meeting of the Air Pollution Control Association, Toronto, Canada, June 1965)

ABSTRACT

The contribution of automotive vehicular emissions to air pollution and the magnitude of the effects of these emissions have been well documented in Los Angeles County and to a lesser extent throughout the State of California. Data are presented which show the presence of photochemical "smog" in a number of communities outside California. The severity and prevalence of "smog" in eastern communities is not as high as in Los Angeles; however, evidence from most large cities where atmospheric pollutants have been measured shows some photochemical activity with production of oxidants throughout the year and severe "smog" when adverse meteorological conditions occur. Plant damage of the types associated with photochemical pollutants has been observed in many areas throughout the country and further indicates the presence of adverse levels of motor-vehicle-derived pollutants. Source surveys in a number of cities

in the United States show that motor vehicles are responsible for very appreciable amounts of the total emissions of hydrocarbons, nitrogen oxides, and carbon monoxide.

The facts presented clearly point to potential problems under current conditions and problems of increasing severity as population densities and use of motor vehicles increase.

Key words:
Vehicular air pollution.
Photochemical smog.
Total oxidant.
Carbon monoxide.
Vehicular emissions.
Effects of vehicle pollution.

INTRODUCTION

The contribution of automotive vehicular emissions to air pollution and the extent of effects attributable to photochemical smog has been well documented and publicized in Los Angeles County and throughout the State of California. A growing body of information is also available on the distribution and prevalence of vehicular emissions and their effects in other parts of the United States.

Much of this information comes from air quality data produced by the continuous air monitoring program (CAMP) of the Public Health Service. CAMP data give the levels of primary vehicular pollutants (hydrocarbons, carbon monoxide, and nitric oxide) and of secondary pollutants (total oxidants and nitrogen dioxide) most commonly produced by photochemical reactions in the atmosphere. Pertinent air quality data are also being obtained in other Public Health Service studies, in State and local networks, and in other research investigations. The occurrence of photochemical smog has also been documented by observation of the unique vegetation damage it causes. Finally, some insight as to the importance of vehicular emissions in specific areas can be obtained by comparing the magnitude of vehicular emissions of hydrocarbons, carbon monoxides of nitrogen to estimated total emissions of these contaminants from all sources.

This report brings together data from several sources relative to the occurence and prevalence of vehicle emissions or their effects on the atmosphere or plants. It presents a clear picture of the importance of motor vehicles as pollution sources in urban areas throughout the country.

SUMMARY

Data from a number of communities outside of California provide ample evidence of photochemical smog. The severity and prevalence of smog in eastern communities is not as high as in Los Angeles. The evidence shows, however, that in large cities where measurements have been made, photochemical activity with production of oxidants occurs throughout the year and significant smog occurs many times a year under adverse meteorological conditions. Furthermore, source surveys indicate that in cities throughout the country, motor vehicles are responsible for about half the emissions of hydrocarbons and nitrogen oxides and nearly all the emissions of carbon monoxide. The facts points to potential serious problems under current conditions and problems of increasing severity as population densities and use of motor vehicles increase.

CONCENTRATIONS OF SIGNIFICANCE

Experimental studies in the laboratory as well as observations of air pollution occurrences throughout the country have shown that photochemical smog products known to be present in polluted air cause eye irritation, (*1–4*) plant damage, (*5–9, 28*) and visibility reduction.

Ozone and peroxyacyl nitrates (included in "total oxidants") are produced through photochemical reactions and are agents known to damage vegetation (*10–18*). Precursors of these oxidants are nitrogen oxides and hydrocarbons, whose major sources of emission are motor vehicles. The concentrations of significance vary with the specific type of plant, with location, and with other environmental conditions.

Summaries of statements pointing out harmful concentrations are cited from several reports. The technical report of the California standards for ambient air quality and motor vehicle exhaust (*19*) concludes: "Visible plant damage of economic importance can be expected from 1 hour exposure at 0.20 parts per million of oxidant (potassium iodide (KI) method) in the laboratory. In the

field, similar injury occurs at levels of from 0.12 to 0.15 parts per million. Impairment of yield and quality occurs with even lesser dosage." This report further states: "The data indicate that a progressive increase in eye irritation begins to occur at from 0.07 to 0.12 parts per million of oxidant by the potassium iodide method and from 0.20 to 0.24 parts per million by the phenolphthalin method." The State of California, recognizing the potential hazards from photochemical pollutants has set 0.15 parts per million oxidant (KI method) as the level at which eye irritation, damage to vegetation, and reduction in visibility will occur.

The Colorado Air Pollution Advisory Committee has recommended the following ambient air quality standards (*20*).

Total oxidant (KI method): 0.10 parts per million for 1 hour (1 percent of time during any 3-month period).

Oxides of nitrogen: 0.10 parts per million for 1 hour (1 percent of time during any 3-month period).

The annual report of the Metropolitan Washington Council of Governments Oxidant Sampling Network, October 1961 to September 1962 (*21*), states that the first signs of smog odor occur at an oxidant concentration of approximately 0.15 parts per million (phenolphthalin [PHTH] method) and the level that produces eye irritation, vegetation damage, and visibility reduction is approximately 0.25 parts per million (PHTH method).

EXTENT OF PLANT DAMAGE

The widespread evidence of plant damage throughout the United States has been shown by several studies, of which the following are examples:

Middleton (*22*) reported evidence of plant damage from photochemical air pollution in 23 States and the District of Columbia. The data in table 1 were taken from Dr. Middleton's report. The areas have been classified by census region and State, showing that such damage occurs in nearly all regions of the country.

Daines (*23*) has reported foliage markings of the oxidant type on 35 types of plants in New Jersey. Oxidant concentrations above about 0.05 parts per million were considered levels at which tobacco leaves may be marked.

Went (*24*) stated that unmistakable smog damage to vegetation was found in or near Los Angeles, San Francisco, New York, Philadelphia, and Baltimore.

Berry and Ripperton (*25*) state that attacks of emergence tip-burn on white pine occurred in Pocohantas County, W. Va., in the summer of 1961 during a period of high atmospheric oxidant concentration. The authors state that oxidant concentrations as high as 0.065 parts per million were recorded.

TABLE 1.—*Areas of occurrence of plant damage from photochemical air pollution in the United States* (*22*)

New England:	South Atlantic—Continued
Connecticut	Maryland
Massachusetts	Virginia
Middle Atlantic:	West Virginia
New Jersey	North Carolina
New York	Florida
Pennsylvania	East South Central: Tennessee
East North Central:	Mountain:
Illinois	Arizona
Ohio	Colorado
West North Central:	Utah
Kansas	Pacific:
Missouri	California
South Atlantic:	Oregon
Delaware	Washington
District of Columbia	

Heggestad (*29*) has reported that damage to a sensitive species of shade-grown tobacco was caused by a single 2-hour fumigation with 0.07 parts per million ozone as measured by a Mast instrument.

Sechtler, et al. (*30*), have reported damage to small grain species in 2-hour greenhouse fumigations with 0.08 parts per million of ozone (Mast).

Newbury (*46*) has reported increasing incidence of weather fleck in tobacco in an area along the northern shore of Lake Erie which is about 70 miles from any known major pollution sources. It has been postulated that the damage

results from aged photochemical "smog" originating in these distant sources and transported under light wind conditions and surface inversion created by the relatively cool lake.

AIR QUALITY MEASUREMENTS

The most serious known problem with photochemical "smog" is in Los Angeles County. A great amount of work has been done and much information has been obtained on the problem in this area. In other areas of the country, a large quantity of air quality data obtained by the continuous air monitoring program (CAMP) and other sources indicates that current or potential problems of photochemical "smog" are widespread throughout the United States.

Table 2 summarizes data on concentrations of total oxidant (KI method) obtained at CAMP locations. The summary gives yearly means; maximum monthly, daily, and hourly averages; and maximum 5-minute concentrations of this pollutant in each of seven cities where CAMP monitoring was carried out during 1964. Maximum 1-hour average concentrations of oxidant in parts per million were 0.13 (Chicago), 0.26 (Cincinnati), 0.46 (Los Angeles), 0.20 (Philadelphia), 0.17 (San Francisco), 0.26 (St. Louis), and 0.20 (Washington, D.C.). These levels are significantly high and leave little doubt as to the occurrence of photochemical "smog" in eastern cities as well as California cities.

Data in table 2 indicate the occurrence of high oxidant values in the cities where CAMP monitoring was done. The data in table 3, based on CAMP values obtained during 1964, indicate the prevalence of elevated oxidant concentrations in these cities. In all the cities the maximum hourly oxidant equalled or exceeded 0.1 part per million on a significant number of days; in all cities except San Francisco maximum hourly oxidant concentrations were 0.05 part per million or greater on at least 43 percent of the total days for which valid data were available.

Tables 1 and 2 include data on oxidant concentrations monitored by the CAMP at its site in Washington, D.C. The Metropolitan Washington Council of Governments Oxidant Sampling Network includes seven stations in the metropolitan area at which oxidant samples are taken. Table 4 summarizes data for the period October 1962 through September 1963 (*26*). These values were determined by the phenolphthalin method; multiplying by a factor of 0.5 gives the approximate values yielded by the CAMP instrumentation (KI method). The data in table 4 are especially interesting for two reasons. First, they substantiate previously cited CAMP data in showing that on an appreciable number of days there were periods when the oxidant level in the Washington area exceeded levels that could potentially cause smog odor, eye irritation, or plant damage. Secondly, the data indicate the significant variation in concentrations at different locations within a metropolitan area. It seems reasonable to expect that high oxidant concentrations may be localized phenomena; these data support that belief. Since current continuous air monitoring of oxidant concentrations is usually done at only one location within metropolitan areas, the frequency of periods of high oxidant concentrations at other localized areas within a city may be higher than is indicated by the CAMP data in table 3; conversely, in other areas it may be lower.

TABLE 2.—*Atmospheric concentrations*[1] *of total oxidants (KI method) from continuous air monitoring program—1964*

City	Number days valid data	Year mean	Maximum monthly mean	Maximum daily mean	Maximum hour mean	Maximum 5-min. value
Chicago	254	0.03	0.05	0.08	0.13	0.15
Cincinnati	303	0.03	0.05	0.08	0.26	0.32
Los Angeles	349	0.04	0.06	0.15	0.46	0.51
Philadelphia	289	0.02	0.04	0.09	0.20	0.25
St. Louis[2]	253	0.03	0.04	0.07	0.26	[3] 0.85 0.50
San Francisco	298	0.02	0.03	0.05	0.17	0.22
Washington, D.C.	293	0.03	0.04	0.08	0.20	0.24

[1] Based on preliminary data analysis.
[2] Station began operation in March 1964.
[3] Occurred 8:40 p.m. Nearby source is being investigated for explanation. Next highest value occurred at 7 p.m.

TABLE 3.—*Prevalence of elevated oxidant concentrations*[1]*—Continuous air monitoring program*

[Days on which maximum hourly oxidant (KI) concentration was equal to or greater than concentration shown, January–December 1964]

City	Days of valid data	≧0.15 p.p.m.		≧0.10 p.p.m.		≧0.05 p.p.m.	
		Number of days	Percent of total	Number of days	Percent of total	Number of days	Percent of total
Chicago	254	0	0	15	6	149	59
Cincinnati	303	5	2	36	12	137	45
Los Angeles	349	83	24	149	42	221	63
Philadelphia	289	9	3	37	13	124	43
St. Louis[2]	253	6	2	26	10	156	62
San Francisco	298	1	<1	13	4	72	24
Washington, D.C	293	4	1	40	14	163	56

[1] Based on preliminary data analysis.
[2] Station began operation in March.

TABLE 4.—*Occurrence of elevated oxidant*[1] *concentrations in Washington, D.C., area (26)*

[Metropolitan Washington Council of Governments oxidant sampling network]

Location	Number of sampling days	Number of sampling days ≧0.15 p.p.m. occurred	Percent of sampling days ≧0.15 p.p.m.	Number of sampling days ≧0.25 p.p.m. occurred	Percent of sampling days ≧0.25 p.p.m.	Maximum oxidant concentration, p.p.m.
District of Columbia Municipal Center[3]	159	57	36	19	12	0.47
District of Columbia Public Health Service[2] (CAMP)	265	55	21	14	5	.52
Alexandria	116	1	<1	----------	0	.16
Fairfax[3]	119	35	30	1	<1	.25
Arlington[3]	102	4	4	----------	0	.22
Rockville[3]	148	11	7	----------	0	.23
Beltsville[4]	126	18	14	----------	0	.24
Cheverly[3]	133	27	20	5	4	.28

[1] Phenolphthalin (PHTH) method; values are approximately double the values obtained by potassium iodide (KI) method.
[2] October 1962–August 1963 only. Highest daily 10-minute sample as recorded by Beckman continuous oxidant analyzer (KI method) multiplied by 2.
[3] 1 10-minute sample each day, Monday through Friday, May through September, and 1 10-minute sample each Tuesday and Friday, October through April.
[4] 1 20-minute sample, routine as [3], through June 1963. 1 10-minute sample, routing as [3] beginning July 1963.

The Colorado Department of Public Health has obtained oxidant values by use of a Mast instrument in Denver. The Mast is a coulometric instrument, sensitive to several oxidants found in the air. Data from the Colorado study (*27*) show that during May, June, and July of 1964 periods when the oxidant concentration was equal to or greater than 0.05 part per million occurred on approximately 21 percent of the sampling days. The State of Colorado considers approximately 0.03 part per million oxidant as the possible natural background level and concentrations above that as evidence of photochemical activity. A report to the legislature on air pollution in Colorado (Colorado State Department of Public Health) states that the oxidant level reached a high of 0.13 part per million (KI method) on October 17, 1963. The report concluded that a potential for photochemical "smog" is present.

Daines (Rutgers University) has taken oxidant samples at a number of locations in New Jersey for several years. In 1964 (*23*), he reported oxidant values of 0.05 part per million (KI method) and higher at Carlstadt, N.J. The data,

summarized in table 5, are based on samples taken daily over the 4-hour period 1100 to 1500 from May 5, 1961, through November 7, 1963; they probably represent the daily maximum 4-hour concentrations of oxidant for this period. Carlstadt is located 3 or 4 miles west of New York City in an area where some crop production still occurs. These data, table 5, show that on 86 days, or 9.7 percent of the total of 885 sampling days in the period, the 4-hour average concentration of oxidant equaled or exceeded 0.05 part per million (KI). On 23 days, or 2.5 percent of the sampling days, the concentration equaled or exceeded 0.10 part per million. The maximum value recorded during the approximately 3-year study was 0.32 part per million.

A review of literature published to July 1963 shows maximum reported oxidant values in a number of communities. Many of these values, listed in table 6, approach or exceed what is generally considered the adverse level of approximately 0.10 to 0.15 part per million oxidant by the potassium iodide method (approximately 0.20 to 0.30 part per million by phenolphthalein method).

TABLE 5.—*Days in Carlstadt, N.J. (May 18, 1961, through Nov. 7, 1963) when oxidant concentration[1] equaled or exceeded 0.05 p.p.m. (23)*

Number of days when oxidant≧0.05 p.p.m	86
Percent of sampling days when oxidant≧0.05 p.p.m.[2]	9.7
Number of days when oxidant≧0.10 p.p.m	23
Percent of sampling days when oxidant≧0.10 p.p.m.[2]	2.5
Maximum concentration (p.p.m.)	0.32

[1] Analyses done by potassium iodide method (KI). Samples taken daily between 1100 and 1500.
[2] 885 sampling days in this period.

TABLE 6.—*Maximum oxidant values reported in a number of American cities*

City	Maximum reported total oxidant, p.p.m.	Method	Reference
Atlanta, Ga	0.14	Phenolphthalein	31
Birmingham, Ala	.20	do	32
Denver, Colo	.13	Potassium iodide	33
Detroit, Mich	.27	do	34
Jacksonville, Fla	.16	Phenolphthalein	35
Louisville, Ky	.58	Potassium iodide	36
Minneapolis, Minn	.39	do	37
Nashville, Tenn	.16	do	38
Phoenix, Ariz	.13	Phenolphthalein	39
Providence, R.I	.27	do	40
Spartanburg, S.C	.10	do	41
Tucson, Ariz	.13	do	42
Do	.23	do	43
Washington, D.C	.41	do	44
Do	.25	do	45

DIURNAL PATTERNS

Figure 1 shows plots of 2-year (1962–63) average concentrations of total hydrocarbon total oxidant, nitric oxide, and nitrogen dioxide in Cincinnati. These data, taken at the CAMP station located in the downtown area, show a diurnal pattern typical of photochemical smog development. This pattern is similar to those occurring in other eastern cities as well as in Los Angeles. The buildup in oxidant is preceded by a buildup in nitrogen dioxide and a decrease in nitric oxide and hydrocarbons.

Figures 2 and 3 are plots of time versus concentrations of nitric oxide, hydrocarbon, oxidant, and nitrogen dioxide in the ambient air at CAMP stations in Cincinnati and Washington, D.C. Photochemical "smog" occurred on the dates represented in these graphs; the data were selected as examples of such inci-

dents, which are not uncommon among cities monitored by the CAMP. These naturally occurring patterns of photochemical smog reactions are typical of laboratory irradiation chamber patterns, such as the example shown in figure 4.

NITROGEN DIOXIDE

The atmospheric concentration of nitrogen dioxide is useful as an indicator of photochemical activity; it has been well established that nitrogen dioxide is formed rapidly in "smog" reactions from the primary exhaust pollutant, nitric oxide. Table 7 shows the mean yearly concentrations; maximum monthly, daily, and hourly averages; and maximum 5-minute concentrations of nitrogen dioxide measured in seven cities by CAMP instrumentation. Table 8 lists the maximum 24-hour concentrations of nitrogen dioxide for 1962 or 1963 and the average 24-hour values for 1962 and 1963 in several cities. These data in table 8 are from the National Air Sampling Network (NASN), which samples on a random schedule 1 day in each 2-week period. The concentrations reach significantly high levels in a number of cities.

CARBON MONOXIDE

Carbon monoxide also is considered an excellent source indicator for pollution of the air by motor vehicle exhaust. Tables 7 and 9, based on CAMP data, show average concentrations in seven cities for 1962 and/or 1963 and for 1964. These data indicate that although the magnitude of the problem varies from one area to another, motor vehicles produce appreciable contamination in communities that are widely separated geographically.

EMISSION ESTIMATES

Emission estimates help to reveal important sources of air pollutants. Nitrogen oxides, carbon monoxide, and hydrocarbons are major gaseous pollutants emitted by motor vehicles, although they are also emitted in various amounts by other sources in urban areas. Table 10 has been prepared from published material to allow an evaluation of the relative importance of vehicular contributions to the total emissions of these gases in several urban communities. Typically, in large metropolitan areas, motor vehicles account for 30 to 50 percent of the nitrogen oxides, 40 to 80 percent of the hydrocarbons, and almost all of the carbon monoxide.

SUMMARY AND CONCLUSIONS

The evidence of photochemical smog reaction products in metropolitan areas outside of California is clear. Data from large urban areas other than Los Angeles indicate that oxidant concentrations equaling or exceeding 0.10 p.p.m. occurred for at least 1 hour on 4 to 14 percent of the days during 1964. This condition occurred on 42 percent of the days in Los Angeles.

Significantly high concentrations of carbon monoxide and nitrogen oxides are now occurring in all metropolitan areas where pollutants are monitored.

Diurnal patterns of concentrations of photochemical "smog" precursors and reaction products in eastern cities are similar to those in Los Angeles.

Plant damage from oxidants have been reported in most regions of the United States.

Current evidence indicates the widespread occurrence of photochemically produced pollutants and their deleterious effects. The problem is significant now and will become more severe with increases in population density and use of automobiles. The projected large increase in urban population depicted in figure 5 will greatly intensify the pollution problem, since levels of "smog" pollutants as well as other pollutants are known to rise with increasing concentrations of human activity. Figure 6 projects a much greater increase in urban than in rural travel and further emphasizes the potential aggravation of pollution problems throughout the country. Present and projected automobile registrations and miles of travel shown in figure 7 also point to a serious increase in problems from pollution by automotive vehicles.

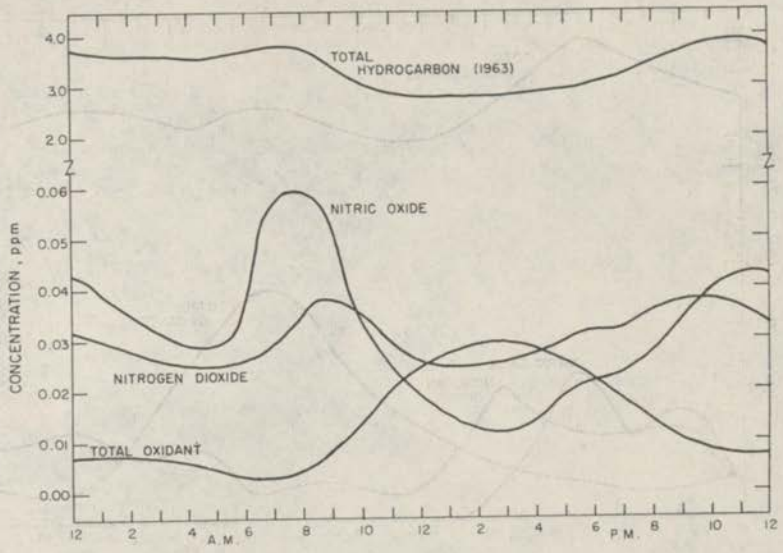


Figure 1. Diurnal variation patterns for 2 year average in Cincinnati, 1962–1963.

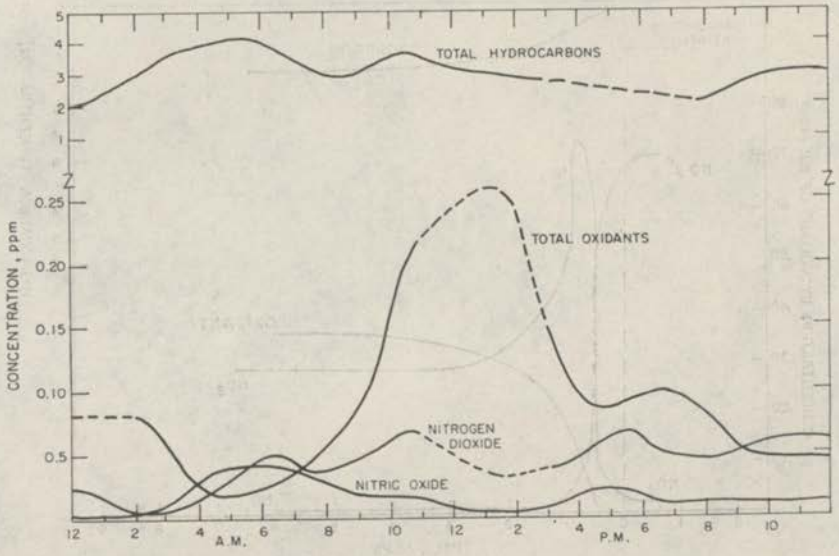


Figure 2. Photochemical "Smog" incident in Cincinnati, July 21, 1964

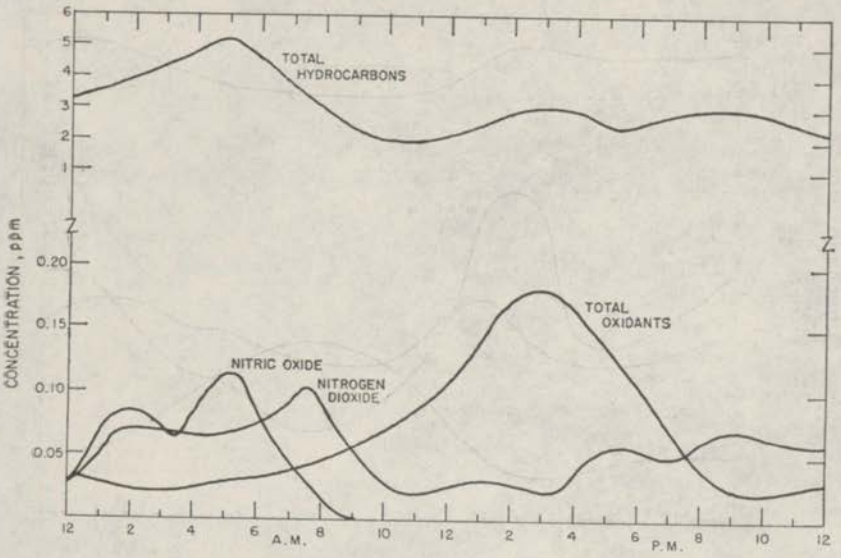


Figure 3. Photochemical "Smog" incident in Washington, D.C., June 26, 1964

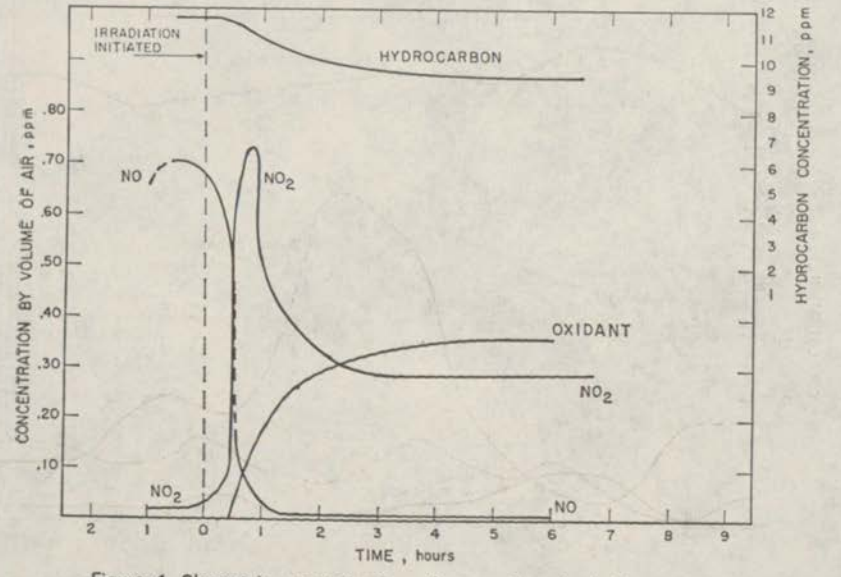


Figure 4. Change in concentration of gases in a typical irradiation chamber test

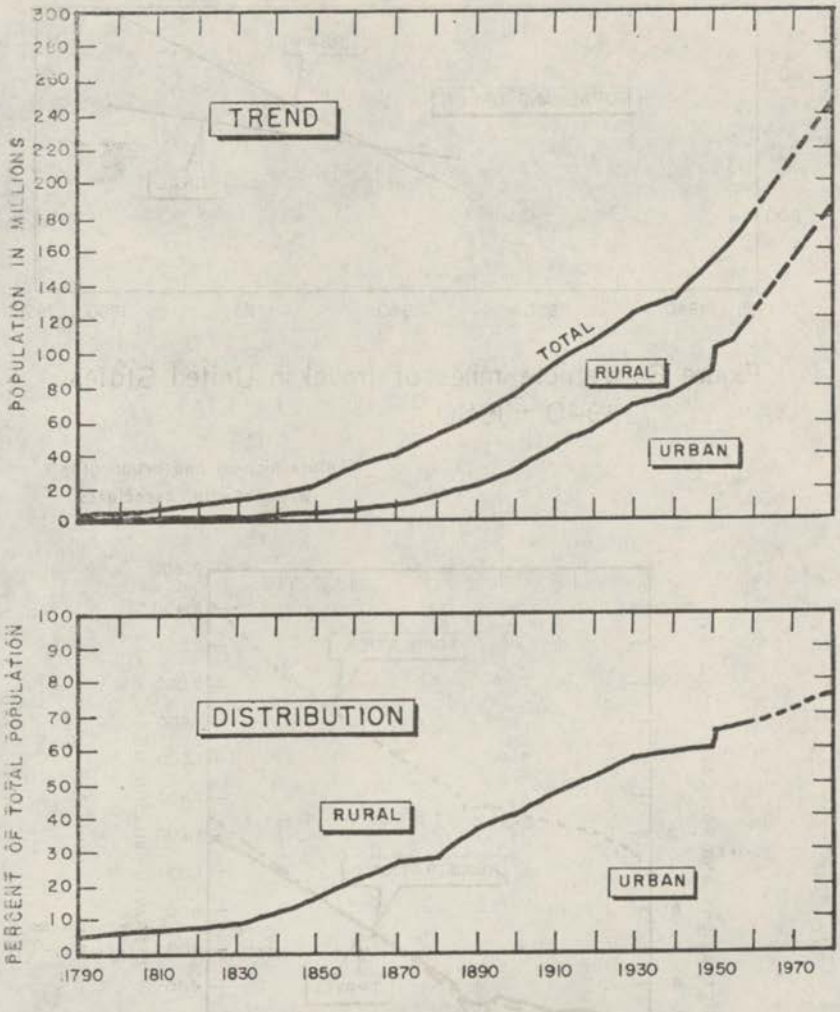


Figure 5. Population trend in United States, 1790 - 1980[a]

[a] "Future highway and urban growth" Wilbur Smith Associates

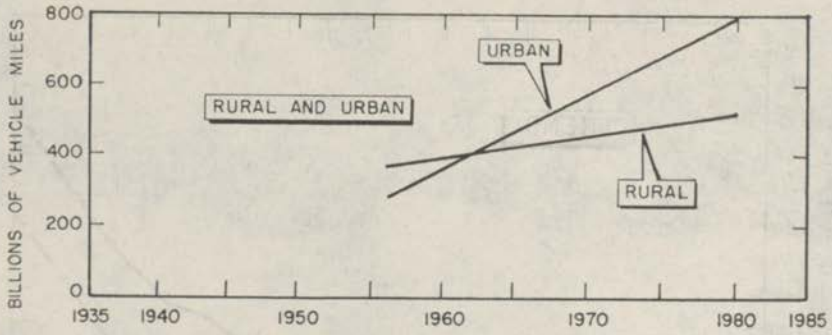


Figure 6. Vehicle miles of travel in United States, 1940 – 1980.[a]

[a] "Future highway and urban growth" Wilbur Smith Associates

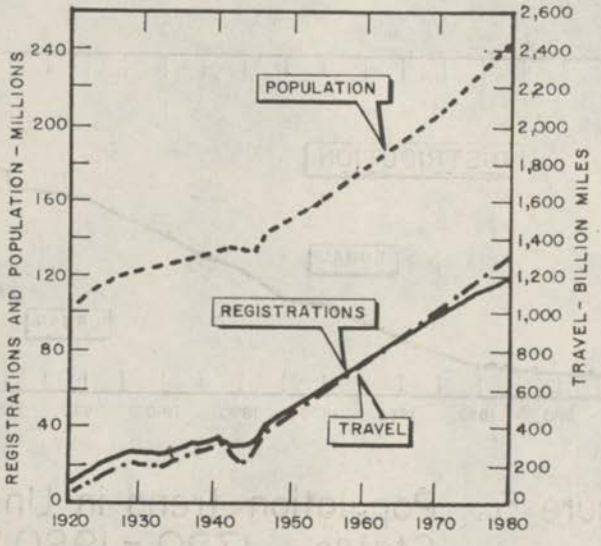


Figure 7. Automobile registration and travel trend in United States

[a] "Future highway and urban growth" Wilbur Smith Associates

TABLE 7.—*Summary of atmospheric concentrations of nitric oxide, nitrogen dioxide, and carbon monoxide from continuous air monitoring program, January–December 1964*

[Concentrations in parts per million]

City	Number days valid data	Year mean	Maximum monthly mean	Maximum daily mean	Maximum hourly mean	Maximum 5-minute value
	nitric oxide					
Chicago	331	0.10	0.16	0.34	0.91	0.97
Cincinnati	347	.04	.10	.30	.65	.68
Los Angeles	339	.08	.21	.45	1.30	1.35
Philadelphia	329	.04	.09	.24	1.15	1.35
San Francisco	317	.09	.13	.29	.77	.85
St. Louis [1]	274	.04	.06	.12	.75	.84
Washington, D.C.	331	.03	.08	.28	.86	.90
	nitrogen dioxide					
Chicago	320	0.05	0.07	0.15	0.47	0.79
Cincinnati	313	.03	.05	.10	.24	.30
Los Angeles	339	.06	.09	.26	.70	.77
Philadelphia	304	.04	.05	.10	.26	.37
San Francisco	304	.06	.08	.18	.41	.52
St. Louis [1]	270	.03	.04	.12	.22	.31
Washington, D.C.	331	.04	.04	.10	.23	.24
	carbon monoxide					
Chicago	297	12	17	27	46	60
Cincinnati	218	6	11	17	22	49
Los Angeles	353	11	14	22	47	50
Philadelphia	311	7	13	21	37	46
San Francisco	326	5	6	10	22	40
St. Louis [1]	295	6	9	17	25	45
Washington, D.C.	253	6	6	13	28	37

[1] Station began operation in March.

TABLE 8.—*Nitrogen dioxide concentrations measured by the national air sampling network* [1]

[Concentrations in parts per million]

City	Maximum, 1962 or 1963	Average, 1962 and 1963	City	Maximum, 1962 or 1963	Average, 1962 and 1963
Los Angeles, Calif.	0.26	0.11	Birmingham, Ala.	.13	.06
Newark, N.J.	.22	.07	St. Louis, Mo.	.13	.05
Philadelphia, Pa.	.19	.08	Tulsa, Okla.	.13	.06
Hartford, Conn.	.17	.06	New York, N.Y.	.12	.06
Pittsburgh, Pa.	.16	.06	San Francisco, Calif.	.12	.08
Columbus, Ohio	.15	.06	Wilmington, Del.	.12	.05
Portland, Oreg.	.14	.05	Cleveland, Ohio	.12	.06

[1] Sampling is done on a random schedule 1 day in each 2-week period.

TABLE 9.—*Average carbon monoxide concentration—Continuous air monitoring program*

[Concentrations in parts per million]

City	Year 1962–63	Year 1964
Chicago	8	12
Cincinnati	7	6
Los Angeles	[1] 11	11
New Orleans	[1] 4	[2]
Philadelphia	11	7
San Francisco	7	5
St. Louis [3]		6
Washington, D.C.	6	6

[1] 1963 only.
[2] Not available.
[3] Station began operation March 1964.

TABLE 10.—*Emissions estimates with percent vehicular contribution* [1]

City	Date	1960 population	NO_x (as NO_2)		CO		Hydrocarbons	
			Tons per day	Percent from vehicles	Tons per day	Percent from vehicles	Tons per day	Percent from vehicles
Chicago [2]	Recent	Urban area, 5,969,000	580	31.4			770	[3] 61.2
Lewiston, Idaho	Late 1950's	2 towns, [4] 18,900	25	24	975	19	38	49
Clarkston, Wash								
Dade County, Fla. [2]	1962	Urban area, 853,000	87	58	1,260	99	216	64
Jacksonville, Fla	Summer, 1961	Urban, 373,000	13	14	360	98	182	23
Do	Winter, 1961	Urban, 373,000	13	7	360	98	208	19
Portland, Oreg	Heating season, 1963.	Urban area, 652,000	134	63			533	62
Polk-Hillsborough Counties, Fla.	Recent	2 counties, 592,000		51		99.5		60
Berlin, N.H	1962	17,800	17.8	41			42	50
Philadelphia, Pa. (city)	1958	2,000,000	300	14			1,350	40
Pittsburgh, Pa	1958	Urban area, 1,804,000	62.6	27			275	80
Reading, Pa	1958	Urban area, 160,000	13.7	23			64.3	73
Harrisburg, Pa	1958	Urban area, 209,500	13.4	23			65.5	73
Media, Pa	1958	5,800	.38	42			3.0	88
North Charleroi, Pa	1958	2,260	.19	63			1.5	73
Cincinnati, Ohio			168	35			295	58
Washington, D.C			289	55			616	78
Los Angeles County	1960	6,038,771	[5] 550 [6] 690	64 [7] 51	[8] 8,600	[8] 84	[8] 1,179	[8] 64

[1] Technical Assistance Branch, Division of Air Pollution, PHS.
[2] Includes process losses.
[3] Without diesel—30.7 percent NO_x, 60.9 percent HC.
[4] One-industry town—pulpmill.
[5] Summer.
[6] Winter.
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18. O. C. Taylor, W. M. Dugger, Jr., E. A. Cardiff, E. F. Darley, "Interaction of Light and Atmospheric Photochemical Products (Smog) Within Plants" (Nature, 192, 814–816 (1961)).
19. J. T. Middleton, "Air Conservation and the Protection of Our Natural Resources," technical report of California Standards for Ambient Air Quality and Motor Vehicle Exhaust, State of California, Department of Public Health, 2151 Berkeley Way, Berkeley, Calif.
20. Communication from Mr. Joseph Palomba, Colorado Department of Public Health, dated July 14, 1964.
21. Annual Report of the Metropolitan Washington Council of Governments Oxidant Sampling Network. October 1962–September 1963.
22. J. T. Middleton, "Air Conservation and Natural Resources," proceedings of the National Conference on Air Pollution, December 10–12, 1962.
23. Communication from Dr. Robert Daines, Rutgers University College of Agriculture Department of Plant Pathology, dated July 13, 1964.
24. F. W. Went, "Global Aspects of Air Pollution as Checked by Damage to Vegetation," National Air Pollution Symposium (April 1955).
25. C. R. Berry, L. A. Ripperton, "Ozone, a Possible Cause of White Pine Emergence Tipburn" (Phytopathology 53, No. 5, 552–557 (May 1963)).
26. Annual Report of the Metropolitan Washington Council of Government Oxidant Sampling Network. October 1962–September 1963.

Mr. QUIGLEY. Well, I think our basic position is that we do not have to know all the answers to all the problems before we do something about some of them.

Now, we recognize that the Federal Government has a special and particular responsibility in this area not only to talk a good fight but to set a good example and that we ought to do in the Federal installations what we are urging industries and municipalities to do.

In addition, as we indicated in our testimony, Mr. MacKenzie's more detailed statement, through an arrangement with GSA the automobiles, some 20,000 or 25,000 automobiles, 1966 models, which the Federal Government will purchase next year for use throughout the country, will meet the California standard. We intend to—we plan to survey and service and keep a running account on these autos so that we will then know whether they work as effectively in Buffalo as they do in Miami, whether there are any special problems that might be encountered in a cold climate that you do not run into in the South.

This is all part of adding to our store of knowledge.

Now, what we are suggesting here is that the automobile industry has indicated that it can have available by the 1968 models, which would be the fall of 1967, cars that will meet California standards. What we are saying is that on the basis of the California experience and on the basis of our experience with the Federal cars for the next 2 years, we will then be in a position to make a judgment as to whether these standards should be set and should be fixed in all parts of the country.

Now, this is why I think we are urging flexibility. This is why in my testimony here and on the Senate side we did not want to put the Secretary in a straitjacket where he had to do this. If there are some changes and some variations that our experience dictates should be allowed, we think the Secretary should have authority to grant such an exception. I don't know what it would be, but I think he should have that authority.

Mr. SPRINGER. I would like to turn to the question of solid waste for just a moment.

May I ask your assistant, where is the demand for this legislation?

Mr. GILBERTSON. Mr. Congressman, I believe in my statement I did mention that almost every city has experienced some problems in this field and this we find from our experience in dealing with cities, communities across the whole Nation. There have been a number of bills introduced in the Congress addressing themselves to the solid waste problem generally indicating that certainly in a number of States throughout the country, including Illinois, California, and Michigan—totally from some 9 or 10 States—Congressmen have introduced bills on this problem. We have found in our work that the health and nuisance situations developing in many communities are causing court cases, placing city governments and local governments in impossible situations. They really have nowhere to go, you might say.

A number of illustrations have come out in the last 3 or 4 years showing instances where the effective discharge of this public function is literally prevented by the injunctions and other legal actions that have been instituted by communities which surround the central

core city. For this reason we believe that a program designed to assist these cities and communities through better methods, the improvement and development and demonstration of improved technology, the assistance given to States to develop programs which in turn can work with the communities, represents a reasonable approach for a national program and one in which the Federal Government certainly has a role to play.

We think this is a rather modest approach. There have been proposals that have gone far beyond this; but we think a technical type of program is one which would lead the way to better methods, and that is the general goal that we have recommended.

Mr. SPRINGER. We have just finished, may I say, and the League of Women Voters led the fight in my home community for a land bill and they finally got the job done, but it seems to me this is the local responsibility. In this instance it was fulfilled by the local citizens fighting for what they believed ought to be put into effect and finally it was done.

I don't know how well but some of my information is that the incinerator has worked well in urban areas.

Mr. QUIGLEY. Mr. Springer, if I could comment, last week the mayors of this country met in convention in St. Louis and I was invited to speak there and they didn't ask me to come and talk about water pollution or didn't ask me to come and talk about air pollution or talk about civil rights, all of which, considering my assignments in the Department, might have been an appropriate subject that I could have come to discuss.

The invitation was if I would come and discuss the problem of solid waste disposal. This is a growing problem in the city.

Mr. SPRINGER. I don't think there is any doubt in my mind, Mr. Secretary, that it is a growing problem. The question is, Is it a Federal problem? If local waste isn't a local problem, then I don't know of any local problem that you have.

Mr. QUIGLEY. It clearly is but what the mayors of these cities were saying collectively and individually, we need help with this problem. Can the Federal Government give us some help? And we are suggesting that the help that we might best give would be in the area of research, would be in the area of demonstrations of new techniques, new approaches, because, frankly, incinerators are presenting some of our cities with really difficult problems. We live in a highly affluent age where everything comes packaged and some of the packaging, some of the plastics that are used in packaging today burn at such intense heat that they do damage to the incinerators. Everything comes in an aerosol jar. These are lethal missiles when they find their way into incinerators.

Fifteen years ago everybody thought the solution to this problem was land fill. It has now become an extremely difficult thing for a major city to find land fill within 20, 30, 40 miles and the economics of transporting are difficult.

Mr. SPRINGER. When there wasn't room, they turned to incinerators, didn't they.

Mr. QUIGLEY. Right, and they are having problems with incinerators.

Mr. SPRINGER. What I am trying to get at—is it our job to do that for the city of Chicago, New York, or Los Angeles? Now, we are coming to a major question here I think of philosophical approach and therefore you can have yours and I will have mine. I just raise what I think is an important problem in just where the committee is going.

Thank you, Mr. Chairman.

Mr. QUIGLEY. I don't think it is. I think basically it is a local problem and the role of Federal Government has to be one of assistance.

Mr. SPRINGER. I think you made a very good statement for your position. I raise these points because I think they are important.

Mr. O'BRIEN (now presiding). I might say to the distinguished gentleman from Illinois that when nature has visited some great disaster to the open plains, people in New York and Chicago and Philadelphia have gratefully contributed their means to the problem.

We have a problem here. We have a rollcall, quorum call. Mr. Harris suggested that we return at 2 o'clock.

Does that present a problem for you, Mr. Secretary?

Mr. QUIGLEY. No, it does not, Mr. Chairman. I can be back here.

Mr. O'BRIEN. I think some of the other members might want to ask some questions.

(Whereupon, at 12:20 p.m., the committee was recessed, to reconvene at 2 p.m., of the same day.)

AFTERNOON SESSION

The CHAIRMAN. The committee will come to order.

Since some of us had to leave just prior to the recess, I believe there are some further questions.

Mr. Rogers, did you have any questions?

Mr. ROGERS of Florida. Thank you, Mr. Chairman, I do have a few questions.

As I understood the testimony, it is the recommendation now of the Department that there be no differentiation between the treatment of the diesel motor vehicles and the gas motor vehicles; is that correct?

STATEMENT OF HON. JAMES M. QUIGLEY; ACCOMPANIED BY VERNON G. MacKENZIE AND WESLEY E. GILBERTSON—Resumed

Mr. QUIGLEY. Mr. Rogers, as far as authority is concerned, that is correct. I think we recognize there would have to be a difference in the standards in the two.

Mr. ROGERS of Florida. As far as the time element in getting something done, you feel that it is reasonable to include the two together.

Mr. QUIGLEY. Right.

Mr. ROGERS of Florida. Therefore, we would strike that section 203 of the Senate bill?

Mr. QUIGLEY. Right.

Mr. ROGERS of Florida. That is all that would be necessary.

Mr. QUIGLEY. That is right.

Mr. ROGERS of Florida. And then they would all be treated together?

Mr. QUIGLEY. I think in addition, there would be a revision of the definition.

Mr. ROGERS of Florida. Have you provided the committee with that language?

Mr. QUIGLEY. We can, and we will be happy to.

Mr. ROGERS of Florida. I am very much concerned about doing something about motorbuses. I drive, as I guess all of you do, down the streets, and just have this exhaust thrown into your face day after day. I don't know whether it can be done by elevating the exhaust, or what. Certainly, the Department ought to investigate that. I would think that could be determined very quickly, as to what approach could be made.

Is any work being done on this now?

Mr. QUIGLEY. Mr. Rogers, I am a layman in this area, as I assume you are. The technicians tell me, from the point of view of hazardous effects and possible hazardous effects the emissions we are getting from our automobiles are likely to do far more damage than what we get from diesel trucks or diesel buses.

I am willing to concede the technical point, because I could not argue it anyway. But it is still a very annoying provoking experience, to get stuck behind a diesel truck or a diesel bus.

Mr. ROGERS of Florida. Mr. MacKenzie, is any work being done in you area?

Mr. MACKENZIE. There is work going on in studying the problem of emissions from diesels, Mr. Rogers. There are several approaches that are being looked at here. There are possible ways of improvement by additives in the fuel—item 1.

Some of these show some promise.

Secondly, the problem of smoke emission is most closely associated with two factors of operation of the diesel engine; one is the degree to which the engine may be overloaded. If it is overloaded, it smokes badly. Also, if the engine is not maintained in proper condition, again it will smoke rather badly.

Now, with respect to the odor problem, we really have no good solution at the moment. There are afterburners under test, and these do show some improvement, but not to the degree which we would like to see. There is continuing work being done on this problem.

Mr. ROGERS of Florida. Is there any time element you think we could look forward to, as to when we will have some practical solution for the diesel motor vehicles?

Mr. MACKENZIE. I would prefer not to establish a definite date on which fully practicable procedures could be applied to the problem totally. We have, however, forwarded to the Housing and Home Finance Administration some suggestions for standards which would apply to equipment that would be financed in part by grants under the Mass Transportation Act that was passed by the Congress.

The principal effect of the suggestions that have been made in this regard would be in connection with limitation of smoke emissions. We think that this can be materially cut back by the procedures that we have suggested in this connection.

Mr. ROGERS of Florida. Probably the overloading factor?

Mr. MACKENZIE. Partly the overloading factor, yes, sir.

Mr. ROGERS of Florida. Now, in that overloading factor, that is where there is not a sufficient horsepower in the bus, say, to carry the number of passengers, or what?

Mr. MACKENZIE. It means where the engine is loaded beyond the point where it will use the fuel efficiently. If you feed the engine more fuel than it can efficiently use, you will get a small increment in additional power from the engine, but it is sacrificing fuel economy, and sacrificing also the efficiency of fuel combustion.

Mr. ROGERS of Florida. Is there any way to regulate that, say, as you do with a governor on a car; or is it the operator himself?

Mr. MACKENZIE. This is done fairly extensively in European practice, particularly in England. That is, the use of governors to limit the quantity of fuel that can be fed to the engine.

Mr. ROGERS of Florida. And this would cut it down?

Mr. MACKENZIE. This would cut down on smoke emission.

Mr. ROGERS of Florida. Now, is that one of your recommendations?

Mr. MACKENZIE. One of the recommendations that we made was a more liberal rating of the engine—that is, a larger engine for the load which it is supposed to carry.

Mr. ROGERS of Florida. And this would be done by the manufacturer?

Mr. MACKENZIE. Yes, it would be done on the original equipment, sir.

Mr. ROGERS of Florida. Have you talked to the manufacturing people about this?

Mr. MACKENZIE. We discussed this at the time the suggestions were made. We called them in before these recommendations were made to HHFA.

Mr. ROGERS of Florida. What reception did you get?

Mr. MACKENZIE. I would say acquiescence, sir.

Mr. ROGERS of Florida. Now, this could be done right away, could it not?

Mr. MACKENZIE. Yes. I would point out, however, that this would probably not correct the situation on the operating vehicles. This would only apply to new vehicles that were purchased. We would still have a problem of what should be done with the vehicles which are now in operation, and for your information these are fairly long lived—have a fairly long life.

Mr. ROGERS of Florida. So, we still have that problem to meet.

Mr. MACKENZIE. Yes, sir.

Mr. ROGERS of Florida. Have you made specific suggestions on that?

Mr. MACKENZIE. We have not. We are conducting studies in this connection, sir. We do not feel that we have final answers.

Mr. ROGERS of Florida. What would be your reaction to putting on this bill an amendment saying that no buses should be used in interstate commerce unless the exhaust is placed in the upright position rather than in the horizontal?

Mr. MACKENZIE. There have been some tests made of this, and frankly some of them indicate that by placing the exhaust in an elevated position there is more likelihood of the exhaust being drawn into the vehicle itself; so, I would approach this with some degree of caution.

Mr. ROGERS of Florida. Thank you.

I am concerned a little bit with the Senate bill on inspections, section 207. I do not see that there is much point in having an inspection at the factory if we make it against the law to transport these vehicles, unless they have the necessary device on them, as designated by the Secretary; do you?

Mr. QUIGLEY. No; I am inclined to accept your position on that. I think if we have the authority under the law to require that the manufacturer submit to us periodic reports, I see no need, or even any desire for us, to make in-plant inspections.

Mr. ROGERS of Florida. Yes. It seems to me that would require an army of inspectors to do this, and it would not be a very practical approach because you would not get all the used cars, or if something went wrong as soon as it was out.

Mr. QUIGLEY. I think if something went wrong, we would have to go and look, and we would hope they would respond and cooperate. But I think what we need is access to the records in case there is some question. Basically, I do not think we need or should put a lot of inspectors in a lot of plants.

Mr. ROGERS of Florida. I am delighted to hear you say that. I would agree with you.

Now let me ask you this: Do you think it would be wise for us to initiate some program of encouraging States to try to initiate some inspection program?

Mr. QUIGLEY. I very definitely think it would be highly desirable. I say that without knowing how best to give the States this motivation.

Clearly, anything we are talking about here is not likely to prove to be a complete success unless there is some practicable, workable system of inspection, which I think has to be carried out at the State or local level. I do not see the Federal Government playing the inspector role here at all.

Mr. ROGERS of Florida. I agree.

Now, let me ask you this: Before any regulations are formulated by the Secretary, there are hearings? Is this required in the basic law?

Mr. QUIGLEY. No, not hearings. I think we may have—we anticipate we would have a series of conferences, meeting with the manufacturers, device manufacturers.

Mr. ROGERS of Florida. Is this set forth in the law, or is this done administratively?

Mr. QUIGLEY. It would be done administratively. The act does not call for a series of hearings, or anything of that order.

Mr. ROGERS of Florida. Well, I notice on page 9, where you have, I believe, section F—"If action reasonably calculated to secure abatement of the pollution within the time specified in the notice following the public hearing is not take"—What does that mean?

Mr. QUIGLEY. Well, this, Mr. Rogers, would be under the regular abatement section of the law, the basic Clean Air Act of 1964 provides for abatement action. This would involve industrial, municipal, or, in this instance international, matters.

Mr. ROGERS of Florida. Then the suit would be brought by the Attorney General?

Mr. QUIGLEY. Right.

Mr. ROGERS of Florida. What assurances do the interested parties have, though, presenting their ideas and their own conclusions after maybe research, that they will be presented and considered by the Secretary if we do not have that provision in the law?

Mr. QUIGLEY. This is on the automobile exhaust standards?

Mr. ROGERS of Florida. Yes.

Mr. QUIGLEY. Well, I would point out again, under the basic Clean Air Act, Congress created a technical committee on automobile exhausts which is made up of representatives of the automobile industry, the fuel industry, and the device manufacturers. This committee meets periodically and attempts to keep tabs and up to date on the problems and the developments and the efforts being made to solve them. Clearly, if this kind of legislation were to be enacted into law, I would anticipate that that technical committee would be the go-between, the device, the liaison between our Department and the affected industries in working out a reasonable, acceptable, liberal set of standards that would do the job.

Mr. ROGERS of Florida. Now, on these standards, is the administrative law procedure triggered at any stage, for a court appeal?

Mr. QUIGLEY. No; I do not think it is provided for.

Mr. ROGERS of Florida. On abatement, this would be true.

Mr. QUIGLEY. On abatement this would be true.

Mr. ROGERS of Florida. Now, I believe you said the Secretary should have the right to make some other standards and to modify.

Mr. QUIGLEY. Right.

Mr. ROGERS of Florida. Could you amplify on that for me just a little?

Mr. QUIGLEY. Basically, I think what we are concerned about is that in the original proposal, as the bill was originally introduced, it attempted to write the standards into law. Basically, I think it adopted pretty much the standards that had been set in California.

We recommended, and the Senate considered and accepted, the idea that the Secretary should be given some flexibility, some authority to set these standards as high or lower or higher than the current ones of California, with the authority to alter these standards as the techniques and the technology and the circumstances of the future develop, without attempting to write them into law, and every time you wanted them changed to come back and argue the point.

Mr. MACKENZIE. May I amplify that briefly, Mr. Rogers?

In addition to the substances, namely, the hydrocarbons and carbon monoxides, for which there is technical capability for control now existing, there is a broad concern over other pollutants, and I refer specifically to the oxides of nitrogen. These are directly toxic to people, to animals, and will need to be controlled in the future. We do not have the means of doing so at the moment, but it is anticipated that when this technical capability has been developed, standards for these pollutants as well should be added.

Mr. ROGERS of Florida. I see.

Now, let me ask you a question about the patent provisions in the bill.

Do I understand correctly that the Department does not agree with the provisions of the proposed bill as passed by the Senate on patents?

Mr. QUIGLEY. It would be our preference that the particular language that was inserted on the Senate floor be not included in any bill that the committee might report out.

Mr. ROGERS of Florida. I believe that would be on pages 16 and 17—those provisions would be stricken then. It would not require any substitution or addition of language.

Mr. QUIGLEY. That's right; it would not require any substitute language.

Mr. ROGERS of Florida. Because the present policy would prevail.

Mr. QUIGLEY. That's correct.

Mr. ROGERS of Florida. I read something in somebody's statement—I just wanted to ask—about raising the 12½ percent appropriations up to 20 percent.

Mr. QUIGLEY. Yes; this is in the grant section. We would be inclined to stay with the present 12½ percent ceiling. In our admittedly very limited experience under the grant section of the Clean Air Act of 1963 to date, there have been only two States that have bumped their heads against that ceiling. We would like to reserve judgment if this proves to be common practice—then, we might change our position; but as of the moment, we would prefer to stay with the 12½ percent.

Mr. ROGERS of Florida. Now, is there any indication as to when some standards may be set on the solid waste disposal or provisions made applicable to Federal installations?

Mr. QUIGLEY. On the question of solid waste? No; frankly, we have not gotten into this question in any detail or depth. We have been working on water pollution standards for Federal installations and air pollution standards under the Air Pollution Act. The bill as passed by the Senate and as it has been submitted to you by the administration does not call for the setting of standards as far as solid waste disposal at Federal installations——

Mr. ROGERS of Florida. What are we to do? Just do research on it?

Mr. QUIGLEY. On the solid wastes? Basically, what the bill proposes to do would be research and demonstrations in the solid waste disposal field. In many respects, I think the demonstrations are not only the more expensive, but also the more important phase, because industry, private segments of the industry have ideas, have developed techniques. The question remains: Will they work out in practice? The average municipality does not have the money nor can't afford to take the gamble and the risk on some of these new methods. But we think that this might be a role that the Federal Government could probably undertake in the common interest—conducting some demonstrations to see what can be done.

Mr. ROGERS of Florida. How much money is presently being spent in the Department on research on solid waste disposal?

Mr. GILBERTSON. During the current year, Mr. Rogers, I believe something in the neighborhood of about $350,000 to $400,000 in research grants. We do not have the authority to carry out special demonstration grants or any of the other mechanisms proposed.

Mr. ROGERS of Florida. Do you have any intramural work going on?

Mr. GILBERTSON. Yes, sir, we have a very small amount. I believe at the present time we are spending in the neighborhood of $805.000 a year.

Mr. ROGERS of Florida. Where is this work done?

Mr. GILBERTSON. Most of the work is being done here in headquarters, in which we are doing a sort of general technical assistance type of program. We also have one person in the field working with States, and we have a small amount of work starting on a research program in the Tennessee area.

Mr. ROGERS of Florida. What does your program call for in the next fiscal year?

Mr. GILBERTSON. The administration proposal is for $10 million for the first year of operation.

Mr. ROGERS of Florida. And this would be used for what?

Mr. GILBERTSON. Well, a large portion, as Assistant Secretary Quigley has said, would obviously go into the demonstration field.

Mr. ROGERS of Florida. How much would you say? I realize this would be an approximation.

Mr. GILBERTSON. Well, our feeling on this is that something in the neighborhood of approximately half of it might go into demonstrations.

Mr. ROGERS of Florida. $5 million?

Mr. GILBERTSON. Yes, sir

Mr. ROGERS of Florida. What would you use the other $5 million for?

Mr. GILBERTSON. The other activities authorized by the act would include research, both intramural and through grants and contracts, training activities, surveys, particularly in local areas, the furnishing of assistance in surveying of the problem in local areas. This would be a key way to get started on assessment of the problem.

Mr. ROGERS of Florida. You would go in at the request of the community?

Mr. GILBERTSON. That's right.

Mr. ROGERS of Florida. You must have the request of the community?

Mr. GILBERTSON. That is the way we have ordinarily operated.

Mr. ROGERS of Florida. Does it give you authority to go in on your own determination?

Mr. GILBERTSON. Neither of the bills mention particularly the question of authority in this connection. Our general approach on this, of course, is to go at the request of the area involved.

Mr. ROGERS of Florida. This is for the research and survey work.

Mr. GILBERTSON. Survey and investigation work.

Mr. ROGERS of Florida. Because I do not think we did set any proposal or policy varying our basic law on this at all.

Mr. QUIGLEY. No. But in that connection, we would certainly have no objection, and it might be wise if the committee——

Mr. ROGERS of Florida. We can put this in the report, if necessary.

Mr. QUIGLEY. Right.

Mr. ROGERS of Florida. Now, what is the contemplated overall expenditure for 5 years? Have you worked this out yet?

Mr. GILBERTSON. As we indicated this morning, we would be glad to provide this for the record.

Mr. ROGERS of Florida. You do not have that figure with you now?

Mr. GILBERTSON. No. We will supply that.
(The information requested is as follows:)

DEPARTMENTS OF INTERIOR AND HEALTH, EDUCATION, AND WELFARE

Solid Waste Disposal Act, 5-year projection of estimates

[In thousands]

Function	Year of operation				
	1966	1967	1968	1969	1970
Secs. 204(a), 204(b)(1), 204(b)(2), and 205 direct conduct of activities	$4,500	$8,000	$10,000	$10,700	$11,500
Sec. 204(b)(3) grants and contracts for research and training	2,000	4,000	6,500	7,800	8,000
Sec. 204(b)(4) grants for demonstration projects including construction	2,500	6,000	10,500	11,000	11,500
Sec. 206 Grants for surveys and planning	1,000	2,000	3,000	3,000	3,000
Total estimate	10,000	20,000	30,000	32,500	34,000
Total positions	500	645	700	795	820

Mr. ROGERS of Florida. Let me just ask Mr. MacKenzie a few questions, Mr. Chairman, and I will conclude.

What is the amount of money being spent on the program now for air pollution?

Mr. MACKENZIE. In the present fiscal year, the appropriation is approximately $22 million, Mr. Rogers. For fiscal year 1966, the pending appropriation totals approximately $26 million.

Mr. ROGERS of Florida. And what is the proposal for the next 3 years? Do you have that?

Mr. MACKENZIE. I do not have that with me. Actually, we have pending, of course, the specific proposal for fiscal year 1967 which has not yet been processed through budget channels.

Mr. ROGERS of Florida. Now, of the $22 million that you are currently spending, what is the breakdown of that as to intramural work, extramural work, research, and so forth?

Mr. MACKENZIE. I will give you the figures here from memory, with the understanding that I may have to correct them for the record, Mr. Rogers. Approximately, $12,500,000 of the total appropriation is channeled for research purposes.

Mr. ROGERS of Florida. Does this go to contract people or universities or what?

Mr. MACKENZIE. Of the $12,500,000 total, approximately $5 million goes to the support of research grants; approximately $3 million is used for the support of research contracts, and the remainder is used intramurally, that is—expended through use of our own facilities and staff.

Mr. ROGERS of Florida. Where is that work done?

Mr. MACKENZIE. The principal location where this is done is at our laboratory in Cincinnati, although we have a number of field studies that are going on elsewhere in the country.

Now, in addition to the research, there is approximately $4,200,000 which is scheduled for granst to State and local agencies for the development or improvement of air pollution programs by them.

Additional sums are used for the support and conduct of training. We have about $1.25 million in grants which are used for the support of training at universities and for the support of individual fellows. Approximately a half million dollars is used for training conducted through our own staff. The remaining funds are used for technical assistance to States and local agencies and for staffing up on our enforcement activities.

Mr. ROGERS of Florida. How many employees are in your division?

Mr. MACKENZIE. At the present time, about 500, sir.

Mr. ROGERS of Florida. And how many on the solid wastes?

Mr. GILBERTSON. On solid wastes, we have a grand total, I believe, six or seven people.

Mr. ROGERS of Florida. You contemplate how many being required in the first year if this program is enacted?

Mr. GILBERTSON. Our preliminary estimates indicated that at the end of about a year the number of persons engaged in all types of activities involved would run somewhere around 150 to 175 persons, including research, training, technical assistance, and so forth.

Mr. ROGERS of Florida. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Carter.

Mr. CARTER. No questions.

The CHAIRMAN. Mr. O'Brien.

Mr. O'BRIEN. Mr. Chairman, I did not have an opportunity toward the end of the morning session to ask one or two questions that occurred to me. We had a discussion late in the morning session, not so much of the specifics of this bill but on the general philosophy. The point was raised why should people in Arizona, Idaho, wherever the air is clean and sweet and pure pay for the purification of the air over our urban centers.

Mr. Secretary, isn't it a fact that a minimum of 130 million people in this country, living in the so-called urban areas, are exposed to some degree of air pollution?

Mr. QUIGLEY. I am sure that figure is somewhere in the general area of accuracy.

Mr. O'BRIEN. My second question has to do with another point that was raised.

The question was: Where is the demand for this legislation?

Isn't it a fact that there is an area where public responsibility takes over, even if there is a lack of demand in the form of letters to Members of Congress?

I cannot recall, Mr. Secretary, ever receiving a single letter urging that we do anything about safety belts. We had the cigarette controversy—I didn't get any mail on that subject.

It seems to me that we should not wait for a Gallup poll to decide whether or not people are being poisoned by the air.

Mr. QUIGLEY. I agree. As a matter of fact, if Dr. Gallup, Mr. Harris, or someone else were to take a Gallup poll, I think there would be an overwhelming indication on the part of the man in the street and the general public that something ought to be done about air pollution problems.

Now, I am sure that the average citizen would not be ready to say what should be done. He assumes his Senator or Congressman is going to decide and make these recommendations and pass this legislation.

But this is our responsibility—to recommend, and for the Congress to consider and come to a conclusion as to what should be done.

Mr. O'BRIEN. Isn't it also a fact that very few of our cities could undertake this purification program on their own, both from the viewpoint of cost, the debt limits, and so forth, and from the fact that so much of the pollution comes into the air over a city from perhaps another State, another area?

Mr. QUIGLEY. Well, I think I would have to break down my answer on that.

I think, Mr. O'Brien, clearly our cities are going to have to do much more than they are now doing in the air pollution control field.

I think, however, and I will use the city of Philadelphia with which I am most familiar—and about which Congressman Green testified this morning—I think, frankly, it would be a waste of the taxpayers' money in the city of Philadelphia, if the mayor and the city council were to adopt an all-out air pollution control program, if at the same time the city of Camden, across the river in the State of New Jersey, and the city of Wilmington, downstream in the State of Delaware, did not adopt a similar program.

I think we now have this very situation with the city of Chicago. I think the city of Chicago is moving forward on one of the most enlightened and effective air pollution control programs in the country, but they are not going to get the results they want and need in the city of Chicago unless the city of Gary, Ind., begins to move in this area.

The Clear Air Act recognizes this. In making grants to local air pollution units, to encourage them to expand their air pollution program, the law wisely provided that where communities will get together and approach the problem jointly, that we are authorized and do make larger grants—there is a bonus.

Washington would be a classic example. The city of Washington itself, the District of Columbia cannot effectively cope with air pollution problems in this area. It is going to require the cooperation of Montgomery and Prince Georges Counties in Maryland, it is going to require the cooperation of Arlington and Fairfax and Alexandria in Virginia. So that, you are going to need a local effort, but perhaps a different kind of local effort than has ever been done before.

But even with all of this, when it comes to the automobile, there isn't anything that you can do on an area or regional basis. I think it has to be done, if it is going to be done effectively, on a national basis—because cars—they may be in Phoenix tonight, but they will be on the freeways in Los Angeles tomorrow afternoon. This is the way the country is.

Mr. O'BRIEN. Well, perhaps if it is not cured, we will leave this poisonous atmosphere and move out to southern Illinois or Arizona.

Thank you very much.

The CHAIRMAN. Mr. Satterfield.

Mr. SATTERFIELD. No questions.

The CHAIRMAN. Does the same toxic substance that you referred to, carbon monoxide, and so forth, result from all types of fuel burned in vehicles?

Mr. MACKENZIE. The major source of carbon monoxide in the open atmosphere, Mr. Chairman, is motor vehicles. There are other sources from which this substance can be produced. Any fuel combustion

in which there is not enough air to burn the fuel completely may well result in emission of carbon monoxide. In cities, however, well over 90 percent of the carbon monoxide that is in the atmosphere derives from motor vehicles.

Some industrial processes, such as cracking of oil at refineries, may result in large quantities of carbon monoxide being emitted. There are, however, readily available means for controlling such emissions at refineries, and, in the main, these are being applied in most locations.

The CHAIRMAN. Do we have the same type emissions from diesel-powered motor vehicles?

Mr. MACKENZIE. There is very little carbon monoxide emitted from a diesel engine, sir—practically none. The real source of carbon monoxide is from the gasoline-powered vehicles.

The CHAIRMAN. Do they have oxides of nitrogen from diesel-powered vehicles?

Mr. MACKENZIE. Indeed, they do.

The CHAIRMAN. They do?

Mr. MACKENZIE. Indeed, they do, sir, from both types of vehicles.

The CHAIRMAN. Well, is that a hydrocarbon?

Mr. MACKENZIE. No, sir. Oxides of nitrogen are produced by the combination of nitrogen, which is a normal constituent in air, and the oxygen in the air at elevated temperatures. Now, if the combustion gases are cooled slowly, the oxides of nitrogen will disassociate again into nitrogen and into oxygen. But when they are cooled quickly or quenched, then appreciable quantities of the combined form, mostly nitric oxide, will remain. And this in the open atmosphere will be subject to chemical change, primarily into the nitrogen dioxide form which is more toxic than the nitric oxide.

The CHAIRMAN. The nitric oxides are toxic?

Mr. MACKENZIE. No, sir; not nearly so toxic as nitrogen dioxide.

The CHAIRMAN. Well, did I understand you to say that under certain conditions of the atmosphere, nitric oxide then can be transformed into——

Mr. MACKENZIE. Nitrogen dioxide, sir. It is normally so transformed under the influence of sunlight.

The CHAIRMAN. Well, is nitrogen dioxide then as toxic as carbon monoxide?

Mr. MACKENZIE. Yes, it is, sir, but it is not normally present in the same concentrations. Normally, it is present only in much lower concentrations than is carbon monoxide.

The CHAIRMAN. Where do hydrocarbons then come from? They are emitted from what type of vehicle operation?

Mr. MACKENZIE. They are emitted from either type of engine that we have discussed.

The CHAIRMAN. Gasoline or diesel.

Mr. MACKENZIE. The hydrocarbons are normal constituents of the fuel. In fact, the fuel is composed of hydrocarbon materials. Gasoline or oil are——

The CHAIRMAN. Are hydrocarbons toxic?

Mr. MACKENZIE. Hydrocarbons are not toxic in the normal concentration in which you find them in the open atmosphere.

Now, I would make an exception to this—depending on the definition of the toxicity that we are referring to. There are some hydrocarbon materials that are of great concern, and I am referring here to the polynuclear hydrocarbons which have demonstrated cancerigenic properties. These are present, however, only in very small quantities in the open atmosphere and come mostly from fuel combustion. These are contained in the materials that are discharged from internal combustion engines as well as from other combustion processes.

The CHAIRMAN. Will the same kind of gadgets—pardon me for using that term for the lack of a better term—will the same kind of article, product, device that provides additional air to burn these components apply to diesel-powered vehicles as well as gasoline-powered vehicles?

Mr. MACKENZIE. No—the same systems are not applicable to diesel engines that are applicable to gasoline-powered engines.

The CHAIRMAN. Well, whatever comes from either gasoline-powered engines or diesel-powered engines that is emitted into the air, is emitted because it is not burned; isn't it?

Mr. MACKENZIE. This is true for all of the pollutants, with perhaps the exception of the oxides of nitrogen which are formed because of the elevated temperature and the effect on the air itself of the high temperature. The others are derived primarily from incomplete combustion.

There is one other exception, and this would relate to the oxides of sulfur, which would come from the burning of any sulfur that is present in the fuel. Now, for internal combustion engines, this is not an important pollutant, that is, sulfur dioxide, because the sulfur content of gasoline normally is very low.

The CHAIRMAN. Then, you do not know of any device that has been proposed that can take care of the oxides of nitrogen?

Mr. MACKENZIE. There are some experimental approaches that have been tried in the laboratory, Mr. Chairman. I may mention a couple of these. One is the injection of small quantities of water along with the fuel in order to reduce the combustion temperatures in the engines. This has been demonstrated to decrease the quantities of oxides of nitrogen that would be emitted.

Another procedure that has been tried experimentally is to recirculate a part of the exhaust back to the engine intake. This also serves to reduce the emission of oxides of nitrogen.

The effect of these types of proposals, however, on engine performance and on the degree of improvement that could be practicably obtained by using them, in reducing oxides of nitrogen emissions, is not fully demonstrated up to now.

The CHAIRMAN. Well, is it not true that a part of these pollutants come from the carburetor, a part from around the motor itself, a part from the crankcase, and so forth, and then, of course, a substantial part from the exhaust?

Mr. MACKENZIE. The studies that have been made, Mr. Chairman, would indicate that so far as hydrocarbons are concerned, about 25 percent normally would come from the crankcase of vent gases. These are now controlled by recirculating these back to the intake of the engine on all the new vehicles, and this has been a part of standard equipment since the 1963 models nationally.

About 10 percent, or thereabouts, of the hydrocarbons emitted from a vehicle come from evaporation of the gasoline, principally from the fuel tank and from the carburetor. Of these two sources of evaporation, recent evidence would indicate that the so-called hot-soak losses from the carburetor may be the more important. Some improvement in reducing these evaporative losses has been effected, by the industry within the last 10 years, by internal venting of the carburetor into the intake manifold.

The greatest source of pollution emissions from a vehicle is in the exhaust. The exhaust accounts for all the oxides of nitrogen, it accounts for practically all of the carbon monoxide from the vehicle, and its accounts for approximately two-thirds of the hydrocarbons which are emitted.

So we do have to consider all these sources. One of them is already controlled; namely, that from the crankcase, and there are now available technical procedures for controlling the emissions of hydrocarbons and carbon monoxide in the exhaust gases. On the other sources, which are of lesser importance in the total emission picture, research work is proceeding.

The CHAIRMAN. Thank you, sir.

How much do you charge for instruction, per lesson?

Mr. MACKENZIE. The lessons here are free, Mr. Chairman.

The CHAIRMAN. That's what you think. [Laughter.]

Well, what about jet fuel? Do you get the same pollutants?

Mr. MACKENZIE. You get pollutants emitted from jet engines, of course, sir. Normally, however, in total community atmospheres, we do not consider that these add appreciably to the total.

The CHAIRMAN. Have you been out to the airport where these jets take off and see that stream coming out behind?

Mr. MACKENZIE. We have made studies of the emissions—one study of a jet aircraft engine would indicate that the rate at which the pollutants are discharged from a 4-engine jet aircraft might be considered equivalent in hydrocarbon emissions to that from about 5,000 automobiles. Now, totally, however, in the atmosphere——

The CHAIRMAN. You mean one jet?

Mr. MACKENZIE. One jet plane.

The CHAIRMAN. That is what I mean—4 engines.

Mr. MACKENZIE. Yes, sir.

The CHAIRMAN. Equivalent to 5,000 automobiles?

Mr. MACKENZIE. This is the rate of emission per minute, yes, during takeoff.

The CHAIRMAN. We better add something to this.

Mr. MACKENZIE. They quickly, however, get above ground level, as you will appreciate——

The CHAIRMAN. But they leave what they emit as they go, just as the buses do.

Have you ever been around a paper mill?

Mr. MACKENZIE. Yes, sir.

The CHAIRMAN. Is there anything toxic about this terrible odor they put out?

Mr. MACKENZIE. I think it is more of a nuisance, really, than a toxic danger in most instances, although there are sulfurous compounds

that are discharged that not only are odorous but can be toxic if present in high enough concentration.

The CHAIRMAN. Well, that leads me into the other thing I wanted to inquire about.

The Secretary urged this morning that H.R. 7429 be included. I introduced the bill some time ago. It has to do with certain types of emission.

Now, Mr. Secretary, hasn't there been some kind of a proposed regulation being kicked around in the Bureau of the Budget at your request about some pollutants from certain Federal buildings that use certain types of fuel?

Mr. QUIGLEY. We have sent forward to the Bureau of the Budget for review and comments, a proposed set of standards for emission for new Federal installations having to do with the burning of sulfur fuels.

The CHAIRMAN. Where do those standards come from?

Mr. MACKENZIE. These standards were developed in the Division of Air Pollution, Mr. Chairman, based on analyses of the probable consequences of burning of fuels at Federal installations. May I expand on this just a little bit?

The limitations with respect to sulfur apply to the combustion gases that are emitted. For relatively small Federal installations—and this would include the normal Federal office building but would exclude such large fuel users as the Tennessee Valley Authority—there is a specification that for the instances where the gases would be discharged, essentially at roof level, those facilities burning less than 10 million B.t.u.'s per hour of fuel input, the sulfur emission would be limited essentially to that that would come from the use of coal containing about seven-tenths of 1 percent sulfur, or oil containing about nine-tenths of 1 percent. For larger installations, the suggestion is that the combustion equipment be so designed and the stack gases be discharged through elevated stacks, that the concentration of the sulfurous gases that would come back down to ground level would be lower than those that we would associate with physiologic damage or damage to vegetation.

The limitation on these smaller installations which I mentioned would keep the sulfurous gases concentration below those that would be associated with any physiologic damage, and also would keep it below the taste and odor threshold so that people in the vicinity of the building would neither be able to smell the sulfurous gases nor to taste them.

Now, there has been question raised about the availability of fuel that could meet these specifications that would be required for such use. Our analysis indicates that, totally in the Federal Government, there is used about 25 million tons of coal per year and about 12 million barrels of fuel oil. Within this total, 5 million tons of coal are currently used for building heating each year, and about 1,300,000 tons of this is within the sulfur limit that would be required to meet the specification that is included in the draft instructions. In addition to this, about 20 million tons are used by the Tennessee Valley Authority, to which this sulfur limitation does not apply, sir.

Now, totally in the United States our analysis indicates that there is produced or was produced last year about 160 million tons of

coal having a sulfur content of about seven-tenths of 1 percent. Of this amount, the largest quantity is used in the metallurgical and coking industries. About 50 million tons are exported. There are about 10 million tons that are used in the generation of electric power. All of which would meet the specification. And the total amount of low content sulfur coal which was produced in the year 1964 thus amounts to about 160 million tons out of a national total of approximately 500 million tons.

With respect to the oil situation—

The CHAIRMAN. Wait a minute now, before you leave that.

Do I understand you to say that the proposal that you have, if you had the authority to carry it out, that out of 500 million tons of coal produced in the United States on an annual basis, only 160 million would come within your regulations?

Mr. MACKENZIE. This is for use in small buildings, sir.

Our regulation would not apply to the large fuel users. We have consulted with the Tennessee Valley Authority, for instance, in a recently proposed addition to one of its plants in which the coal used would contain 4.2 percent sulfur.

In this instance, the only solution available is the construction of a very tall stack, by which the effluent gases would be sufficiently diluted before they reached back down to ground level.

The fuel limitation to which I have been referring would only apply to the fuel used in small buildings which do not have or are not equipped with tall stacks, and from which the effluent gases are discharged relatively close to the ground level and the breathing level.

The CHAIRMAN. In other words, any other user of coal that would put up a tall stack, x number of feet in the air, would be exempted.

Mr. MACKENZIE. We suggest that these large users consult with us so that we will be in agreement with the computations that are used or have been used to develop the height of stack that should be used at each installation.

Now, this is only applied, so far as Federal installations are concerned to date, to installations of the Tennessee Valley Authority, and we have had such consultations with them. We have endorsed their practice of doing this by using the tall stacks, because this is the only feasible solution that is currently available for handling this problem.

Mr. ROGERS of Florida. Will the gentleman yield for one question?

The CHAIRMAN. Yes.

Mr. ROGERS of Florida. I am not clear, either, on how much of the total production would fall within the prohibited amount of coal. Is it correct that out of the 500 million, 100 million-odd would be prohibited for use?

Mr. MACKENZIE. No, no. The 160 million tons that I mentioned is our estimate of the total amount produced last year that would meet the low sulfur specification, which would be required for the small amount of fuel that is used in the heating of office buildings.

Mr. ROGERS of Florida. So, almost 400 million, then, would not meet the standards you set; is that correct?

Mr. MACKENZIE. Some 350 million or thereabouts, Mr. Rogers. But the large use of coal in this country is for the generation of electric power, and normally in this usage, such restrictions would not apply.

Mr. ROGERS of Florida. Because of the stack.

Mr. MACKENZIE. The approach that would be used would be to construct a tall stack.

The CHAIRMAN. Do you know how much coal is being consumed in Federal buildings?

Mr. MACKENZIE. Yes, sir; we have these figures.

The CHAIRMAN. You do not have them with you.

Mr. MACKENZIE. I would be glad to supply them for the record. I think I might have them here, but it would take me a little time to get them.

The CHAIRMAN. If you would do that, I wish you would.

Mr. MACKENZIE. We will be glad to supply that, sir.

(The information referred to is as follows:)

FEDERAL FUEL USAGE

The following table presents our best estimates of annual Federal fuel usage for building heating and hot water supply and the estimated quantities of fuels which would be affected by the "Instructions for the Installation of Air and Water Pollution Control and Treatment Systems at New Federal Facilities and Buildings" proposed by the Department of Health, Education, and Welfare:

	Coal (tons)	Oil (barrels)
Estimated annual Federal fuel for building heating and hot water supply	5,000,000	12,000,000
Estimated annual increment of Federal fuel usage which would be affected by proposed instructions (based upon assumption that current annual rate of increase of floor area of federally owned buildings will continue unchanged in future years)	[1] 60,000	[2] 144,000

[1] Assuming all new Federal installations are heated with coal.
[2] Assuming all new Federal installations are heated with oil.

The CHAIRMAN. Now, about oil. You started to give us a rundown on that.

Mr. MACKENZIE. Totally in Federal installations there was used last year an estimated amount of 12 million barrels of fuel oil.

The CHAIRMAN. In Federal buildings?

Mr. MACKENZIE. In Federal public buildings throughout the United States.

A small part of this would meet the sulfur specifications.

In addition to this——

The CHAIRMAN. What part?

Mr. MACKENZIE. It would be 5 percent or thereabouts.

In addition to this small amount of heavy fuel oil that would meet this specification, practically all distillate fuel oils would meet the specification, because in the refining process these are effectively desulfurized.

In order to meet the specification, if an oil fuel is to be used, therefore, the 0.9 percent sulfur content, it would require the blending of heavy fuel oil, if this is to be used, with appropriate quantities of distillate fuel oils which already are effectively desulfurized. This would increase the fuel cost to Federal fuel oil users by some amount. We do not regard it as excessive.

There are ample quantities of oil that are available that can be used for this purpose.

We have had discussions with other Federal agencies, principally the ones that use large quantities of fuel, and have been advised that

in the main the instructions that we have drafted are practicable and can be met.

There has been some discussion of possible supply problems in individual areas, and we have agreed that, if necessary, discussions could be held about such problems.

The Tennessee Valley Authority has agreed that our approaches on this appear to them to be reasonable, and they have been cooperating with us in applying what we both consider to be the best practices.

The CHAIRMAN. Well, do you distinguish between the utilization of this type of fuel in a large metropolitan area as compared with a rural area?

Mr. MACKENZIE. We do, sir. For several large metropolitan areas where the sulfur pollution problem is already critical, we have suggested that all Federal users use the lowest available sulfur content fuel that can be obtained, and for these limited number of large metropolitan areas, the restriction on the sulfur content of fuels that apply to small buildings should apply generally throughout these metropolitan areas as well.

The CHAIRMAN. Well, it has been suggested to me that if your proposed regulation were to become effective, it would virtually eliminate fuel oil and coal to serve these installations.

Mr. MACKENZIE. May I comment on that, sir?

The CHAIRMAN. Yes, indeed. That is the reason I raised it.

Mr. MACKENZIE. Our computations in this regard are related to new Federal facilities. Now, we, of course, have no way of knowing what facilities are going to be constructed next year. However, we can take the average rate at which such facilities have been constructed over the past 5 to 10 years, an increase of about 1.2 percent per year in floorspace. We have translated this into fuel usage for heating and air-conditioning purposes.

If you apply this to the same pattern of coal and oil use that now prevails in all Federal establishments generally, this would mean that about 60,000 tons of coal would be affected by the sulfur restriction in the first year in which this would be applied. This amounts to a little more than one one-hundredths of 1 percent of the total United States use of coal.

With respect to oil, the same set of computations would indicate that this restriction would apply to 144,000 barrels of oil to be used in Federal establishments——

The CHAIRMAN. A year?

Mr. MACKENZIE (continuing). Per year, initially, and that this amount corresponds to fourteen one-thousandths of 1 percent of the total fuel oil usage in the United States.

The CHAIRMAN. Your contention is that the effect would be a minimum—the adverse effect.

Mr. MACKENZIE. Yes, sir. I cannot see that these small quantities can be said to be ruining the market of either the coal or the oil industry.

As a matter of fact, our figures will indicate that there are available supplies of fuel that would meet the specifications that we have been talking about.

The CHAIRMAN. Well, I am glad to have your views and analysis on it. We are going to have, I think, other opinions expressed, if

what I have been told is correct. We want to get the facts. I do not want to get into one of these kinds of situations where we will appear to be picking and choosing as to what kind of fuel will be used in a Federal installation out in the interior or around Washington, or any other place.

You know, it may be that—I hope none of my natural gas friends are here. It may be that you cannot get natural gas in every installation.

Mr. MACKENZIE. These restrictions would not require natural gas, Mr. Chairman. We do not consider them to be overly restrictive.

The CHAIRMAN. If you eliminate the competitors, there is no other choice.

Mr. MACKENZIE. We do not believe that we are eliminating the competitors, sir. As a matter of fact, we have, I hope, an open mind and attitude on this. We have had discussions with representatives of the fuel industry, and we expect to have more on this particular subject.

The CHAIRMAN. I want to urge you to do that.

As a matter of fact, I do not want to see this regulation we are speaking of approved or adopted by administrative action, or by this bill, unless this is cleared up, to where we have the facts as to what the results will be.

I recently had enough problems with the new Federal building in my own district, and as though that wasn't enough, they got into a fuss as to what kind of fuel to use. Of all the places in the world, they should have used gas; they decided to use fuel oil or coal—I am not sure which. Now, it really would be something to come along here with another Federal mandate, then, that you cannot use what you have already decided and you are installing in a building which is not yet completed.

Mr. QUIGLEY. Mr. Chairman, may I say for the record, to protect my status back in Pennsylvania which I think I might still have, it is a big coal producing State, and clearly there is nothing in this draft of the instructions as we understand it that would preclude the use of oil or coal in new Federal installations. It might, in some instances, require the burning of a higher grade of coal or oil, or in the alternative the erection of higher stacks that normally ordinarily would be erected.

The CHAIRMAN. Well, we have a call to go to the floor.

If you burn, then, in motor vehicles a higher grade of gasoline, you will have less emissions.

Mr. QUIGLEY. No; I don't think it follows. I think no matter what grade of gasoline you burn, you still come out with an auto exhaust emission.

The CHAIRMAN. What you mean then, by the utilization of fuel oil and coal, is that if you will burn coal, the less sulfur that comes into it, you would be better off.

Mr. QUIGLEY. Yes.

The CHAIRMAN. Well, I wanted to be sure and get that into record, because I have been told that the bill, H.R. 7429, would merely by legislation do what you are trying to do through the Bureau of the Budget by regulation.

I don't want to get caught in that, either. If what I have been told is true—and that is the reason I want to be sure what the facts are.

We will no pursue this, I think that's enough at this time.

Colonel, we have been trying to get you all day. If you feel that your time is such that you should not come back tomorrow, we will go right to this and come back and hear you.

Colonel MEYER. Sir, I am at your disposal. If you prefer to start in the morning, I will be available.

The CHAIRMAN. Very well. Thank you very much, Mr. Secretary. All four of you. We will recess at this time until 10 o'clock tomorrow morning.

(Whereupon, at 3:25 p.m., a recess was taken until 10 a.m., Friday, June 11, 1965.)

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CLEAN AIR ACT AMENDMENTS

FRIDAY, JUNE 11, 1965

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON PUBLIC HEALTH AND WELFARE OF THE
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met, pursuant to recess, at 10 a.m., in room 2123, Rayburn House Office Building, Hon. Oren Harris (chairman) presiding.

The CHAIRMAN. The subcommittee will come to order.

Our first witness is Col. Alvin F. Meyer, Jr., U.S. Air Force, BSC, Department of Defense.

We will be glad to have your testimony, Colonel Meyer. We regret the interruption yesterday whereby we detained you until today, but as I told you, we would get to you the first thing this morning.

STATEMENT OF COL. ALVIN F. MEYER, JR., U.S. AIR FORCE, BSC, DEPARTMENT OF DEFENSE

Colonel MEYER. Thank you, Mr. Chairman, as you know, sir, we have sent over a written report on H.R. 7065, 7394, and 7429 and S. 306.

The Department of Defense appreciates the opportunity of discussing with you the effect upon the Department and its activities of the proposed amendments to the Clean Air and Federal Water Pollution Control Act.

In addition to this prepared testimony, I have one or two comments that I would like permission to interject as we go along in the light of the comments of yesterday.

Mr. CHAIRMAN. You may. The report you referred to I assume is the report that we have from the Department of Defense.

Colonel MEYER. Yes, sir.

The CHAIRMAN. That will be included with other agency reports.

Colonel MEYER. Thank you.

Today I would like to bring all of these comments into perspective in relationship to the basic legislation. At the same time, some further comments regarding certain technical and professional environmental engineering considerations will be furnished for your consideration. This presentation reflects a consensus of the views of the various medical services, engineering, logistics, and other functions of the Department of Defense, involved in pollution control and abatement.

I should like at this point to emphasize, as has been done in the Department's previous testimony and correspondence on the various

proposed legislative actions relating to pollution, that the national objectives of reducing environmental pollution from all causes are not only endorsed enthusiastically by this Department, but are incorporated into our programs and operating policies.

The President's message on natural beauty of February 8, 1965, directed the heads of all agencies to improve measures to abate pollution. The Department of Defense directive relating to natural resource conservation has been revised to embody the overall requirements of the executive message.

I have a copy of this latest directive with me which I will leave with the clerk, if you would like to have it for the committee.

The CHAIRMAN. It will be made a part of the record at the end of your statement.

Colonel MEYER. Yes, sir.

A number of instructions relating to natural resources and conservation have also been developed. A specific Department of Defense issuance on health and welfare requirements has been prepared by the Tri-Service Working Group on Environmental Pollution Abatement.

(The document referred to follows:)

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE,
Washington D.C., May 19, 1965.

MEMORANDUM FOR DEPUTY ASSISTANT SECRETARY OF DEFENSE, MANPOWER (HEALTH & MEDICAL)

Subject: Proposed Department of Defense directive, "Environmental Pollution Abatement."

References:

(*a*) ASD M Memorandum, Tri-Service Working Group on Environmental Pollution Abatement.

(*b*) Department of Defense directive 5505.1, "Natural Resources Conservation—Management."

In accordance with instructions contained in reference (*a*) the Tri-Service Working Group on Environmental Pollution Abatement has prepared a draft proposed Department of Defense directive, subject as above. The provisions of this directive are complementary to those of reference (*b*). This directive has been prepared in coordination with the Chairman of the Department of Defense Natural Resources Group. Views of the Assistant Secretary of Defense, Installations and Logistics and the Director of Defense Research and Engineering have also been incorporated therein.

The Defense Environmental Pollution Abatement Panel (DEPAP) established by section IV of the proposed directive is considered to be essential. Experience of the past several years has indicated that normal staff actions among the Departments, and within Department of Defense, are generally inadequate for the functions assigned to the Panel. Its establishment is necessary for the following reasons:

(*a*) Time available for reaction to congressional inquiries and committee reports and to specific problems is generally very short, requiring some established formalized means of rapid action in a coordinated manner. The importance of the potential impact of environmental pollution abatement situations on current or R.D.T. & E. operations is a major consideration. (The recent problem in the State of Utah relating to beryllium rocket propellants and affecting the Department of the Air Force, two of its contractors, the Department of the Army, the State Health Department and the U.S. Public Health Service is an example.)

(*b*) The requirement for establishing Department of Defense inputs to Department of Health, Education, and Welfare regulations, and for coordination with the Department of Health, Education, and Welfare and other agencies (such as NASA) is of continuing and increasing importance. "More formalized arrangements" for this were recommended by the Senate Special Subcommittee on Air and Water Pollution following the "clean air" hearings in June 1964; and

again was included in committee comments following the testimony on S. 560 (the Federal Installations Facilities and Equipment Pollution Control Act).

(*c*) The Department of Defense should be in a position to "speak with one voice" in dealing with the complex problems of pollution abatement as it affects health and welfare, and as it affects natural resources conservation. The DEPAP, in conjunction with the defense natural resources group will provide a complete mechanism for Assistant Secretary of Defense Manpower, Assistant Secretary of Defense Installations and Logistics, and Director of Defense Research and Engineering, to insure for the Secretary of Defense that the intent of the Congress and Presidential directive on this subject of national interest is properly achieved within the Department of Defense.

(*d*) It should be noted that no additional funds or special manpower authorizations result.

This draft directive has the unanimous concurrence of the members of the Tri-Service Working Group on Environmental Pollution Abatement.

ALVIN F. MEYER, Jr.,
Colonel, U.S. Air Force, BSC Chairman,
Tri-State Working Group on Environmental Pollution Abatement.

[Draft]

DEPARTMENT OF DEFENSE DIRECTIVE

Subject: Environmental pollution abatement.
References:

(*a*) 33 U.S.C. 466, the Federal Water Pollution Control Act.
(*b*) Public Law 206, 88th Congress, The Clean Air Act.
(*c*) Department of Defense directive 5505.1 ("Natural Resources—Conservation and Management."
(*d*) Department of Defense directive 6015.5, "Joint Utilization of Medical Resources."
(*e*) Executive Order 11017 (as amended).
(*f*) BoB Circular A–11.
(g) Department of Defense Directive 5154.12, "The Armed Forces Pest Control Board."
(*h*) Department of Defense Directive 5410.18, "Community Relations."

I. PURPOSE AND APPLICABILITY

A. This directive assigns responsibilities and establishes procedures for—

1. Cooperation with the Department of Health, Education, and Welfare, and with State and local health and pollution abatement authorities in preventing and controlling air, water and general environmental pollution; and for compliance with the Federal Water Pollution and Clean Air Acts as amended (references (*a*) and (*b*));

2. Coordination of health and human welfare requirements of environmental pollution abatement with the relating to natural resource conservation and management and recreation (reference (*c*));

3. Development of coordinated Department of Defense positions and testimony to Congress on environmental pollution matters;

4. Providing for a single focal point of contact for the DOD with the Department of Health, Education, and Welfare and other Federal agencies in the development of air, water, and other environmental quality standards, and for the establishment of procedures and criteria for the protection of civilian areas adjacent to installations or facilities at which R.D.T. & E. or operational activities constitute new or specialized environmental pollution; and

5. Insuring effective coordination and joint utilization of resources (reference (*d*)) where two or more departments or agencies have a common problem in the same geographical area (e.g., testing and handling of a rocket propellant having pollution potential).

B. Its provisions apply to all components of the Department of Defense, and to its contractors.

II. DEFINITIONS

A. *Environmental pollution.*—Environmental pollution is the condition within the environment resulting from the presence of chemical, physical, or biological agents or materials which so alter it that an adverse effect is created on human

health, or produces damage or adverse effects on livestock, agriculture, aquatic life, plants, wildlife, causes damage or deterioration of facilities or equipment, or constitutes a hazard to transportation.

B. *Welfare, and natural resources conservation.*—In addition to direct or indirect effects on health, pollution may have an adverse effect on living things and property, or cause a deterioration in scarce natural resources. The need for conservation, development, and better use of natural resources has been recognized by the Congress and the President (references (*a*), (*b*), and (*c*)). As used in this directive, welfare and natural resources conservation encompass those measures and programs directed toward preventing the effects of pollution on recreational utility of the environment, the enjoyment of natural resources, and the preservation of such resources (reference (*a*)).

III. POLICY

It is the policy of the DOD to take necessary action to control or minimize environmental pollution, including air, water, and soil, or other components, at its bases, buildings, facilities, and from its operations. This includes those operated by its contractors over which it has cognizance. Consideration will be given first to those pollution situations which constitute a direct effect on human health; then to those which affect economic utility, and to those which are of a welfare and natural resource conservation nature. Extending throughout all echelons of each DOD department and agency, formalized arrangements will be provided to assure that coordinated program is implemented among all of the activities having established and assigned responsibilities relating to environmental pollution abatement and natural resources conservation (e.g., the medical services, installations and logistics function, research, development, test and evaluation activities, and fish, wildlife, and resource conservation and management). In achieving this end, the following apply:

A. Maximum effort will be made to incorporate environmental pollution preventive measures in the basic designs for new bases, facilities, buildings, equipment, in systems programs, and in projects for rehabilitation or modification of existing items.

B. Control of pollution where economically and technically feasible will normally be directed to the source of the potential release to the environment. This involves proper design and operation of utilities, industrial facilities, and research, development, test, and evaluation (R.D.T. & E.) activities so as to minimize or prevent the release of harmful or irritating materials. The ultimate objective is to insure compliance with such Federal standards or guides to good practice as are issued by the Department of Health, Education, and Welfare under authority of current statutes, or of State and local regulatory agencies when such apply.

C. Department of Defense installations and activities will demonstrate leadership in pollution abatement and will cooperate in the development of pollution abatement programs with local communities. Department of Defense installations and facilities will not take a lesser degree of action on pollution abatement than that prevailing in the surrounding community. Where conflicts exist as to applicability of local or State rules, action will be taken in accordance with instructions issued by each of the departments to arrange for resolution of the matter through the Department of Health, Education, and Welfare.

D. Projects for new construction will be designed to meet the instructions of the Department of Health, Education, and Welfare for installation of air and water pollution control measures, developed pursuant to section 6H, Bureau of the Budget Circular A–11 (reference (*f*)), to be contained in an appropriate DOD instruction when issued by the Department of Health, Education, and Welfare.

E. Consideration will be given to the needs for, and possibilities of detecting and controlling environmental pollution, including effects on natural resources as a part of R.D.T. & E. programs involving potentially hazardous materials. Necessary medical services toxicological and environmental health investigative programs will include such consideration.

F. Care will be taken to prevent discharge of waste material into the air, water, or soil, in an unauthorized manner.

G. Facilities of DOD departments and agencies having an environmental health capability will be utilized jointly, where indicated on a geographic basis, to provide necessary surveillance over, and support to environmental pollution

abatement studies and natural resource conservation matters within their capability (reference (*d*)).

IV. THE DOD ENVIRONMENTAL POLLUTION ABATEMENT PANEL (DEPAP)

There is hereby established the DOD Environmental Pollution Abatement Panel. This Panel functions as the focal point for development of DOD policies and for coordination with the Department of Health, Education, and Welfare and other Federal agencies on matters relating to environmental pollution, other than those assigned to the DOD Natural Resources Group (reference (*c*)). Close coordination, cooperation, and support will be maintained between these two activities.

A. The Panel shall consist of not more than four principals from each department; technical consultants as needed from each department; liaison representatives of Director of Defense Research and Engineering, Assistant Secretary of Defense, Installations and Logistics, Assistant Secretary of Defense, Manpower (Health and Medical), DOD Natural Resources Group; and a Chairman. The Chairman shall be designated by Assistant Secretary of Defense, Manpower (Health and Medical), based on nominations of the Surgeons General of the Army, Navy, and Air Force. He shall be a Medical Service officer of high professional qualifications, with demonstrated ability in environmental pollution abatement, and interagency coordination. In this additional duty he functions as the DOD Coordinator for environmental pollution abatement matters. Members of the Panel (and their alternates) will be appointed by the respective Secretaries from the following officers:

1. *Army.*—The Surgeon General, Chief of Engineers, and such other agencies as may be deemed appropriate, if desired.

2. *Navy.*—The Surgeon General, Chief, Bureau of Yards and Docks, and such other agencies as in the case of the Army.

3. *Air Force.*—The Surgeon General, DCS/Operations—Director of Civil Engineering, and others as in the case of the Army.

B. The Panel will—

1. Assist in the development of coordinated DOD positions on proposed legislation dealing with environmental pollution problems.

2. Develop DOD recommendations to Department of Health, Education, and Welfare regarding proposed "standards," "instructions" or other regulatory requirements for environmental pollution including air and water quality criteria.

3. Provide a means for expediting coordination among the departments for development of plans and procedures relating to common problems, and in dealing with local and State agencies, the Department of Health, Education, and Welfare, or other Federal departments, such as NASA, Interior, or Commerce.

4. Assist in the development and preparation of annual reports to the Department of Health, Education, and Welfare (references (*a*) and (*b*)).

5. Undertake such special studies or reviews as are directed by Assistant Secretary of Defense, Manpower (Health and Medical).

6. Maintain coordination with, and assist as necessary, the Defense Natural Resources Group, and the Armed Forces Pest Control Board (reference (*g*)).

V. RESPONSIBILITIES

A. The Assistant Secretary of Defense, Manpower, is responsible for the supervision of the total environmental pollution abatement and natural resource conservation program. The Deputy Assistant Secretary of Defense, Manpower (Health and Medical) will, in coordination with the Assistant Secretary of Defense, Installations and Logistics, maintain cognizance over the Environmental Pollution Abatement Panel, and assure proper coordination of the Panel with the National Resource Conservation Group. In view of the impact of environmental pollution abatement and natural resource conservation measures upon military construction, maintenance, and operation and R.D.T. & E. programs, the Assistant Secretary of Defense, Manpower will assure that effective coordination is maintained among the DEPAP, AFPCB and DNRG, and with appropriate elements of Assistant Secretary of Defense, Installations and Logistics, and Director of Defense Research and Engineering.

B. Departments and commanders of major military commands, bases and installations will—

1. Maintain cognizance, by the medical services and civil engineering activities, over environmental pollution abatement requirements, and programs. This will include, but not be limited to evaluation of adequacy of existing measures, status of compliance with regulatory authority requirements, and the development of recommendations for correction of deficiencies, or the prevention of abatement associated with new projects or programs.

2. Insure that environmental pollution abatement, and other health protective features are incorporated in the designs for new buildings, facilities, and equipment, as required by an appropriate DOD instruction to be issued later, or in accordance with recommendations of the respecitve medical services, where special health and pollution abatement measures are needed (as in the case of R.D.T. & E. operations).

3. Establish procedures whereby complaints or allegations of environmental pollution from departmental installations or facilities are promptly investigated by pollution abatement personnel of the medical service, assisted by civil engineering representatives and other technically qualified personnel as necessary.

4. Include in the community relations program (ref. (h)) information on specific actions taken at bases and facilities on environmental pollution and related matters, and plans for information and news media releases regarding reporting of any major episode which may adversely affect public opinion, such as an accidental release of toxic materials into streams or the air.

5. Cooperate with representatives of the Department of Health, Education, and Welfare in conducting surveys of air and water pollution abatement practices, and provide medical service engineering and civil engineering personnel to assist in such surveys.

6. When conflicts arise regarding applicability of local or State rules, take necessary action to arrange for resolution of the matter through the Department of Health, Education, and Welfare.

VI. REPORTS

Each military department will take action to have information on environmental pollution abatement programs and problems included in their respective medical service and civil engineering reporting systems, so as to be able to furnish information to the Assistant Secretary of Defense, Manpower, for consolidation, review, and submission to the Secretary of Health, Education, and Welfare, or congressional committees as required by the statutes (ref. (a) and (b)). Specific requirements for reporting procedures will be contained in appropriate DOD instructions to be issued by ASD M, in collaboration with ASD I. & L.

VII. IMPLEMENTATION

Each military department will publish this directive in appropriate departmental regulations. Proposed implementing regulations, to include specific departmental procedures shall be forwarded to ASD M for approval prior to publication within 90 days from the date of this directive.

VIII. EFFECTIVE DATE

This directive is effective immediately.

Colonel MEYER. It is in the process of final review before publication. The existing instructions of each of the departments on environmental pollution abatement and control will be amplified and broadened in accordance with these directives and instructions.

We call to your attention the actions taken and being taken in the State of Utah with regard to beryllium rocket propellant testing and waste disposal activities as evidences of the continuing close coordination and cooperation among Department of Defense agencies with the U.S. Public Health Service and with State and local authorities.

Briefly, two U.S. Air Force contractors are engaged in rocket propellant testing and manufacturing in Utah. As a result of these activities, some amounts of beryllium contaminated waste are created. The need developed for the establishment of mutually acceptable procedures for health protection and air pollution control requirements, and to assist the State of Utah in providing technical knowledge and assistance thereon.

We have with us a copy of the rather detailed protocol on this which I can also submit for the record, if you so desire.

(The document referred to follows:)

Fld Utah Berry

FINAL PROTOCOL

Prepared by: US Army Environmental Hygiene Agency
In Collaboration With
The Surgeon General, Dept of Army
The Surgeon General, Dept of Air Force
US Army Materiel Command

Project Title: Monitoring of Environmental Dispersion of Beryllium from Disposal of a Solid Propellant by Trench Burning at Dugway Proving Ground, Utah

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Location of Study: Dugway Proving Ground, Utah

Length and Time of Study: 6 months - To begin on or about 1 May 1965 and to be completed on or about 1 November 1965

Directing Agency: US Army Environmental Hygiene Agency
Edgewood Arsenal, Maryland 21010

Requesting Agencies: The Surgeon General, Department of the Army
The Surgeon General, Department of the Air Force

Participating Agencies: The Surgeon General, Department of the Army
The Surgeon General, Department of the Air Force
US Army Environmental Hygiene Agency (AEHA)
US Army Materiel Command (AMC)
US Army Test and Evaluation Command (TECOM)
Dugway Proving Ground (DPG)
392nd Aero Space Medical Group, Vandenburg AFB
Regional Environmental Health Laboratory, Kelly AFB
Rocket Propulsion Laboratory, Edwards AFB
Regional Environmental Health Laboratory, McClelland AFB
Hill AFB

Coordinating Agencies: US Public Health Service
Utah Department of Health

Related Projects: Air Force Studies Project SANDSTORM and Project ADOS, which are atmospheric diffusion programs, aimed at the development of quantitative statements of dilution rates of pollutants released as quasi-instantaneous volume sources.

Final Protocol

1 BRIEF OF PROJECT: PURPOSE AND OBJECTIVE

1.1 Objectives: To determine the distribution of beryllium to the environment (air and ground) at predesignated inhabited or occupied locations as a result of disposing of beryllium-containing missile propellant wastes by burning in an open trench at Dugway Proving Ground, Utah.

1.1.1 The Surgeons General will attempt to obtain data pertaining to the concentrations of beryllium in the air and soil, which can serve as a basis for recommendations regarding policy and procedures. These recommendations will attempt to insure the development of a properly conducted future disposal program, which will protect the health and well-being of all military and civilian personnel, through prescribed adequate means for control of environmental contamination.

1.2 Approach: This project will be divided into five major tasks as follows:

A. Determine by means of a literature search and review, through discussion with various consultants, and through application of existing mathematical equations, the most probable exposure to beryllium at designated inhabited and/or occupied locations in the environment under theoretical meteorological conditions existing at time of the burning.

B. Determine the baseline or background levels of beryllium in the environment prior to disposal of the propellant.

C. Determine the actual exposure to beryllium in the air at designated inhabited locations, as a result of burning the fuel under the given meteorological conditions.

D. Conduct a post-burning sampling program to determine re-entrainment of beryllium in the air and total change of the environment.

E. Correlate and interpret the data found so that it may serve as a basis for recommendations regarding policy and procedures.

1.3 Background: Because of its lightness, its ability to absorb and conduct heat rapidly, and other favorable factors, beryllium is being applied to many operations, including its use as a component for missile engines, in which it has been shown to produce a significant increase in specific impulse or performance.

1.3.1 However, after a period of time the propellant fuel may begin to deteriorate or become unstable, or for other reasons, disposition of it may have to be made. Additionally, wastes including propellant, handling materials, etc., are generated in laboratories and on the production line will require special disposal techniques. A current proposal is to dispose of these wastes by burning in remote areas such as Dugway Proving Ground, Utah. An agreement was reached between the US Air Force and Dugway Proving Ground, in which the latter accepted a contract to dispose of a given quantity of propellant waste, 42,000 pounds of which are currently on site at Dugway Proving Ground.

1.3.2 The proposed plan of operation has been reviewed by the Utah State Department of Health and the USPHS. It has been agreed that in this instance, disposal by open burning at DPG of waste material contaminated with beryllium be permissible provided that the burning operation is conducted under favorable meteorological conditions, it is properly monitored, and that all necessary precautions are observed to protect the health and welfare of all members of the public. It is expected that open burning operation will be completed in a single daylight period.

1.3.3 Up to this time, in addition to some civilian experience in the vicinity of beryllium extraction and alloy fabrication plants, military data on general environmental dispersion have been obtained in connection with the handling of beryllium on research or pilot plant scales of production. In addition, Edwards Rocket Propulsion Laboratory, Edwards AFB, California, has statically test fired a number of small motors and has burned small quantities of beryllium containing fuels in open pits. As the use of beryllium containing propellants is increased, disposal of these fuels and beryllium-contaminated wastes along with its attendant problems will increase. Data pertaining to concentrations of beryllium in the air and soil are important to properly conducted disposal programs, and can serve as a basis for recommendations regarding policy, procedures and the development of future programs.

1.4 Direction and Supervision of Project:

1.4.1 Project Directors:

Colonel Robert G. McCall, MSC
US Army Environmental Hygiene Agency
Edgewood Arsenal, Maryland 21010

Lt Colonel Alois Peczenik, MC
US Army Environmental Hygiene Agency
Edgewood Arsenal, Maryland 21010

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1.4.2 The Air Force Surgeon General's Technical Coordinator:

Captain Owen H. Kittilstad, USAF, BSC
Edwards Rocket Propulsion Laboratory
Edwards Air Force Base, California

1.4.3 The Army Surgeon General's Supervisors:

Major Lee C. Herwig, Jr., MSC
US Army Environmental Hygiene Agency
Edgewood Arsenal, Maryland 21010

Captain Frederick B. Higgins, Jr., MSC (Assistant)
US Army Environmental Hygiene Agency
Edgewood Arsenal, Maryland 21010

1.4.4 Commanding Officer, Dugway Proving Ground's Supervisor:

Mr. Robert L. Alg
Safety Director
Dugway Proving Ground, Utah

1.4.5 Direct communication and the establishment of close liaison and cooperation for the completion of this project has been authorized between the directors, supervisors and project agencies.

1.5 Requesting Agencies: The Army and Air Force Surgeons General, as the requesting agencies in this study will desire the cooperation of other allied agencies for the completion of this project.

1.5.1 US Public Health Service: will furnish technical advice and assistance as needed to meet the objectives of this study and to implement the provisions of the Clean Air Act.

1.5.2 Utah Department of Health: The project director and supervisors are authorized to establish direct liaison with the State of Utah Health Department to assure the successful completion of this project.

1.6 References:

1.6.1 Manual for the Calibration and Use of High-Volume Air Samplers in the Measurement of Suspended Particulate Matter, C. I. Harding and E. R. Hendrickson, Air Pollution Research Laboratory, Florida Engineering and Industrial Experiment Station, Bulletin Series No. 117, University of Florida.

1.6.2 Preliminary Report on Project SANDSTORM, Major J. H. Taylor and Captains J. U. Nau and G. L. Tucker, Air Force Cambridge Research Laboratories, June 1964.

1.6.3 Symposium on Environmental Measurements, U. S. Public Health Health Service Publication No. 999-AP-15, July 1964.

1.6.4 The Ocean Breeze and Dry Gulch Diffusion Programs, Vol. 1, D. A. Haugen and J. J. Fuquay, eds., Air Force Cambridge Research Laboratories, AFCRL-63-791(1), November 1963.

1.6.5 Meteorology and Atomic Energy, US Atomic Energy Commission, AECU 3066, July 1955.

1.6.6 Toxicity of Beryllium, Chemical Engineering Branch, Manufacturing Technology Laboratory, Aeronautical Systems Division, Air Force Systems Command, ASD-TR-62-7-665, April 1962.

1.6.7 Toxic Hazards of Beryllium Propellant Operations, Biomedical Laboratory, Aerospace Medical Research Laboratories, Aerospace Medical Division, Air Force Systems Command, AMRL-TDR-64-75, September 1964.

1.6.8 Cloud Travel Slide Rules for the Determination of Downwind Travel and Area Coverage, A. K. Stuempfle, III, D. O. Egner and

Donald Campbell, U. S. Army Chemical Research and Development Laboratories, CRDLR 3124, February 1962.

1.6.9 Workbook in Atmospheric Diffusion Calculations, G. A. DeMarrais, Idaho Operations Office, USAEC, IDO-12005, February 1959.

1.6.10 "Non-Occupational Berylliosis", Merril Eisenbud, R. C. Wanta, Cyril Dunstan, L. T. Steadman, W. B. Harris and B. S. Wolf, J. Ind. Hyg. and Tox., 31, 282 (1949).

1.6.11 "A Study of Beryllium Exposures at a High Explosive Assembly Test Facility", R. O. Campbell, A. Ind. Hyg. Assoc. J., 22, 385 (1961)

1.6.12 "An Air Pollution Study of a Community Surrounding a Beryllium Plant", U. H. Sussman, Jan Lieben and J. G. Cleland, A. Ind. Hyg. Assoc. J., 20, 504 (1959).

1.6.13 Unpublished data. Edwards Rocket Propulsion Laboratory, Edwards Air Force Base, California.

2 TASK A: ESTIMATION OF EXPOSURE AT PREDETERMINED SAMPLING SITES:

2.1 This task is an attempt to estimate the exposure not to be exceeded within given confidence limits at any of the given sampling points.

2.2 The assumption will be made that the test will not proceed unless the following conditions prevail: Wind is from SE, S, or SW Quadrants; wind speed is above 10 mph; lapse conditions will prevail; and there will be little cloud cover.

2.3 Because the source strength and its rate of emission is not known in this study, a variety of equations with various parameters will be used in attempting to delineate the concentration at any given point.

2.4 These equations will consist of both theoretical as well as empirical formulae. The equations and nomographs are shown in appendix I.

2.5 Estimates of concentration when coupled with information pertaining to equipment sampling rate and an estimate of the natural beryllium background permit calculations of minimum sampling time to assure that sample is large enough to be detected within the sensitivity limits of the desired analytical methods.

2.6 Estimates of exposure will be furnished the Safety Director so that he may designate exclusion limits in the range area, through which personnel should not proceed without adequate safety protection.

3 TASK B: DETERMINE THE BASELINE OR BACKGROUND LEVELS OF BERYLLIUM IN THE ENVIRONMENT PRIOR TO DISPOSAL OF THE PROPELLANT:

3.1 This task is concerned with the establishment of baseline data pertaining to the concentration of beryllium in the air and soil to which subsequent post-burning data may be referenced.

3.2 Subtask B-1: Air Sampling.

3.2.1 Air sampling will be conducted at 12 sampling locations as shown on appendix II. These locations are at the coordinates shown in appendix IIA, and include sites in six civilian communities, Wendover, Knolls, Low Station, Fish Spring, Callao, and Gold Hill. Also included are two heavily populated areas, Easy and Dog, at Dugway Proving Ground. These eight areas will subsequently be referred to as populated areas. The remaining four sampling

locations are points along the range road network and in the vicinity of the test area. These latter stations will be referred to as range locations.

3.2.2 Air sampling will be accomplished using two different models of high volume samplers: General Metal Works and Gelman Instrument Co. Refer to appendix III for a description of these samplers.

3.2.3 All instruments will be calibrated with previously calibrated orifice plates, using the technique described in appendix IV.

3.2.4 General Metal Works samplers will be placed in remote areas. Sampler enclosures will be locked to prevent tampering and will be operated 24 hours by means of timers. Gelman Hurricane samplers will be operated 8 hours and will be placed in the range area where they can be manually controlled.

3.2.5 The appropriate sized Whatman No. 41 filter paper will be used as the basic filtering media for this study. Gelman procured membrane filter paper will be available to provide comparison of results at some sampling stations.

3.2.6 Background sampling will take place on at least three non-consecutive days prior to burning, and will be more frequent if the situation permits.

3.2.7 Analysis for beryllium will be accomplished according to the analytical technique described in appendix V.

3.2.8 The technique for the handling and shipping of filter papers is described in appendix VI.

3.2.9 Meteorological data for correlation with results of analysis of background samples will be obtained from the meteorological station located in Dog Area.

3.3 Subtask B-2: Soil Sampling

3.3.1 This subtask has as its goal an attempt to determine the quantity of beryllium occurring on a one foot square surface area, prior to disposal of the waste.

3.3.2 An adhesive one foot square will be attached to a 250 pound cylindrical roller (similar to a lawn roller) with the adhesive surface outward, and will be rolled once over a previously marked location.

3.3.3 The adhesive will be removed from the roller and will be analyzed according to the technique described in appendix V. The total weight of beryllium will be reported as micrograms of beryllium per square foot of soil surface area.

3.3.4 Soil samples will be taken at all sampling stations located in the range area. In addition samples will be taken in and immediately surrounding the burn trench at locations described in appendix VII.

3.3.5 Fallout trays will be located at selected soil sampling locations, and an attempt to correlate two sampling methods will be made.

4 TASK C: DETERMINE THE CONCENTRATION OF BERYLLIUM IN THE AIR AT DESIGNATED INHABITED AREAS AND SELECTED POINTS IN THE RANGE AREA, AS A RESULT OF BURNING THE FUEL UNDER THE GIVEN METEOROLOGICAL CONDITIONS:

4.1 This task is concerned with burning of the propellant waste, the determination and recording of meteorological conditions during the period of the burning, the determination of the temperature of the fire, and the monitoring of the air during this period.

4.2 Subtask C-1: The Safety Director, Dugway Proving Ground, is responsible for burning the propellant waste.

4.2.1 As DPG Project Supervisor, this responsibility will as a minimum cover the following areas: Deciding when meteorological conditions meet the criteria set forth in par 2.2.2; ignition of the fuel by qualified Explosive Ordinance Disposal Personnel; safety of personnel prior to, during, and following the burning; provision for ambulance support in the range area; and backfilling of trenches following the burning.

4.3 Subtask C-2: Determination of meteorological conditions during the period of burning.

4.3.1 Micrometeorological data will be determined at the disposal site by a meteorological detachment consisting of two men and one van.

4.3.2 Measurements taken and data reduction will be accomplished by DPG, and will consist of the information as shown in appendix VIII.

4.3.3 Additional data, including information from which a gross estimate of the lapse rate can be made, will be provided by a permanent meteorological station located in Dog area. This information will be provided to TSG Project Supervisor upon request.

4.4 Subtask C-3: The Explosive Ordinance Disposal Detachment, DPG, will measure continuously during the propellant burning the

temperature of the fire by the use of three thermocouples and a continuous recording device.

4.5 Subtask C-4: Determination of the actual exposure to beryllium in the air at designated locations, as a result of burning the waste propellant.

4.5.1 Air sampling will be conducted using equipment and sampling locations as described in the section entitled Task B.

4.5.2 Sampling time for the samplers located in the populated areas will be 24 hours.

4.5.3 Sampling time for the samplers located in the range area will be the duration of the fire plus an additional time increment determined by wind speed and direction.

4.5.4 The samplers located in the populated areas will be turned on by timers at approximately the time the burning of the waste begins.

4.5.5 Samplers in the range area will be turned on manually approximately 30 minutes prior to ignition.

4.5.6 The technique for handling and shipping of the filter papers is described in appendix VI.

5 TASK D: POST-BURNING SAMPLING PROGRAM:

5.1 This task is concerned with conducting a post-burning sampling program to determine re-entrainment of beryllium in the air by natural winds and during backfilling of the trench; and associated change of the environment.

5.2 Subtask D-1: Air Sampling.

5.2.1 Air sampling will be conducted during the period following disposal of the waste utilizing the sampling site and in a manner described in section 3.2.

5.2.2 Length of sampling time will be 24 hours for the samplers in the populated areas and 8 hours for the samplers on the range.

5.2.3 Sampling will be conducted for seven days following burning or until the concentration reaches background, which ever event precedes.

5.2.4 An attempt will be made to evaluate the contamination potential created by backfilling the burn trench. This will be accomplished by monitoring the air in the breathing zone of the bulldozer operator by mounting a portable sampler on the bulldozer.

5.3 Subtask D-2: Soil Sampling

5.3.1 Post burning soil samples will be taken on the day following the burning using the techniques and sampling stations described in Section 3.3.

5.4 Subtask D-3: Other Environmental Sampling.

5.4.1 Wipe samples will be taken on equipment with filter paper and will cover an area of 100 square centimeters.

6 RESPONSIBILITY OF PARTICIPATING AGENCIES:

6.1 The Army Surgeon General:

6.1.1 The Chief, Preventive Medicine Division, Office of The Surgeon General, is responsible for policy determinations and coordination at departmental level.

6.1.2 Funds for conducting the Army portion of this project are provided by The Surgeon General.

6.2 The Army Materiel Command:

6.2.1 The Army Materiel Command is responsible for conducting the burning of the waste propellant in accordance with provisions for health and safety of all members of the military and civilian community, through its subordinate command, USATECOM.

6.2.2 AMC will provide administrative and logistical support of this technical study on both a reimbursable and non-reimbursable basis as outlined in par 6.4 through its subordinate command, USATECOM.

6.3 US Army Test and Evaluation Command:

USATECOM is responsible for insuring the test is properly executed through its subordinate command, DPG.

6.4 Dugway Proving Ground:

6.4.1 Has primary responsibility for conducting the burning of the beryllium waste, as indicated in detail in Subtask C-1, par 4.2.

6.4.1.1 Notify Utah Department of Health 48 hours prior to burning.

6.4.2 Provide administrative and logistical support for this test plan as indicated in the following paragraphs:

6.4.3 Non-reimbursable support will include the following:

Provide power and batteries for operating equipment.

Provide stands for sampling stations in range area.

Provide assistance in calibration of monitoring instruments, as requested.

Assist in mounting portable sampler on earth moving equipment.

Provide gas cans for hauling fuel for portable generators.

Provide safety clothing and protective masks for personnel.

6.4.4 Reimbursable support will be in two categories, definite committment, and support as needed upon request.

6.4.4.1 Definite support required is as follows:

Provide as a minimum, housing for two persons for three weeks and one person for one week during test.

Provide meteorological support as indicated in Subtask C-2, par 4.3.

Provide photographic coverage to include black and white still photographs and color slides of the burning to include: monitoring equipment used, various personnel in action, and coverage of the plume in the canyon and downwind.

Provide gasoline for small portable generators.

Provide continuous measurement of the temperature of the fire by use of three sampling points.

6.4.4.2 Support which may be required during the test and will be requested on an as needed basis is as follows:

Assistance in setting up sampling stations prior to the burning.

Provide maintenance and repair of electrical equipment.

Provide up to a maximum of three trucks for test personnel during period 28 June-21 July 1965, as needed.

6.5 US Army Environmental Hygiene Agency:

6.5.1 Provide primary direction of all aspects of this study.

6.5.2 Carry out the literature search and review and field study as indicated in Task paragraphs.

6.5.3 Provide two persons as field investigators to carry out field survey.

6.5.4 Coordinate the efforts of all parties to assure the accomplishment of the objectives set forth in this protocol.

6.5.5 Provide the equipment and supplies indicated in appendix IX for the test.

6.5.6 Ship Agency equipment to and from DPG.

6.5.7 Assume responsibility (to include pecuniary liability upon receipt) for Air Force equipment shipped to DPG.

6.5.8 Provide for return shipment of Air Force equipment from DPG to point of origin.

6.5.9 Correlate and evaluate all data, and prepare progress and final reports to be transmitted to the respective Surgeons General , through the Chief, Preventive Medicine Division, Office of The Surgeon General.

6.6 The Surgeon General, Department of the Air Force:

6.6.1 Provide technical, field survey and analytical support from USAF activities, as outlined in the following paragraphs.

6.7 Regional Environmental Health Laboratory, Kelly AFB, Texas:

6.7.1 Provide chemical analyses in support of test program as outlined in protocol, and furnish laboratory results to project supervisor by telephone and confirm in written report.

6.7.2 Provide additional technical information pertaining to analysis and assist in interpretation of data.

6.8 392nd Aero Space Medical Group, Vandenburgh AFB, California:

6.8.1 Provide and ship to DPG 20 high volume samplers and include portable generators; shipment to commence in sufficient time to

insure arrival DPG prior to 28 June 1965.

6.8.2 Perform maintenance prior to shipment and provide calibration curves for equipment as indicated.

6.9 Regional Environmental Health Laboratory, McClellan AFB, California:

6.9.1 Provide and ship to DPG, Utah, 15 high volume samplers, shipment to commence in sufficient time to insure arrival DPG prior to 28 June 1965.

6.9.2 Perform maintenance prior to shipment and provide calibration curves for equipment as indicated.

6.10 Edwards Rocket Propulsion Laboratory, Edwards AFB, California:

6.10.1 Provide Project Technical Coordinator for USAF.

6.10.2 Provide technical guidance and advice pertaining to subject study.

6.10.3 Provide assistance and consultation in preparation of final report.

6.11 Hill AFB, Utah:

6.11.1 Provide one person as field investigator to assist in conducting field survey during period 28 June-21 July 1965. The exact time of arrival of field investigator will be communicated directly with Hill AFB at a later date.

7 CONSULTANTS:

7.1 Maximum use will be made of the following consultants during this investigation:

7.1.1 Mr. Austin N. Heller, Robert A. Taft Sanitary Engineering Center, USPHS, Cincinnati, Ohio - Air Pollution

7.1.2 Mr. Paul Humphreys, Robert A. Taft Sanitary Engineering Center, USPHS, Cincinnati, Ohio - Meteorology

7.1.3 Colonel Walter Melvin, Regional Engineering Laboratory, Kelly AFB, San Antonio, Texas - Sample Analysis

7.1.4 Captain Owen Kittilstad, Edwards Rocket Propulsion Laboratory, Edwards AFB, California - Beryllium Dispersion

7.1.5 Mr. Carlson, Chief Meteorologist, Dugway Proving Ground, Utah - Meteorology

8 COORDINATION WITH UTAH DEPARTMENT OF HEALTH:

8.1 Utah Department of Health will place samplers at Wendover, Knolls, Low Station and Easy Area (Dugway Proving Ground) to provide replicate samples which will be analyzed by an independent laboratory.

8.2 Utah Department of Health will service USAEHA samplers at those locations where there are replicate high volume samplers.

8.3 USAEHA, DPG and Utah Department of Health will jointly prepare a news release on the test burning to be issued as indicated.

8.4 Utah Department of Health will assist USAEHA in contacting civilian personnel at Fish Springs, Callao, and Gold Hill for permission to utilize power source to operate samplers located in these areas.

APPENDIX I

PREDICTION OF DIFFUSION PATTERN

The Ocean Breeze and Dry Gulch diffusion experiments of the U. S. Air Force (Reference 1.6.4) resulted in a modification of the Sutton equation for the prediction of dispersion of gases from continuous ground level point sources. The form of the equation recommended for use is:

$$\frac{Cp}{Q} = 0.00211 \times {}^{-1.96}\sigma_{(\theta)}{}^{-0.506} \quad (\Delta T + 10)^{4.33}$$

where,

Cp = the peak concentration in grams per cubic meter at a height approximately five feet above the ground at a given downwind travel distance, x in meters.

Q = Source strength in grams per second

ΔT = Difference in °F between the temperature at 54 feet and 6 feet above the ground (ΔT is defined as $T_{54} - T_6$ so that a negative ΔT means a decrease in temperature with height, and a positive ΔT, an increase of temperature with height).

$\sigma_{(\theta)}$ = The standard deviation in wind directions in degrees of azimuth.

Graphical solutions for solving the equation are available, along with conversion factors for use in adjusting Cp/Q and x to conform to desired levels of confidence.

In order to obtain an estimate of the worst possible hazard, the projected burning was also treated as a quasi-instantaneous, hot source. A number of rockets were fired during the SANDSTORM and ABODE diffusion studies, and the following equations were obtained:

$$X_{50} = 0.238\ (E_p/Q)^{-0.667} \quad \text{or} \quad (E_p/Q)_{50} = 0.116 \times {}^{-1.50}$$

$$X_{75} = 0.248\ (E_p/Q)^{-0.704} \quad \text{or} \quad (E_p/Q)_{75} = 0.138 \times {}^{-1.42}$$

$$X_{90} = 0.284\ (E_p/Q)^{-0.714} \quad \text{or} \quad (E_p/Q)_{90} = 0.172 \times {}^{-1.40}$$

$$X_{95} = 0.305\ (E_p/Q)^{-0.721} \quad \text{or} \quad (E_p/Q)_{95} = 0.016 \times {}^{-1.387}$$

APPENDIX I
Prediction of Diffusion Pattern

where,

E_p = the peak time weighted concentration in gram-seconds per cubic meter at a height of approximately five feet above the ground at a given downward distance, x in meters.

Q = the instantaneous source strength in grams.

The subscripts 50, 75, 90 and 95 refer to the probability levels that a given (E_p/Q) will not be exceeded at a distance x.

A presentation of the equations is shown in the following graph (fig.1). The horizontal lines represent the range of data from rocket firings, while symbols are used to denote open burnings. The burnings fall well within the range of rocket firing data.

51-707 O - 65 - 14

APPENDIX IIA

COORDINATES OF SAMPLING POINTS

Sample Point	Description of Area	Approximate Coordinates	Type of Sampler	No. of Samplers
1	Wendover	-	General Metal	2
2	Knolls	-	"	1
3	Low	-	"	1
4	Fish Springs	-	"	1
5	Callao	-	"	1
6	Gold Hill	-	"	1
7	Easy Area	-	"	1
8	Dog Area	-	"	2
9	Vicinity of Canyon	$^{3}093^{44}454$	Gelman	1-10*
10	Stark Road	$^{3}095^{44}475$	"	1-10*
11	CP and Change House	$^{3}058^{44}504$	"	1-2*
12	Burns Road	$^{3}090^{44}494$	"	1-10*

*Depending on feasibility and availability of samplers.

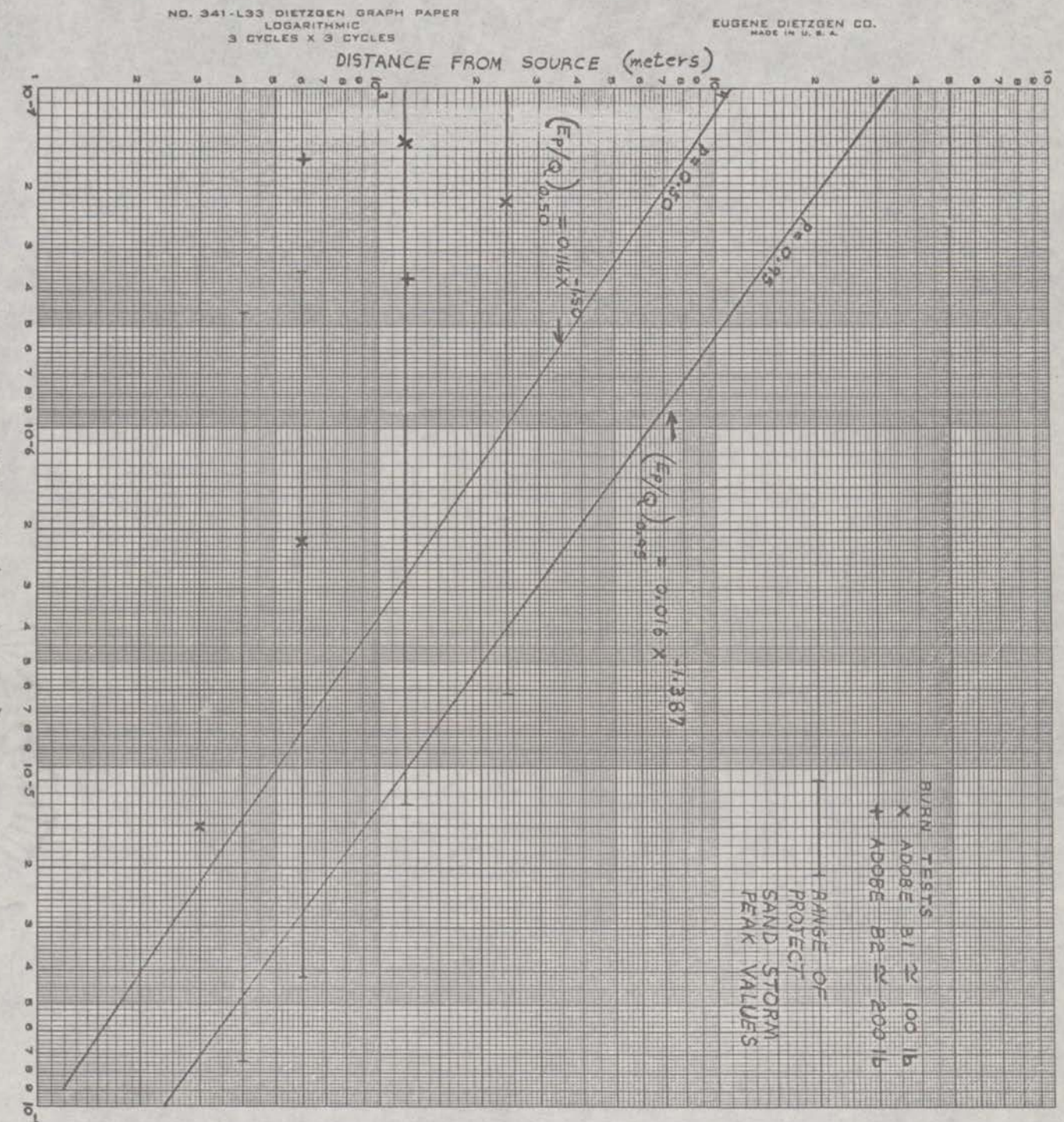
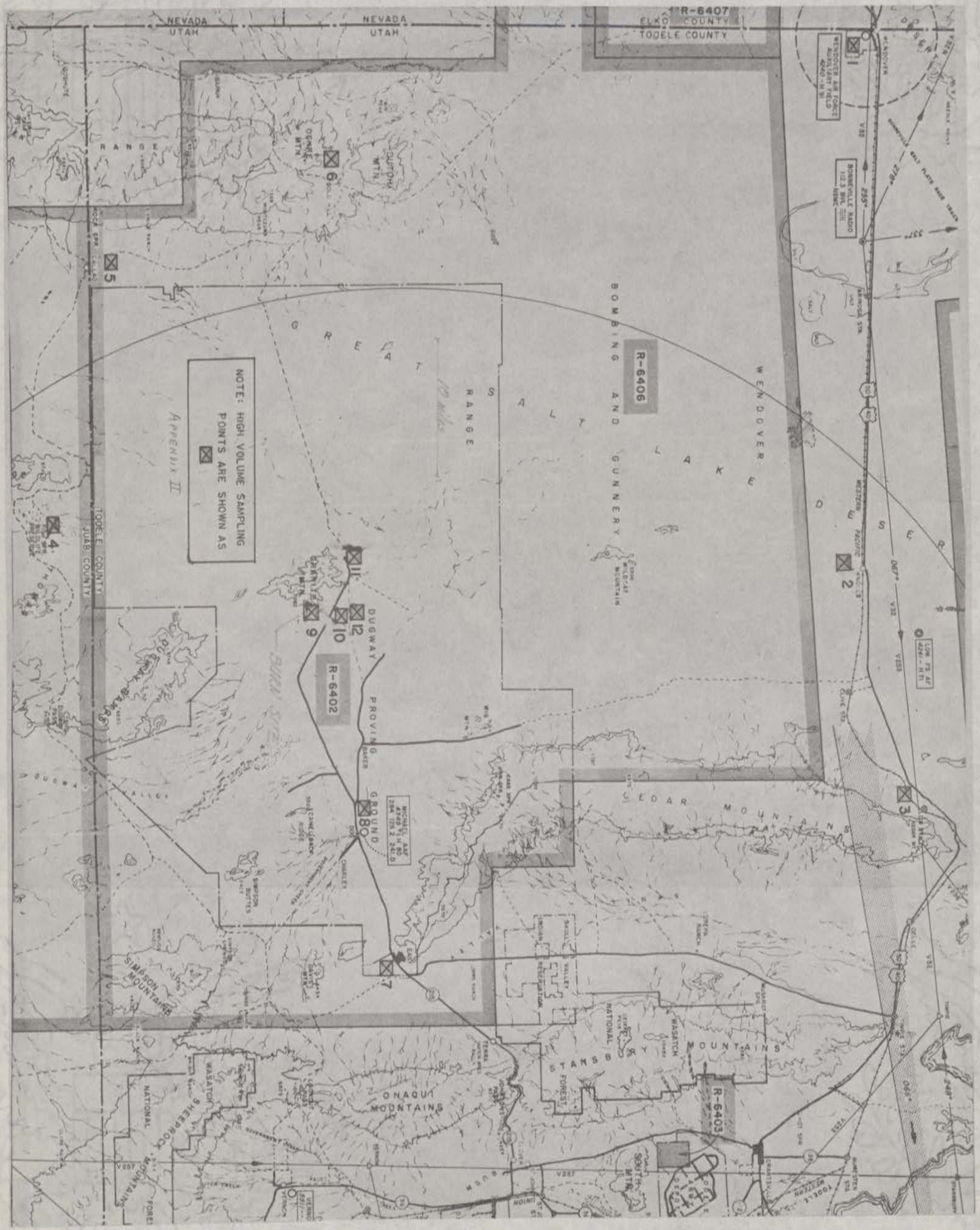
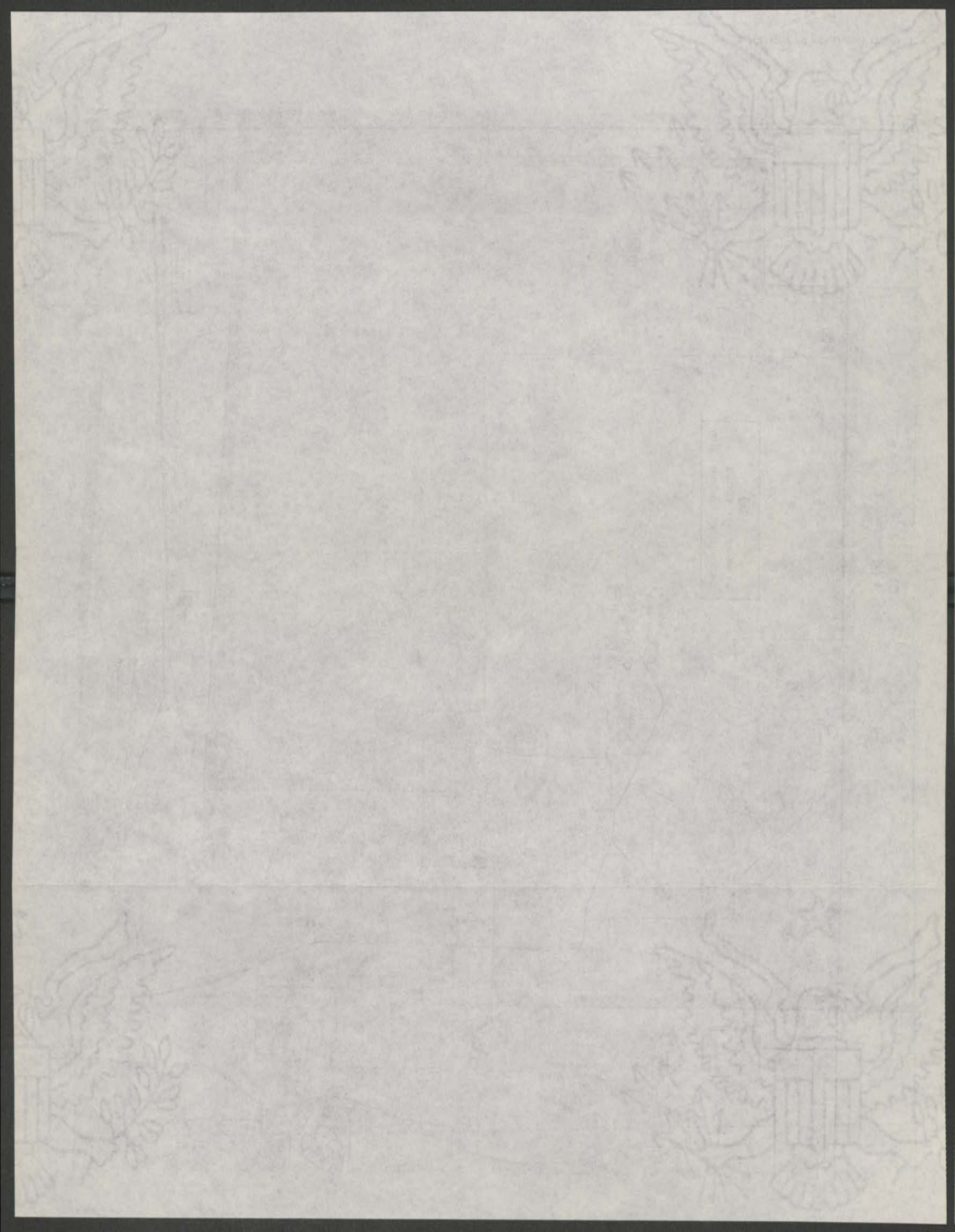


Figure 1.

Normalized peak exposures plotted as a function of distance for 38 Sand Storm experiments. The curves, P = 0.50 and P = 0.95 represent the probabilities of exceeding indicated values with probabilities of 0.50 and 0.95 respectively.


NEVADA
UTAH
NEVADA
UTAH
ELKO COUNTY
TOOELE COUNTY
R-6407
WENDOVER AIR FORCE AUXILLIARY FIELD
BONNEVILLE RADIO FIELD
RANGE
OQUIRRH MTN.
SOUTH MTN.
GREAT SALT LAKE DESERT
BOMBING AND GUNNERY
R-6406
WENDOVER
NOTE: HIGH VOLUME SAMPLING POINTS ARE SHOWN AS
APPENDIX II
TOOELE COUNTY
JUAB COUNTY
DUGWAY PROVING GROUND
R-6402
CEDAR MOUNTAINS
SIMPSON MOUNTAINS
ONAQUI MOUNTAINS
WASATCH MOUNTAINS
NATIONAL FOREST
R-6403
SOUTH MTN.
1
2
3
4
5
6
7
8
9
10
11
12



APPENDIX III

SAMPLER CHARACTERISTICS

A. GENERAL METAL WORKS

The model GMWL 2000 is a high speed, turbine type air sampler operating on 110 volts AC, 25 to 60 cycle current. Samplers will be fitted with 8" x 10" stainless steel filter holders and will operate at 30 to 70 cfm. The unit is housed in an aluminum housing that breaks down to form a shipping container. A visa float gauge is provided for air flow measurement. The shelter may be locked and will be provided with a timer for automatic operation.

B. GELMAN INSTRUMENT COMPANY

The Hurricane air sampler will be used in a 24 VDC model powered by either an external generator or by batteries. The sampler is light weight and portable and will be used with a 4" diameter filter holder. The initial flow rate will fall in the range 6-18 cfm. An exhaust orifice and pressure gauge are provided for flow measurement. The instrument is designed for intermittent duty and will be used in the range area where it can be manually operated. Samplers will be mounted on standard DPG stands which will place the filter approximately five feet above the ground.

APPENDIX IV

Technique for Calibration of GMWL 2000 High Volume Samplers

Equipment required to calibrate the GMWL 2000 includes a calibration orifice (to be obtained from the manufacturer), a variable voltage transformer and a water manometer. The orifice fits onto the instrument and is connected to the manometer so as to measure differential pressure across the orifice plate. With a clean filter in place, the air flow through the sampler is controlled by means of voltage regulation. Readings are taken of differential pressure at the orifice and of the flowmeter readings at a number of flow rates. Differential pressures are converted to flow, using the orifice calibration curve, to produce a graphical relationship between flowmeter reading and true flow rate. All samplers will be calibrated prior to use. Samplers obtained on loan will come with calibration curves.

APPENDIX V

Determination of Beryllium Using Acetylacetone (AA)

In Soil

Sift approximately 200 gms of the soil through a 30 mesh sieve, this process is to remove rocks, roots, sticks, etc. Thoroughly mix the 30 mesh sample. Take 30 to 40 gms of this sample and with the aid of a mechanical shaker sift this portion through a 100 mesh sieve. Place the 100 mesh in an oven and dry at 105°C for at least 2 hours.

Place 2 grams of oven dried 100 mesh soil in a 125 ml Phillips beaker and destroy organic matter using concentrated nitric acid one ml at a time until very little brown fumes are given off; then complete digestion by adding 2 ml of perchloric acid.

Add distilled water and adjust to approximately pH 1 with saturated NaOH.

Extraction. The beryllium is extracted using acetylacetone and EDTA to complex interferring cations. The amount of EDTA required in the first extraction depends on the amount of interferring cations to be complexed. Usually for 2 grams of 100 mesh soil the following amounts suffice. First Extraction. Just before use dissolve 2 ml of AA in 30 ml of a 21% aqueous tetrasodium EDTA solution. Add 20 ml of this solution to the sample solution to bring to pH 5 to 6 and adjust with HCl. Pour into a 125 ml separatory funnel making complete transfer of soil with distilled water. Adjust volume with distilled H_2O to about 90 ml and mix. Allow 15 minutes for the formation of the Be-AA complex. Extract twice with 15 ml

APPENDIX V
Determination of Beryllium Using Acetylacetone (AA)

portions of CCl_4 being careful not to let any of the soil into the stem of the funnel. Collect extracts into original container. Add 8 ml of conc. HCl and 4 ml conc. HNO_3 and evaporate and boil almost to dryness (avoid charring) add water. Discard soil and wash separatory funnel with distilled H_2O.

Second Extraction. Add 30 ml of 10% disodium EDTA and adjust pH to 7 with NaOH. Add 5 ml of 5% aqueous AA solution, and after 10 minutes extract with 15 ml of CCl_4. Boil down the extract with HCl and HNO_3 as above.

Third Extraction. Repeat the second extraction using only 20 ml of 10% disodium EDTA. Boil down acids as above.

Fourth Extraction. Add 1 ml of 10% disodium EDTA and bring the pH to 7 with dilute NaOH. Add 0.5 ml of 5% AA and check the pH. After 10 minutes extract the solution with 10 ml of $CHCl_3$ (used here because of easier back-extraction of free AA below). Drain off the extract, discard the water phase, and wash the separatory funnel thoroughly. Return the $CHCl_3$ to the funnel and back extract with two 20-ml portions of 0.1 N NaOH to remove excess AA. Each back-extraction should last 90 seconds, while all other extractions should be continued for 2 minutes. Filter the $CHCl_3$ through medium filter paper into a 10-ml volumetric flask. Add fresh $CHCl_3$ to bring the volume to 10 ml.

Absorbance Measurement. The absorbance measurement is made on a Beckman DK-2 spectrophotometer. As a control, the absorbance readings should be scanned from 340 to 280 mμ. The 340 mμ reading should be below 0.01 absorbance.

APPENDIX V
Determination of Beryllium Using Acetylacetone (AA)

The absorbance peak should be exactly at 295 mμ reading. An experimentally determined blank must be subtracted from the 295 mμ reading.

Preparation of standard curve - carry standards containing from 0.0 to 2.4 micrograms of Beryllium through digestion and extraction procedures.

NOTE: All glassware used must be free of compounds that absorb in the ultra-violet. Stopcock grease should not be used.

Air Dust Filters

Wet-ash the filters with sulfuric and nitric acids. Add distilled water and depending on the amount of interferring cations start with either third or fourth extraction procedure as given in soil procedure.

References.

Merrill, J. R., Honda, M., Arnold, J. R., Analytical Chemistry, October 1960, p. 1420.

APPENDIX VI

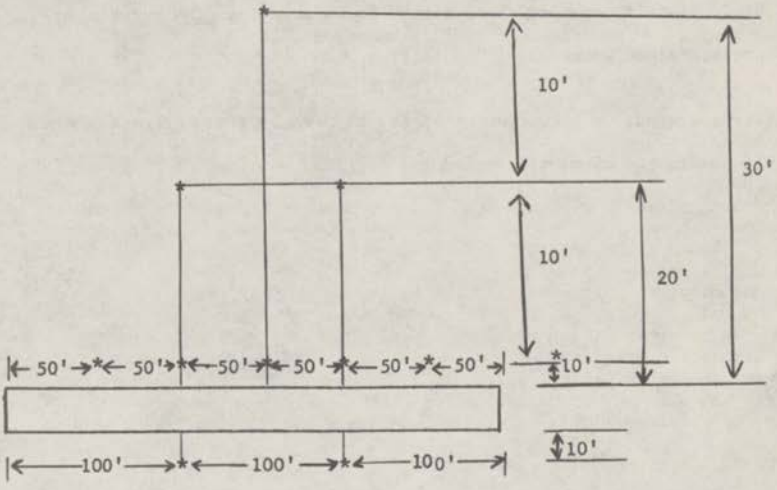
Technique for Handling and Shipping Filters

1. Number the filter on two diagonally opposite corners, one on front and one on reverse, and outside the area to be exposed. Place filters to be used in a single sampling in a manila folder, separated by manila cards.

2. Take a numbered filter to the point of sampling and carefully place the filter in the holder of the air sampler. Start the filter and record the time and initial airflow after allowing the motor to warm for several minutes. Return at the end of the sampling interval, unless a timer is being used, and record the time and final airflow. Stop the motor, remove the filter, fold once lengthwise with the dirty side in, place in a folded manila card, and finally into a brown draft envelope. Return filters to the laboratory in groups packaged to prevent crumpling. If a timing device is used to start and stop the motor, the sampler should be turned on several minutes and final flow rate recorded before removing the filter.

APPENDIX VII

Additional Sampling Points for Soil Analysis in Vicinity of Trench
(10 Sample Points)



NORTH

APPENDIX VIII

METEOROLOGICAL DATA TO BE PROVIDED AT SITE BY DUGWAY PROVING GROUND

1) Winds aloft to one-half hour intervals by sounding from surface to predetermined interval

2) Surface winds on a continuous basis, reduced by time averaging for a 15-minute and 30-minute period

3) Temperature

4) Humidity

5) Barometric Pressure

APPENDIX IX

EQUIPMENT TO BE FURNISHED BY PARTICIPATING AGENCIES

Item	Quantity	Nomenclature	Agency
1	10 ea	High Volume Air Samplers, Model GMWL 2000, with shelters and 8"x10" filter holders	USAEHA
2	1ea	Calibration orifice for GMWL 2000	USAEHA
3	20 ea	Motor brushes for GMWL 2000	USAEHA
4	5 ea	Clock, time switch, inter-matic	USAEHA
5	12 pr	Trippers for Clock, time switch, inter-matic	USAEHA
6	10 ea	Clock, Time Switch, Tork 1191-SK	USAHEA
7	20 ea	Omitting Screw for Clock, Time Switch, Tork 1191-SK	USAEHA
8	12 pr	Trippers for Clock, Time Switch, Tork 1191-SK	USAEHA
9	1 pkg (25)	8"x10" membrane filters, 5 μ pore size	USAEHA
10	1 pkg (100)	4" diameter membrane filters, 5 μ pore size	USAEHA
11	2 pkg (100)	8"x10" filter paper Whatman No. 41	USAEHA
12	3 pkg (100)	4" diameter filter paper, Whatman No. 41	USAEHA
13	1 ea	Lawn Roller, water filled, 250 lb	USAEHA

APPENDIX IX
Equipment To Be Furnished by Participating Agencies

Item	Quantity	Nomenclature	Agency
14	20 ea	Gelman Hurricane Samplers with generators and auxillary fuel tanks. 4" filter holders	Bio-environmental Engr. Office, 329 Aero Space Medical Group, Vandenburg AFB
15	20 ea	Gelman Hurricane Samplers 24 VDC battery operated, with 4" filter holders	Regional Environmental Hlth Lab, McClelland AFB
16	4-32 ea	Sampling Stands	DPG

APPENDIX X

FINANCIAL SUPPORT REQUIRED FOR THIS PROJECT*

TRAVEL		
a. Consultation and Preparation for Monitoring of Burning		$ 1400.00
b. Consultation and Collaboration During Period of Test		800.00
c. Consultation Following Test Burning		500.00
	Subtotal	$ 2700.00
SUPPLIES, MATERIAL AND EXPENDABLE EQUIPMENT		
a. Purchase of 10 high volume samplers with 8"x10" filter holders and spare parts		$ 1750.00
b. Calibration orifice		50.00
c. Timers and Trippers		350.00
d. Filter Paper		150.00
e. Soil Sampling Equipment		15.00
f. Extension Cords and Miscellaneous Electrical Equipment		85.00
	Subtotal	$ 2400.00

*This does not include support in par 6.4.3 listed as non-reimbursable.

APPENDIX X
Financial Support Required For This Project*

PUBLICATION COSTS		$ 100.00
SHIPMENT COSTS		$ 400.00
OTHER EXPENSES (Support Required from DPG)		
a. Meteorological Support		$ 1000.00
b. Photographic Coverage of Buring Operation		160.00
c. Continuous Measurement of Flame Temperature		600.00
d. Test Division Assistance		1000.00
e. Maintenance and Repair of Electrical Equipment		80.00
f. Vehicular Support (Three Trucks)		1200.00
g. Gasoline for Running Small Portable Generators		160.00
	Subtotal	$ 4200.00
	T O T A L	$ 9800.00

*This does not include support in par 6.4.3 listed as non-reimbursable.

Colonel MEYER. With regard to the propellant testing operations, Department of the Air Force contract provisions included detailed requirements to assure protection of not only plant personnel, but the community surrounding it. Assistance was furnished by the Air Force and the U.S. Public Health Service to the State in developing of State requirements. Numerous conferences and coordination meetings among the industry representatives, Air Force and Public Health Service were held. The latest of these occurred on May 12 and 13, 1965.

The problem of large amounts of waste to be disposed of was considered also at this meeting. A cooperative program among Department of the Air Force and Department of the Army Medical Service environmental health activities had been developed to control and evaluate the waste disposal project. Plans and procedures were reviewed in detail by the U.S. Public Health Service and the State of Utah so that this important national defense effort can be undertaken in a safe and suitable manner. Similar detailed cooperation exists between DAF, NASA, and the U.S. Public Health Service on problems associated with missile propellant testing on the west coast, and among the Department of the Army, Department of the Navy, and the U.S. Public Health Service on other related problems.

I might also add, sir, as typical of the problems which were highlighted yesterday about solid wastes, the Department's comments on S. 306 were rather general and are not contained in this written prepared submission, for the simple reason that in the State of Louisiana, in my home State, we have a phrase called lagnaippe, which I think you in Arkansas are familiar with, which in essence means the same thing. There was nothing in S. 306 so far as solid wastes were concerned, really particularly that pertained to the Federal program. We have a lot of problems and activities in this area and, obviously, we would benefit from any research that is done on this. That is, under Federal auspices. And so we are very much in favor of this.

I might add that on the solid wastes problems, as you know, we have a reclamation and salvage program at every military installation in an attempt to segregate those things which are useful and those things which must be demilitarized before being released, and those which must be destroyed.

As an example of one of the activities, showing the relationship between solid waste disposal and air pollution, which is of concern to us, we have at Davis Monthan a program where we are disposing of a large amount of aircraft and in this the materials which are still in the airplanes must be removed by the only way, and that is to do it by burning the interior. This does create an air pollution problem and we have studied this extensively through our regional and environmental laboratory people and are developing means of controlling this, and in doing this we are working very closely with the U.S. Public Health Service, the city of Tucson and the State of Arizona.

We have currently pending necessary detailed legal and technical review, a proposed Federal specification which will insure that contractors of the Department of Defense are apprised of and comply with the requirements of the Clean Air and Federal Water Pollution Control Acts. We are in continuing contact with our colleagues in

the Department of Health, Education, and Welfare, National Aeronautics and Space Administration, and the Atomic Energy Commission on mutual problems, and are hopeful that some improved and formalized arrangements on this subject will be consummated in the near future as will be discussed later in this presentation.

Now, sir, I will turn to some comments on the legislation at hand.

We have carefully studied, for a considerable period of time, the impact upon the Department of Defense of the various proposals for amendment of the Clean Air and Federal Water Pollution Control Acts. In each of the various proposals, among the concerns of the Department of Defense are the provisions relating to standards, appropriations, and reports. Certain other features are of collateral interest; others are the primary responsibility or concern of such other agencies as the Department of Health, Education, and Welfare or the General Services Administration. I will comment on these in turn.

Equally applicable to the problems of air and water quality is the concept of quality standards. It is recognized by the Department that there are basic differences of opinion regarding the Federal versus State standards. The following comments pertain to Federal standards for Federal installations. They are applicable to the general subject, regardless of the administrative and political authority involved in their issue. At the present time the Federal departments are required to cooperate with any State or interstate agency or local authority having jurisdiction over water and air pollution control. The many differing and often conflicting State and local requirements relating to air and water quality and pollution abatement create a major problem in the planning for and establishment of programs for the construction and operation of pollution abatement measures within the Defense Establishment.

One of the major problems we have is that in many instances there are no State or local requirements, and differences of opinion do arise as to the existence of pollution, from a Federal installation, and the time requirement for any abatement action. Some guidance for the Federal installations, on a uniform Federal basis, is obviously necessary for such situations. Any such Federal standards for Federal installations and accompanying guides to good practice must include a provision that where a State or local administrative or political authority has higher standards, these will prevail.

Establishment of standards, or guides, and subsequent changes therein have a profound effect on existing as well as new facilities. In the development and application of standards, or any other regulatory device, such as permits, the impact on construction and maintenance and operation requirements needs consideration. An effective system of priorities for planning and budgeting needs to be developed. In approaching the problems of standards, and their relation to the end result of achieving a desired and necessary objective, several considerations need to be kept in mind.

There is no sharp line of distinction between conditions which are healthful, irritating, undesirable, or outright nonhealthful. Further, there are conditions which, while not directly harmful to the health of humans, do or may have an adverse effect on vegetation, animals, aquatic life, or physical possessions. The pattern of exposure may vary in space, concentration, and time. Multiple "boundaries" are

needed in environmental pollution standards, along with full explanations of their basis and significance. Environmental quality standards have two related uses, both of which have an impact on the priority with which actions are taken, and which will materially affect the Defense program and budget. These are:

(*a*) To provide a basis upon which to design means of elimination or control of pollution.

(*b*) To serve as a measure to determine if pollution in fact exists, and if so, to determine if corrective measures are required, including any necessary enforcement procedure.

Not in air pollution but in the matter of pollution areas, we have a case in point which I would like to call to your attention.

On the island of Guam, the Air Force takes its water from wells. The Department of the Interior is constructing some new housing and rehabilitating old housing, using package sewage plants with the effluent discharged into the ground. The water is being contaminated. The Department of Health, Education, and Welfare under the Water Pollution Control Act has taken a very firm position against the discharge of sewage from Federal installations into the ocean, unless it is completely treated. We have a problem there to determine which takes priority. This is one of the reasons that we are calling this to your attention, that the way you set up standards and the assessment of the standards and the need for cooperation and consultation among the agencies is highlighted by the way we approach it. Obviously, the fresh water resources of the island are far more important than the discharge of the effluent into the sea. We have discussed this with Mr. Quigley of the Department of Health, Education, and Welfare and have arrived at an agreement as to how to approach the problem.

The CHAIRMAN. You have done that?

Colonel MEYER. Yes. We have done this and are in the process on a verbal basis of having it discussed and confirming this in writing at the present time.

Frequently, due to the developmental nature of the materials involved (such as in the case of the previously referenced rocket propellants) Department of Defense activities will have greater knowledge regarding both pollution characteristics and counter measures than the Department of Health, Eduction, and Welfare. This makes it essential that the current coordination between the Department of Health, Education, and Welfare and the Department of Defense on these problem areas continues. Our experiences indicate that interagency coordination is necessary not only in the establishment of standards or regulations, but also in the evaluation of compliance therewith. Inspections and investigations of pollution abatement should be a joint effort by the Department of Health, Education, and Welfare with professional specialists of the medical and engineering services of the Department of Defense, for Defense installations, and with their counterparts in the other Departments and agencies so staffed.

The Clean Air Act currently contains a provision that the Secretary of Health, Education, and Welfare may establish classes of pollution sources which the Federal activities must obtain a permit for such discharges. With the development of "standards" and "guides

to good practice," the need for such a permit system appears to be obviated, and any relating to the Water Pollution Controls Act.

It is recognized, however, that the Congress in its wisdom may feel that there are legislative and administrative considerations with regard to air pollution which make the permit system necessary. In any event, because of the highly technical problems involved in establishment of standards, rules and procedures relating to pollution abatement, it is our view that standards and regulatory provisions relating to permits, waivers, inspections or other procedures ought to be developed by the Department of Health, Education, and Welfare in consultation with the Federal agencies affected. While the Administrative Procedures Act does, to a certain extent, provide for such action, it is believed that it is desirable that such consultation procedures be enacted into the legislation. It is respectfully suggested that changes as they relate to standard for Federal installations, to the Clean Air Act, and as they relate to standards and permits and any relating to the Water Pollution Controls Act include some such statement as follows:

> In developing Federal standards for Federal installations, rules for special classes of pollutants, and other regulatory procedures, the Secretary or his duly authorized representatives shall consult with the Federal departments or agencies concerned. Such standards and regulatory requirements shall take into account technical feasibility, practicality and cost of achieving the desired controls.

In an aside I might point out that this is the way that we handle what we are doing right here today with the Congress asking people to come and to give their views and we feel that the Public Health Service should find out how the Federal activities will be affected.

The CHAIRMAN. S. 306 does not provide for that?

Colonel MEYER. No, sir; but the basic Clean Air Act in section 7(b) calls for the permit system, sir. The problem with the permit system is that it leaves it up to the Secretary to establish the classes of pollution. And in the budgeting processing and in the planning and programing for military construction, as an example, we are left with a situation where it may be decided by HEW at the last minute to establish some class for pollutants for which necessary action will be taken, and we much prefer to have some standards which, if we comply with the standards, we have met what is expected of us.

Further, Mr. Chairman, we recognize this, that in any system that you establish, be it a standards or permits system, that the permit in effect almost amounts to saying that you are going to do something and this is how you do it, so long as you do it within certain rules. If you establish a standard, guides of practice, we recognize that there may be instances in which we would have to say that we cannot come up with the standard, because of military necessity, and in effect you would be getting a permit to do something different from the standard. There are some differences of opinion among the services as to the impact of permits or standards. The Department of the Army is rather vigorously opposed to the permit system. The Department of the Navy is less so and the Department of the Air Force does not like it. We all would much prefer to be able to build our facilities and to plan and do the necessary program against some known stated requirements. Once this is done we would not have to come in every

year and say that we want a permit to continue to do what we did right in the first place.

The CHAIRMAN. Apparently, under the present law, Colonel Meyer, the permit system is applicable to the discharge of any matter into the air.

Colonel MEYER. That is correct, sir. It says that the Secretary may establish classes, and that all depends upon what the Secretary of Health, Education, and Welfare does. We work very closely with him.

The CHAIRMAN. But, as I see it, it does not include water pollution?

Colonel MEYER. No, sir; it is only applicable to the air, but there are some requirements in the Water Pollution Controls Act as proposed—some amendments in S. 306, as you know, for the establishment of standards in the Federal installations.

The CHAIRMAN. Yes, sir.

Colonel MEYER. One other thing, Mr. Chairman, with regard to legislation at hand. If you took out the permit system and substituted the standards and left the language that you must immediately come in and ask for appropriations to come up to standards, you would need a programing definition here as to time on this because you might wind up, as I will point out in a minute, with some rather excessive requirements for construction.

With regard to appropriations, the Department opposes legislation which would place in the hands of the Secretary of Health, Education, and Welfare the responsibility for obtaining and then disbursing funds for air and water pollution abatement in a manner different from that now provided for the military construction, operation, maintenance, and research development test and evaluations programs. The Defense budget today involves an intricate programing procedure. In addition to administrative problems involved, in developing the program and justifying it before the Congress, a cumbersome and expensive system for auditing and accounting and transfer of funds would result if the Secretary of Health, Education, and Welfare is required to obtain appropriations for the environmental pollution abatement activities of the departments.

On the other hand, provisions authorizing appropriations of necessary amounts for environmental pollution abatement in accordance with standards developed by the Secretary of Health, Education, and Welfare and his representatives, in conjunction with those of representatives of the other Federal agencies, appears to be a reasonable procedure.

Experiences with our system for review and approval of plans and projects which includes evaluation by medical service and other agencies concerned with environmental pollution abatement, indicates that a legislative requirement that plans and specifications for air and water pollution control to be approved by the Secretary of Health, Education, and Welfare is unnecessary, so long as the agencies concerned with the projects certify that they have been prepared in accordance with Federal standards or other guidance issued by the Department of Health, Education, and Welfare. Accordingly, the Department favors legislation as is now contained in H.R. 7429 (sec. II). At the same time, we are disturbed at the implications in the proposed requirement as now written that departments or agencies having build-

ings, installations or property not meeting such standards shall request from the Congress such appropriations as be necessary to accomplish same. In the absence of an indication of legislative intent that the corrective actions be developed in accordance with a phased program, it could be assumed that such action is to be taken on a one-time, immediate basis.

The Department of Defense has exerted a major effort with regard to all phases of environmental pollution abatement. Special reference and attention has been given to exerting leadership as envisioned in Presidential directives and as required by the Congress. Priority attention has been given to those situations which constitute a direct effect upon health, and concurrent actions are taken on resource conservation. As pointed out in our foregoing remarks on standards, changing concepts with regard to degree of pollution abatement or environmental control required can and will necessitate extensive rehabilitation and modification of facilities. As an example, in the case of air pollution, immediate compliance with standards relating to certain chemical constituents of fuels might result in requirement for wholesale replacement of powerplant facilities, at a disproportionate cost in comparison to the rest of the agency's construction budget for the year concerned. Certain standby mobilization military facilities ought to be exempted.

The proposals for amendment to the Internal Revenue Code to provide for special credits for expenditures for construction or installation of pollution control "devices" might possibly assist in insuring that industrial contractors engaged in company rather than Defense-sponsored research would adequately provide for air and water pollution control measures. Enactment of provisions for such credits might help in lowered costs on Department of Defense contracts. Based on our experiences, it is suggested that the definition of "devices" include those items necessary for detecting and measuring pollution. In the case of air pollution, extensive arrays of micrometeorological and sampling equipment is necessary for an adequate control program. Credit should also be given for expenditures for these items.

The Department of Defense defers to the Treasury Department on this legislation. These remarks are only with regard to our views as to this. The Treasury, of course, is the agency of Government which has the primary responsibility.

The CHAIRMAN. As I understand it, the proposals are only applicable to future construction. They are not applicable to existing structures. Should there be a modification then there would be a problem. Yesterday I inquired of different people about this, and we heard them say that the proposal would have a minimum effect insofar as the use of coal and fuel oils are concerned. It was not intended to force a particular selection of fuels for any given installation.

Mr. SPRINGER. If you will yield.

The CHAIRMAN. Yes.

Mr. SPRINGER. You are talking about H.R. 7429?

The CHAIRMAN. Yes.

Mr. SPRINGER. May I ask the witness what would be wrong with H.R. 7429, if enacted?

Colonel MEYER. H.R. 7065?

Mr. SPRINGER. No, H.R. 7429.

Colonel MEYER. There would be nothing wrong with it, sir, subject to some minor changes as indicated in detail in our report.

Mr. SPRINGER. The witness that I heard yesterday, unless I misconstrued what was said, stated that he was not exactly sure that something should be done. It seems to me that somewhere we need some experience and if we took H.R. 7429 or something similar to H.R. 7429 and passed it, in the next year or two, we would learn something about this and we would come up with further recommendations that we could then take. That was the part that disturbed me, and I think the chairman has expressed that.

I was not particularly disturbed about the cost, but I was disturbed by the fact that there were no more facts in the program presented or indications of what they expected it to do. I thought that H.R. 7429 would be a good one to start with, rather than S. 306.

Colonel MEYER. Let me explain, sir. Perhaps, some of the apprehension which is expressed in our report here, and our testimony, is that a lot of this is left open as to just what is to be done now. By no means do I want to appear in criticism of the Public Health Service because we are working with them very closely on this. Our program in the Department of Defense, which I could talk about at considerable length, is a rather extensive program. We can tell you what we are doing about air pollution and a lot of it is being done and will be continued to be done, really, regardless of what is done about amending the Clean Air Act and making certain provisions of it relative more specifically to Federal installations. We have an ongoing program which we have been in the process of building onto for the last 10 years, particularly with regard to the more toxic materials associated with rockets and missile propellant programs. We have, also, been vitally concerned with such things as controlling the emissions from our industrial facilities, not only because of the fact that these things have an effect on neighboring communities, but we are running large cities, such as our naval shipyards and our Army arsenals and our Air Force bases and depots which are, in effect, large industrial complexes, and we have to worry about the people who work there. We have a comprehensive program. We are expanding this program. As a matter of fact, some of the services are planning to meet the requirements which are in the act as well as in our own installations. Some of our apprehension, because we do not know how things may change, is the reason or one of the reasons that we keep stressing the need for consultation between all of the agencies concerned, so that if the decision is made to change a standard rule before impact of this on our establishment is known.

Mr. SPRINGER. Thank you, Mr. Chairman. And thank you for answering my questions.

Colonel MEYER. Yes, sir.

The CHAIRMAN. I would like to say, also, that I would be very strong for consultation, but I would not want to see a proposal on the basis of, "Let it be applicable to the other fellow." Or, "Let us make it applicable to the public, insofar as automobiles are concerned, but let the Federal agencies, the Department of Defense, and so forth, go." Or, on the other hand, "Let us put it all on the Government and make the Government comply, but let everybody else go." I think we have reached a state in our national life where everybody recognizes that

with our improved technological practices, the expansion of population, with the many millions of automobiles traveling on the highways, and with industrial complexes all over the country, something will have to be done sooner or later. If we do not do it now, we will be worse off 5 years from now and it will be more difficult to do it then. My feeling about it is that if it can be done in California, it can be done in Washington. The industry says that it is doing it in California. And I would like to see it done here. I do not think that it means that we should have to wait and see what will be done and whether we will have the same smog in Washington and in New York and Chicago, and then do something about it.

You may proceed.

Colonel MEYER. The next concerns reports. It is recognized that an annular report by the Secretary of Health, Education, and Welfare to the President and Congress regarding environmental pollution abatement activities within the Federal Government is desirable. Several of the proposals regarding reporting could conceivably create considerable administrative problems. As an example, at a single military installation such as Fort Bragg, N.C., there are approximately 5,000 buildings. Literal application of the requirement that the Department of the Army inform the Secretary promptly regarding difficulties with the boiler plants supplying steam for heating at one of these buildings when such occurrence results from an equipment failure, seems to be unnecessarily burdensome. The documentation of each individual building would appear to be a complicated procedure serving little useful purpose. An annual report could include information on installations and activities, and where appropriate, individual buildings, which do not conform to the Federal standards or guides to good practice, the reasons therefor, and the planning and programing, both technical and budgetary, initiated to correct same. Such a report would serve as a good means of insuring awareness of problems at the departmental level, as well as being of value in assessing the status of Federal leadership.

COLLATERAL AND GENERAL ITEMS

Air pollution control from motor vehicles, utilized by the Department of Defense and other agencies (such as heavy duty tracked and wheeled vehicles) presents some special problems. The Department endorses the need for air pollution control associated with motor vehicles, not only from a health protection viewpoint, but because research and development in this area will assist in the solution to the problems of smoke obscuring vision of combat crew operators, and the effect of fumes and vapors upon their health and effectiveness. We endorse the provisions of the law proposed relating to the development of standards for emissions, so long as in the case of other standards that consideration is given to technological feasibility and economic cost. We urge that exemptions to the requirements for new motor vehicles or engines be authorized for reasons of national security for special purpose vehicles, since in some situations the inclusion of such devices or requirements could affect combat capability with the present state of engineering capability.

Many of the Army vehicles do not operate on the highways. They operate in closed reservations or in combat. To penalize, as will happen, some of these, would seem to be unnecessarily restrictive.

The CHAIRMAN. You can put those tall stacks on top of them, can you not?

Colonel MEYER. That is a possibility, but I would like to point out that the Army as the leading agency for the military services has been doing a tremendous amount of research, particularly at the Detroit Arsenal, on this question of air pollution, from heavy-duty vehicles. We have a problem in combat of smoke and fumes. Really, in view of the pattern that the General Services Administration has issued about passenger vehicles and vehicles otherwise, I think that up to 6,000 pounds weight—I am not sure of this—in view of the heavy research on this that is going on, on the heavy-duty vehicles, the need for legislation on this appears not really necessary, but we do not want the Defense Establishment viewpoint of appearing, as you said of being that of trying to be a good citizen, but we do want it identified that we have a problem.

The CHAIRMAN. I think you have a very good point there, and it should be noted.

Colonel MEYER. Yes, sir.

The Department of Defense and its subordinate activities recognize the importance of cooperation and coordination among the Federal agencies and the industry with regard to the special problems of air pollution associated with jet aircraft, missiles, and fuels therefor. It is hoped that our presentation today has given an indication of our awareness of such a need. We oppose establishing by statute a technical committee to "initiate, conduct, and accelerate research programs" in this area, however, it does not appear to be desirable or necessary. Establishment of such a committee would necessitate further authority regarding necessary procedures for control of funds of personnel among the various activities concerned. The desirability of liaison and consultation among the Department of Defense, the Department of Health, Education, and Welfare, the Federal Aviation Administration, the National Aeronautics and Space Administration, the Atomic Energy Commission and the Department of Commerce, and the affected industries, is concurred in. We recognize that changes in personalities and in operational procedures and concepts make dependence upon ad hoc liaison not a completely satisfactory procedure. It is therefore suggested that, rather than establish a statutory committee, the legislation include a requirement that the Secretary of Health, Education, and Welfare is, in conjunction with the other appropriate Secretaries and administrators, a Federal policy establishing rules and procedures relating to coordination of both research and environmental pollution control measures associated with the jet aircraft, missile, and fuel problem. It is believed this would provide for the same end, and at the same time not result in the need for a special fiscal program, and overlay of supervision and administration in a scarce resource area.

I might point out, Mr. Chairman, that representatives of the air pollution group and the environmental abatement group have devel-

oped the preliminary approaches to just such a procedure, and this sort of thing is already in the mill, but it would be well for it to be in the legislation.

In regard to the establishment of study programs and research to determine the effects of air pollution from all sources on human health, and the establishment of a Federal air pollution control laboratory, the Department considers these to be matters in the primary cognizance of the Department of Health, Education, and Welfare. Such programs, however, would naturally be of value and assistance to the Department of Defense, since information developed as result of the research and laboratory investigations would be useful in solving some of the problems faced by this Department. Consultation and collaboration on mutual problems within the framework of the coordiation policies discussed above would undoubtedly result in greater effectiveness and lowered costs in both money and personnel requirements, than would be otherwise the case. Lest there be any misunderstanding on that score, however, it must be recognized that to achieve desired ends of a new conservation environment by the President and the Congress, increases in expenditures for personnel, equipment, facilities, and research are developing. The Department of Defense traditionally has been vitally interested in insuring that its operations are conducted in such a manner as they do not affect either our own personnel or the general health and welfare. We are extremely desirous that our programs for prevention or abatement of pollution of the environment are accomplished in the most economical manner possible, based on good environmental health and engineering practices, and in accordance with standards and guides to good practice which have been evolved as the result of valid scientific and professional judgments.

Again, let me state that it has been a pleasure to be afforded the opportunity to provide our comments and suggestions regarding this subject to the committee.

(The document entitled "Department of Defense Directive, No. 5500.5" on natural resources—conservation and management, follows:)

DEPARTMENT OF DEFENSE DIRECTIVE No. 5500.5

May 24, 1965.

Subject: Natural Resources—Conservation and Management.

References:

(a) DOD Directive 5500.5, "Natural Resources—Management and Harvesting of Fish and Wildlife," February 16, 1962 (hereby canceled).
(b) DOD Instruction 5000.10, "Natural Resources—Information Required for the Secretary of Defense Conservation Award and Program Administration," December 13, 1963 (hereby canceled).
(c) ASD(M) Memorandum, subject: "Department of Defense Natural Resources Conference," December 18, 1964 (hereby canceled).
(d) ASD(M) Memorandum, subject: "Implementation of the President's February 8, 1965, Message to the Congress on Natural Beauty," February 16, 1965 (hereby canceled).
(e) Message of the President to the Congress, February 8, 1965 (H.R. Doc. 78, 89th Cong., 1st sess.).
(f) 10 U.S.C. 2671.
(g) Public Law 797, 86th Congress.
(h) Public Law 446, Sec. 511, 88th Congress.
(i) Public Law 29, 88th Congress.
(j) Executive Order 11017, "Recreation Advisory Council" (as amended).
(k) Public Law 517, 86th Congress.

(l) DOD Instruction 7310.1, "Accounting and Reporting on Disposition of Proceeds From Sale of Scrap, Salvage, Surplus, Foreign Excess Personal Property and Timber and Lumber Products," October 10, 1962.
(m) Public Law 206, 88th Congress.
(n) 33 U.S.C. 466.
(o) DOD Directive 5154.12, "The Armed Forces Pest Control Board," August 21, 1962.
(p) DOD Directive 5410.18, "Community Relations," April 21, 1965.
(q) DOD Directive 5500.11, "Nondiscrimination in Federally Assisted Programs," December 28, 1964.

I. PURPOSE AND APPLICABILITY

A. Purpose

This directive—

(1) prescribes DOD policies and establishes an integrated DOD multiple-use program for the renewable natural resources in forests and woodlands, fish and wildlife, soil, water, grasslands, outdoor recreation and natural beauty compatible with the military mission in compliance with the natural resource policies of the administration contained in the President's Message to the Congress (ref. (e)); and

(2) implements references (f), (g), and (h) which confer certain responsibilities on the Secretary of Defense for the management, conservation, and development of natural resources on military reservations and facilities.

B. Applicability and scope

The provisions of this directive apply to all DOD members and components and cover the conservation and management of the natural resources and related programs, projects, or instruments involving Defense land, ground, and water areas. Nothing contained herein or in implementing regulations and cooperative agreements shall modify any rights granted by treaty or otherwise to any Indian tribe or to members thereof.

II. CANCELLATION

References (a), (b), (c), and (d) are hereby superseded and canceled.

III. GENERAL POLICIES

A. Responsibility for

1. *Stewardship.*—The DOD, as an important occupier of Federal lands, has an obligation to the American people to act responsibly and effectively in conservation management including the duty to restore, improve, develop and conserve through wise-use, the renewable natural resources of the lands and waters under military control. The conservation programs required by this directive and the military mission need not, and shall not, be mutually exclusive.

2. *Natural beauty.*—This is a new conservation concept with broad connotations (ref. (e)). Because sound natural resource management enhances natural beauty, conservation should include not only the classic methods of protection and development but also creative conservation of restoration and innovation. The objective of conservation should not be with nature alone but with the total relationship between man and his environment. Thus, a conscious and active concern for the values of natural beauty will be considered in all DOD plans and programs.

B. Command responsibility

1. DOD personnel at all echelons of command will support national conservation policies and programs in accordance with this directive. Intelligent and sympathetic understanding of natural resources, natural beauty, and recreation problems, and the relationship and responsibility at all DOD echelons to such problems, must be an important and identifiable function of command management (sec. X).

2. Since the natural resources disciplines encompassed within this directive are sciences, all commanders will require the optimum use of professionally trained personnel to insure the necessary technical guidance in the planning and execution of the several programs.

3. To increase the scientific knowledge of personnel and to improve the efficiency and effectiveness of the defense resources program, representation, and participation at related natural resources professional meetings is encouraged.

C. Outdoor recreation

1. The outdoor recreation policies for the Nation including the DOD are stated in reference (i) by the declaration that "* * * all American people of present and future generations (should) be assured adequate outdoor recreation resources, and that * * * all levels of government * * * (shall) take prompt and coordinated action to the extent practicable without diminishing or affecting their respective powers and functions to conserve, develop, and utilize such resources for the benefit and enjoyment of the American people."

2. The Recreation Advisory Council (RAC), composed of the Secretaries of Interior, Agriculture, Defense, Commerce, Health, Education, and Welfare, the Administrator of Housing and Home Financing Agency, and the Chairman of the Tennessee Valley Authority, was established by the President to provide broad policy advice to the heads of Federal agencies on all matters affecting outdoor recreation resources and to facilitate coordinated efforts among the various Federal agencies (reference (j)). The RAC policies, promulgated by the issuance of circulars, are applicable to the DOD. The Assistant Secretray of Defense (Manpower), is the RAC delegate for the Secretary of Defense.

3. Outdoor recreation and natural beauty will be recognized as important objectives in the conduct of all DOD natural resources management programs.

D. Cooperation and coordination

DOD components will assure that appropriate commanders take the initiative to seek the aid of appropriate natural resource agencies (Federal, State, and local):

(1) For providing technical advice and assistance.

(2) In cooperative research projects.

E. Multiple-use natural resources conservation management

All defense installations shall be managed so as to:

(1) Protect, conserve, and manage the watersheds and natural landscapes, the soil, the beneficial forest and timber growth and the fish and wildlife as vital elements of an optimum natural resources program.

(2) Utilize the care for natural resources in the combination best serving the present and future needs of the United States and its people.

(3) Provide for the optimum ecological development of land and water areas and access thereto in accordance with section V. Multiple use, by no means an assemblage of single uses, is defined, within the meaning of this directive, as a conscious, coordinated management of the resources, each with the other, without impairment of the productivity of the land or water (sec. 4(a) of reference (k)).

IV. RESOURCE PROGRAM POLICIES

A. Programing, budgeting, and financing

The Secretaries of the military departments and the Directors of defense agencies will make provisions in their programing, budget estimates, and financing programs for conducting effective national conservation programs consistent with the provisions of this directive. The cost of the natural resources and related programs will be the responsibility of the military service or defense agency involved and must be accomplished within financing available to the military service or defense agency.

B. Soil and water management

1. To assure the maximum benefits from existing natural resources, and to avoid unnecessary expenditures for their preservation, appropriate requirements for soil, water, and plant conservation for all projects shall be determined as an integral part of the site development studies and the necessary measures to meet these requirements shall be included in the improvements to be made. The adequacy of these measures should be reviewed by a qualified soil conservationist.

2. A soil and water conservation (land management) plan is required which shall be in full accord with modern conservation and land use practices, updated

as required, continuously applied in an orderly and timely manner and includes all phases of land use, grounds development, maintenance, improvement and outleases as appropriate.

C. Forest management

1. Consistent with required forest resource management plans, forest management practices and operations will be applied to provide for sustained yield of quality timber, watershed protection and management, fish and wildlife, recreation potential and the other resource values, including natural beauty. The development and maintenance of a desirable biological balance in the forest community will be an objective of forest resource management.

2. The forest management programs of the DOD are authorized by reference (h) and funded in accordance with reference (*l*).

D. Fish and wildlife management

1. A continuing program of fish and wildlife habitat management, complying with accepted scientific practices integrated and consistent with the total natural resources will be the objective of the defense fish and wildlife management program.

2. Cooperative management plans with the State and Federal fish and wildlife conservation agencies are required by reference (g).

E. Pollution and pesticide control

1. *General.*—In addition to health and welfare measures for personnel, installation activities must not adversely affect neighboring civilian populations or the environment. Because of the close relation existing between health protection measures and natural resources management, continuing cooperation and coordination of these activities will be maintained.

2. *Air and water pollution.*—Environmental pollution may affect human health. It also may, through direct or indirect alteration of the environment, render it unfit for recreation, adversely affect supplies of water, agriculture or biological products, or may interfere with opportunities for enjoyment of nature and natural beauty. Federal agencies have been directed (refs. (e), (m), and (n) to exert leadership in developing measures for prevention of pollution of the environment. Federal agencies and their contractors are required to comply insofar as practicable with local, State, and interstate health and pollution abatement authorities. Medical, engineering, logistics, and research, development, test and evaluation activities are responsible for cooperative efforts in conjunction with the Department of Health, Education, and Welfare, and local and State authorities.

3. *Pesticides.*—The President's Science Advisory Committee sanctions the carefully controlled use of pesticides and the exercise of precautionary measures to insure that harmful effects do not result to plants, animals, vegetation, and aquatic life beneficial to man. The Armed Forces Pest Control Board (ref. (o)) functions as the coordinating activity in the DOD for pest control and is the principal advisory body to all DOD agencies and activities on all matters relating to pesticide use, including those pertaining to the problems of resource conservation and management. The services of the Board are obtained through procedures established within each military department.

V. ACCESS TO MILITARY LANDS AND WATERS

A. By the public

1. Public access to military installations for the use and enjoyment of the public in compliance with the policies of the United States will be granted, except where a specific finding has been made that the overriding military mission requires a temporary or permanent suspension of such use. When all public access must be withheld, the reasons must be substantiated by a statement incorporated in the cooperative agreement required between representatives of the military departments, the State natural resource authorities, and the U.S. Fish and Wildlife Service.

2. Provision shall be made, within manageable quotas, for controlled public access to installations when such can be granted without bona fide impairment of the military mission. In granting access privileges to persons other than those assigned to or living on military installations, manageable quotas will vary, depending upon the amount of suitable land and water areas available. Oppor-

tunities for recreational purposes must be equitably distributed by impartial selection procedures, such as drawings or lots, or first-come first-served basis.

B. By Federal and State conservation officials

1. Military departments will insure that appropriate commanders, in cooperation with the Governors, or their designees, of the States in which the installations are located, provide installation access for designated State, natural resource or conservation officials at such times and under such conditions as may be agreed upon.

2. Accredited conservation representatives of Federal agencies furnishing professional advice and technical assistance under this directive will also be admitted to installations.

3. Federal and State conservation officials provided installation access will be issued an identification card and pass permit, DD form 1221, by the appropriate commander for use under the terms specified.

C. Signs and outleasing agreements

1. Signs identifying posted military reservations should also contain information to make it possible for Federal and State authorities, as well as private parties, to identify the proper headquarters responsible for the area.

2. Outleases of military lands shall include natural resources management plans and, where possible, recreational uses.

VI. INSTALLATION CONSERVATION COMMITTEE

Military departments will insure that commanders of installations having active or potential programs within the concept of this directive shall appoint a conservation committee to assure continuous planning and balanced application. The composition of this committee will include but not be limited to the commanding officer, the natural resource management and engineer personnel, entomologists, law enforcement, operations, safety, legal, medical, special services, veterinarians and elected officers of the installation rod-and-gun-type activities. Local civilian conservation groups, whenever feasible, should be invited to attend committee meetings as guests.

VII. THE SECRETARY OF DEFENSE CONSERVATION AWARD

To encourage and give added incentive for improvement of DOD natural resource activities, the Secretary of Defense will annually present an award to the installation that conducted the most outstanding conservation program during the preceding calendar year. The Assistant Secretary of Defense (Manpower) will chair a selection committee composed of civilian conservation leaders to judge and recommend the winning installation to the Secretary of Defense.

VIII. NATURAL RESOURCES GROUP (DNRG)

The DNRG composed of Office of the Secretary of Defense, Army, Navy, Air Force, and Marine Corps members and chaired by the designee of the Assistant Secretary of Defense (Manpower) is hereby established. The DNRG in addition to their individual and primary duty assignments, are to—

A. Facilitate the interservice utilization of personnel assigned throughout the DOD who possess the differing skills of the several disciplines in natural resources management.

B. Plan and direct the biennial DOD natural resources conference.

C. Serve the Assistant Secretary of Defense (Manpower) in his capacity as the designee of the Secretary of Defense to the President's Recreation Advisory Council.

D. Develop, propose, and review natural resources policies, including natural beauty, and collaborate, as applicable, on the resolution of conservation problems.

E. Assist in the planning and execution of the annual conservation award program.

IX. COMMUNITY RELATIONS AND CIVIL RIGHTS

A. In developing agreements and procedures with State and local authorities, representatives of the Armed Forces will bear in mind at all times the importance

of establishing, maintaining, and improving Armed Forces' community relations, in keeping with the provisions of references (e) and (p).

B. No person shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination in receiving the privilege of public access or any other uses within the terms of this directive (ref. (q)).

X. RESPONSIBILITIES

A. Under the direction, authority and control of the Secretary of Defense, the Assistant Secretary of Defense (Manpower) shall have the primary responsibility for administration of this directive.

B. The specific requirements for program administration and reporting procedures will be contained in appropriate DOD instructions.

C. The Secretaries of the military departments will require an established system for annual technical program inspections.

XI. IMPLEMENTATION AND EFFECTIVE DATE

A. Implementation

Each military department will publish this directive in appropriate departmental regulations. Two (2) copies of proposed implementing regulations shall be forwarded to the Assistant Secretary of Defense (Manpower) for approval prior to publication within 60 days from the date of this directive.

B. Effective date

This directive is effective immediately.

ROBERT S. MCNAMARA,
Secretary of Defense.

The CHAIRMAN. Thank you very much, Colonel Meyer. You have given us a very fine statement.

Mr. Satterfield, are there any questions?

Mr. SATTERFIELD. No questions.

The CHAIRMAN. Mr. Carter?

Mr. CARTER. No questions.

The CHAIRMAN. Mr. Mackay?

Mr. MACKAY. No questions.

The CHAIRMAN. Any further questions, Mr. Springer?

Mr. SPRINGER. No.

The CHAIRMAN. We thank you again. We probably jumped the gun in interrupting you during the course of your presentation, but I thought that it was appropriate under the circumstances.

Colonel MEYER. Thank you, sir.

The CHAIRMAN. We are very glad to have had your presentation.

Our next witness is a former colleague of ours, Evan Howell. We are very glad to welcome you here. We will be glad to have you present whatever you care to present to the committee. I believe that you have with you Mr. Walter S. Rainville, Jr., director or research, together with Mr. Hyman Feldman, general superintendent, Surface New York City Transit Authority. You may identify them properly, if I have not.

Mr. SPRINGER. I am glad to welcome the distinguished gentleman, Mr. Evan Howell, a former member of this committee from Illinois. I believe he was in Congress in 1948 and at that time he was the second-ranking member of the committee on this side of the aisle. I might also say that his father was a prominent member of the board of supervisors.

The CHAIRMAN. You may proceed.

STATEMENT OF HON. EVAN HOWELL, COUNSEL, AMERICAN TRANSIT ASSOCIATION; ACCOMPANIED BY WALTER S. RAINVILLE, JR., DIRECTOR OF RESEARCH, AMERICAN TRANSIT ASSOCIATION; AND HYMAN FELDMAN, GENERAL SUPERINTENDENT, SURFACE EQUIPMENT, NEW YORK CITY TRANSIT AUTHORITY

Mr. HOWELL. Mr. Chairman, members of the committee, I want to thank you for this very fine beginning. I have with me, Mr. Chairman and members of the committee, Mr. Hyman Feldman, on my immediate left, who is the general superintendent of surface equipment for the New York City Transit Authority, which is under his immediate supervision. He has about 4,100 transit buses, on which he oversees the maintenance of this equipment, and all matters relating to their operations. He has been associated with diesels all of his life. He was formerly a supervisor of automotive maintenance and automotive engineer with the Capital Transit of Washington, D.C.

He is a graduate of Virginia Polytechnic Institute, with a degree of bachelor of science in mechanical engineering.

He was an ordnance (automotive) officer in World War II.

He is past chairman of the mechanical division of the American Transit Association.

He is past chairman of the Committee on Vehicle Design Objectives of the American Transit Association.

He is past president of the Transit Equipment Men's Association, Mid-Atlantic States.

He is a member of the Society of Automotive Engineers, of which he has been a member for 25 years.

He is a member of the Diesel Fuel Committee of the American Transit Association.

And on his immediate left is Mr. Walter S. Rainville, Jr., who is the director of research of the American Transit Association and secretary of the committee on diesel fuel.

I should point out that the American Transit Association has had a committee on diesel fuel since buses first began burning that kind of fuel. And in view of their qualifications I would respectfully request the chairman and the members of the committee that I be permitted to present this rather brief statement without interruption and have the questions reserved for these men who are eminently more qualified to answer your questions.

The American Transit Association is a voluntary trade association representing a substantial portion of the urban transit industry, which oprates a total of 62,180 transit vehicles, 49,400 of which are motorbuses in the city and suburban service propelled by internal combustion engines.

Federal legislation is currently in force which offers financial assistance to local urban transit companies, and which encourages State and local governmental units to do likewise, in an effort to preserve, improve, and expand transit services in areas congested with private passenger automobiles. It would be inconsistent, indeed, if other Federal legislation were enacted which would deal a serious blow, physically and economically, to this industry through the imposition of onerous regulations in the form of national standards and criteria

covering motor vehicle exhausts, or through Federal encouragement of the adoption of equally burdensome standards at the regional, State, county, or local levels.

It is inconceivable that the Congress desires to put out of business any segment of American service activity unjustifiably, especially in the face of the Congress own efforts to preserve and improve that activity. Acting on that premise, attention is respectfully directed to three principles by which efforts to strengthen the provisions of the present Clean Air Act should be governed, so far as the urban transit industry is concerned:

1. Standards and criteria should be regulatory rather than legislative in nature, designed for flexibility in formulation and application by agencies of competent jurisdiction which can keep abreast of technological developments and the realizable probabilities of effective enforcement in the respective areas;

2. Standards and criteria for exhaust emissions from vehicles propelled by internal-combustion engines should be subject to local application, inspection, and enforcement—rather than imposed by the Federal Government, based upon the background conditions—and the needs—of the local area;

3. Standards and criteria governing exhaust emissions from urban transit buses, which are propelled by diesel engines, should recognize the superior performance characteristics of this vehicle from the standpoint of exhaust emissions, as well as the relatively small numbers of such buses in relation to the total motor vehicle population operating in any urban area.

The American Transit Association endorses the testimony of those witnesses at the recent subcommittee hearings who maintained that:

One, further research is needed before standards can be set for diesel-engine exhaust. Sine the emission from diesel engines is so infinitesimally small in relation to the whole, little research has been done—and much needs to be done before steps are taken to legislate "against" it;

Two, Congress should not specify standards for automotive exhaust, but rather should give the Secretary of Health, Education, and Welfare generally authority in this field to take account of improvements in technology, and to provide encouragement and guidance to local authorities in setting standards and criteria suitable for exhaust emission control of the several classes of vehicles in their respective areas;

And third, motor vehicle exhaust enforcement programs should be preceded by the establishment of workable control procedures for meeting reasonable exhaust emission standards, and/or the development of demonstrably successful and economically feasible control devices or equipment. Legislators should carefully avoid the establishment of laws which require the use of measures or devices which are not feasible technically.

The American Transit Association endorses the testimony of those witnesses at the recent subcommittee hearings who maintained that the bill under consideration was too specific in setting permissible standards for motor vehicle exhaust by tying standards to those adopted in California to meet what may in time prove to be a unique—or, at least, a quite uncommon situation. These standards might well prove to be too onerous for general adoption and application.

Regulations adopted in any locality should fit the conditions of that locality as determined through research, systematic sampling and analysis. Such local standards and criteria should take into account the ambient conditions encountered, as affected by:

Amount, nature and location of industry;
Types of fuels used for heating and by industry;
Climate;
Temperature variations;
Meteorological conditions;
Sunlight and photochemical effects;
Precipitation;
Winds;
Density and composition of vehicular traffic; et cetera.

For this reason, standards and criteria for motor vehicle emissions should not be established by Federal legislation, or by regulation at the Federal level; rather, they should be developed, formulated and applied locally, with the role of the Federal Government limited to the conduct and encouragement of research, improvement in technology, and encouragement and guidance for the local authorities in setting standards and criteria suitable for exhaust emission control of the several classes of vehicles in their respective areas.

It goes without saying that all control, inspection and enforcement measures should be carried out by the local bodies having jurisdiction, with a minimum of cost and inconvenience to the transit operator.

Because of the low level of its emission of so-called pollutants to the air, the diesel-propelled urban transit bus is not to be confused with the other members of the family of automotive vehicles, such as the private passenger automobile, or the over-the-road truck and the intercity bus.

As to numbers: First, as to vehicle population. There have been reports of 83 million motor vehicles in the United States, with a consumption of 65 billion gallons of fuel per year. In contrast, the urban transit bus fleet consists of 49,400 units, which consume 374 million gallons of fuel per year.

Thus, the urban transit bus fleet represents but 0.06 of 1 percent of the total automotive fleet, and its fuel consumption but 0.6 of 1 percent of the Nation's total.

It is apparent, therefore, that if the entire diesel transit bus fleet were made "100-percent air pollution proof," the surface of the air pollution problem in urban areas would not be scratched. This suggests a focus of the approach on the prime offender—the automobile.

As to chemical composition: Second, as to the composition of the exhaust gases. Carbon monoxide and hydrogen are major constituents in the exhaust gases of spark ignition engines, like those of the passenger automobile. They are, however, only minor constituents of the diesel engine exhaust. (See app. A.) Because the diesel exhaust odor differs from that of the spark ignition engine, many people think it contributes more to general atmospheric pollution. That such is not the case is illustrated by the results of a study made by the General Motors Corp. (See app. B.)

The diesel emits only a small fraction of the carbon monoxide discharged by the spark ignition engine. Thus, the diesel is the more desirable type engine, since the toxicity of its exhaust is greatly be-

neath that of the spark ignition engine. While, on the average, both engines produce the same concentrations of aldehydes at steady speeds and on acceleration, the diesel engine has a decided advantage at idling speeds and on deceleration. Considering hydrocarbons, the diesel engine again shows an advantage over the gasoline engine because of the lower hydrocarbon emission rate (and because the hydrocarbons are of a different type).

Again, the incidence of local air pollution control activity should be focused on that segment of the total vehicle fleet which produces the more toxic pollutants in far greater quantity—the automobile.

As to control measures: The urban transit industry has a well-earned reputation for having achieved the highest level of maintenance of any automotive rolling stock anywhere. The industry fully understands the importance of such levels of maintenance to sustained dependability of service and successful operating performance. The industry is unique in this respect.

Of most significance is the fact that the local operators of diesel-propelled transit buses have taken full precautions, in their daily operations and on their own initiative, to minimize the effects of vehicle exhaust emissions. This has been accomplished through the following measures:

Purchase of buses equipped with adequate engine horsepower;

Purchase of proper quality of diesel fuel and diesel engine lubricant for the engine used and for the local operating conditions;

A high standard of maintenance of the engine mechanical condition, including proper adjustment and balancing of the fuel injectors to control the combustion process.

On the other hand, a generally "random" type of attention to mechanical condition characterizes a large proportion of the total automotive vehicle population. Experience has shown, for example, that in California where certain air pollution control devices have been prescribed for passenger automobiles, many of these units have become inoperative through lack of periodic maintenance attention, thus defeating their purpose.

Because of the unique situation surrounding the urban transit diesel bus, it is apparent that representation by the transit industry on the "Government-industry technical committee" contemplated under the proposed legislation is of the utmost importance. Only in this way can this important segment of the Nation's economy have a voice in the formulation of advice concerning further steps in air pollution control, and an opportunity to minimize the likelihood of unduly burdensome regulations being imposed on it.

Representation on the proposed Government-industry committee is respectfully requested.

The CHAIRMAN. Thank you, Mr. Howell. The appendixes to your statement will be included in the record at this point.

(The apps. A and B, together with charts I, II, and III follow:)

APPENDIX A

The following table shows a typical diesel engine exhaust analysis. It indicates some high and low values for exhaust gas constituents as observed under conditions of normal operation—idle, acceleration, full load, and deceleration.

EXHAUST GAS CONSTITUENTS

Undiluted—Before discharge from exhaust pipe

CONCENTRATION RANGE

[Percent of total exhaust volume]

	Diesel engine air/fuel ratio 16:1 to 100:1		
Carbon dioxide	1		12
Nitrogen	79		85
Oxygen	1		18
Carbon monoxide	0		.4
Hydrogen	0		.2
Oxides of sulfur		[1]	
Oxides of nitrogen	.003		.10
Aldehydes	.001		.01
Organic acids		[2] 0.006	
Alcohols		[2] .0006	
Unburned hydrocarbons	.01		.05

[1] Depends on sulfur content of fuel.
[2] Idle condition only.

The toxicity of several chemical compounds has been investigated by the American Conference of Industrial Hygienists, and the following limitations were established in 1954:

Permissible concentration for continuous 8-hour exposure

	Volume percent	Parts per million
Carbon dioxide	0.5	5,000
Carbon monoxide	.010	100
Nitrogen oxides	.0005	5
Sulfur oxides (SO_2)	.0010	10
Aldehydes	.0005	5

It has been determined that exhaust gas is quickly diluted by outdoor fresh air on emergence from the exhaust pipe, to a minimum of 2,000-fold with fresh air. The midvalues of the first table above, diluted 2,000 to 1, are shown below in parts per million. These values may be said to be a reasonable estimate of the concentrations which may be found in the outdoor air of large cities due to the exhaust of diesel engines.

Exhaust constituent	Concentration (parts per million)	
	Diesel engine	Permissible limit for 8-hour exposure
Carbon dioxide	33.0	5,000
Carbon monoxide	1.0	100
Nitrogen oxides	.25	5
Aldehydes	.025	5
Unburned hydrocarbons	.15	

Comparing the values for diluted diesel exhaust with the permissible concentrations shown in the adjacent column, note that all of the exhaust constituents are present in concentrations well below the permissible limits.

APPENDIX B

COMPARISON OF DIESEL AND GASOLINE ENGINE EXHAUST[1]

The comparison described herein is based upon exhaust gas analysis of two engine types used in urban transit buses—the diesel engine and the gasoline engine. Samples of exhaust gases were collected from diesel and gasoline buses operating at four conditions: idle, steady speed, acceleration, deceleration.

The charts compare the average concentrations of carbon monoxides, aldehydes, hydrocarbons found in the undiluted exhaust of the test engines.

If exhaust contamination of air is said to be due primarily to the discharge of carbon monoxide, aldehydes, and hydrocarbons, then the charts indicate that the diesel engine contributes less to air pollution than gasoline engines.

Chart I

Carbon monoxide.—The diesel produced practically no carbon monoxide at idle, on acceleration, or deceleration. This has special significance in congested city operation of buses where engines are required to idle, accelerate, and decelerate for considerable amounts of time. Very little of the typical urban transit speed-time cycle involves "steady speed." The diesel engine offers decidedly less hazard from carbon monoxide than the gasoline engine.

Chart II

Formaldehyde.—On the average, on acceleration and at steady speed the formaldehyde concentration of the exhaust from the two types of engines is not significantly different. The diesel engine has a decided advantage in this respect at idle and on deceleration. If exhaust odor is due primarily to the presence of aldehydes, then the diesel engine is not exclusive in the emission of an objectionable odor. Unpleasant odor from a diesel engine is normally present only under conditions of cold operation and light load, particularly when the engine is accelerated following prolonged idling.

Chart III

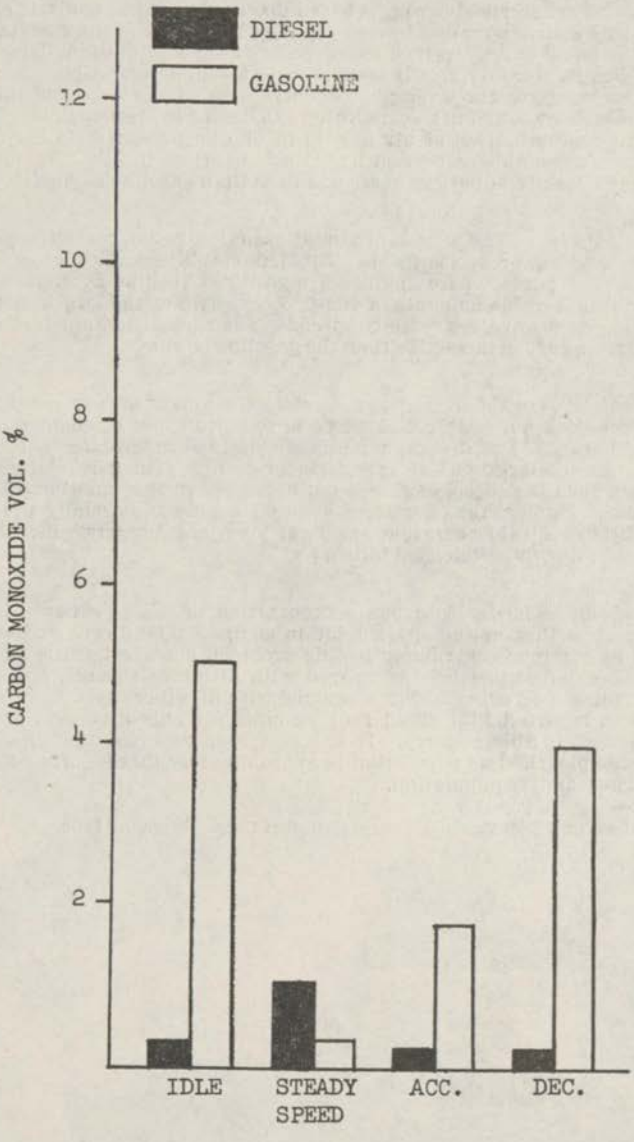
Hydrocarbons.—The hydrocarbon concentration of diesel exhaust is consistently lower than that of the spark ignition engine. The diesel engine must be considered as a minor contributor to this problem, considering the small quantity of diesel exhaust produced compared with all other sources, and the small quantity of diesel fuel consumed as compared with all other fuels.

It has been reported that diesel fuel accounts for only 3 percent of the total motor fuel used in this country. It has also been reported that in New York City, for example, the bus population is approximately three-tenths of 1 percent of the total automotive population.

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[1] "An Analysis of Diesel Exhaust," General Motors Corp., November 1956.

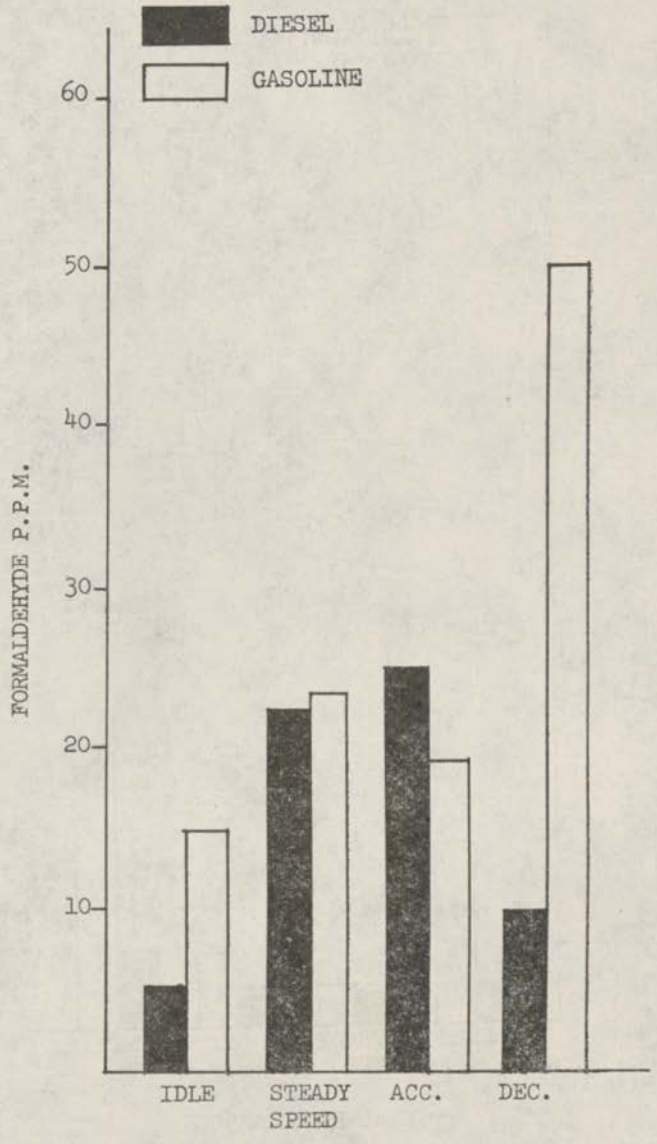
CHART I



CARBON MONOXIDE
IN BUS ENGINE EXHAUST

ACC. = Acceleration
DEC. = Deceleration

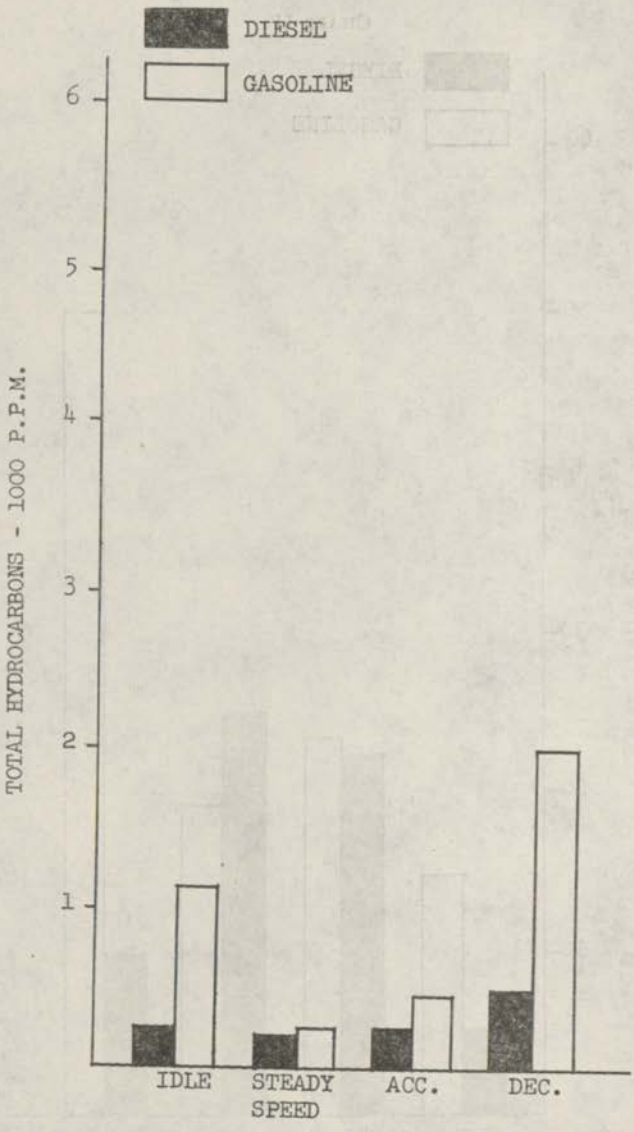
CHART II



FORMALDEHYDE
IN BUS ENGINE EXHAUST

ACC. = Acceleration
DEC. = Deceleration

CHART III



TOTAL HYDROCARBONS
IN BUS ENGINE EXHAUST

ACC. = Acceleration
DEC. = Deceleration

The CHAIRMAN. Do either one of the gentlemen with you wish to comment any further at this point?

Mr. FELDMAN. I believe that the presentation covers everything that the industry is concerned with, Mr. Chairman. This industry, however, has been plagued—it has had a history of being plagued by local legislators who have attempted to engineer, by means of the legislation, and it is, therefore, very gun shy. And that is of deep concern to this industry. This has happened in a great many communities. And it is happening in the community in which I reside and operate.

The CHAIRMAN. Well, you mentioned inconsistencies in your statement, Mr. Howell. It seems to me like the inconsistency is the position you have taken in view of the statement you have just made, in that you think that there out not to be any Federal approaches to the problem—that it ought to be left primarily to the localities. Therefore, why would you not want to make it a Federal problem, so that you could work out an across-the-board program?

Mr. FELDMAN. This industry is in favor of the Federal legislation which provides for local regulations.

The CHAIRMAN. In other words, you are in favor of Federal regulation that would provide local legislation to further plague you, is that it?

Mr. FELDMAN. No, sir. This industry would be in favor of Federal legislation which would lay out guidelines—intelligent, technically feasible guidelines, so that local legislation could be provided.

The CHAIRMAN. Well, I think that so far as enforcement and inspection and things of that kind are concerned the local, State community could more appropriately assume that responsibility. I do not know how you would work it out otherwise to carry out this tremendous responsibility, that is growing day by day and year by year. As the urban population increases, the demands for bus service are greater and more people have to be served. Maybe they can decentralize some of the population and get some of it to move out into the rural areas of the country, but as of today, everybody seems to want to concentrate in urban areas. If we could decentralize some of it, the problem might not be so bad, but sooner or later it will be, as the population increases up to the year 2000. I do not know.

It has become a problem. That is the reason that we should not ignore it at this time, but I can not see how you can decentralize this thing and leave it all to the localities if you are going to have these vehicles coming from all over the country. I know that you operate in the urban areas. You are engaged in that business. Your buses, primarily, are going to be maintained at a given community point. We cannot, however, cover individual bus situations, but this whole thing, as one of my colleagues said a while ago, is one that will have to be attacked from the Federal level. That is where it will have to come from. It cannot come from a city like Philadelphia or Eldorado, Ark.

Are there any questions, Mr. Satterfield?

Mr. SATTERFIELD. I have no questions.

The CHAIRMAN. Mr. Carter?

Mr. CARTER. No questions.

The CHAIRMAN. Mr. Mackay?

Mr. MACKAY. No questions.

Mr. HOWELL. Could I say just one word further with reference to what has been stated as being an inconsistency? The American Transit Association is very much in favor of the provisions of this bill which authorized for the Secretary of Health, Education, and Welfare, to institute these studies.

The CHAIRMAN. You are talking about S. 306 now?

Mr. HOWELL. Yes. And to work out a set of instructions and qualifications and requirements that would fit the locality.

The CHAIRMAN. It has to fit the whole country.

Mr. HOWELL. I know that, the whole country.

The CHAIRMAN. The way I look at this thing, we cannot look at it on a local basis—it is all or none. In my State buses have been on the increase in numbers. They are there. If they can do it for California, they can do it for New York. That is the way I see it. I do not know, nor am I sure that they have been successful in doing it for California yet. I hope they have.

Mr. RAINVILLE. Is it in order for me to ask a question so that I might understand better the chairman's last question?

The CHAIRMAN. You can ask the question. I do not have to answer it.

Mr. RAINVILLE. I understand that, but I just asked if it was in order for me to ask a question.

The CHAIRMAN. You can do that.

Mr. RAINVILLE. Because of your referring to the localities. I understood nothing from what you said indicated that if there were national legislation that the exact provisions as worked out by the locality would have to be the same in every locality. It could take into account the difference in sunlight and the meteorology and all of these other things which the experts tell us do bring about some of these offensive effects.

The CHAIRMAN. I do not think that the automobile manufacturer could make an automobile or a vehicle in Detroit, Mich., that is going to fit the sunlight in every different section of the United States of America. That seems to me to be impossible. They run these things off the assembly lines. They have the know-how and the processes, and it will require cooperation with them in the various areas to put whatever gadget—I will not use that word again, I will say "device"—whatever device is necessary to fit that particular community. This will be a very fine thing when done. I know that if you drive an automobile to the top of Pike's Peak, the carburetor will not function the same up there as it did when you started down below, at the lower level. Adjustments should be made, but, generally speaking, the manufacturer cannot make a vehicle that will fit the different communities.

I am convinced that sooner or later something will have to be done by you people in the industry, in the diesel industry, in the Defense Department, in the airline industry. As I mentioned yesterday they were almost left out, that is the airlines. I do not believe that I am going to be for something that will put all of the onerous burdens on the consuming public driving automobiles and let others be preferred customers. I cannot see that at all. I think that, if we are

going to tackle the problem we have to do these things. I learned a long, long time ago when I was a little boy, a small lad, that the last straw broke the camel's back. You know the old example of piling on just one more feather. You can put just so much pollutants in the air and the time will come when just a little bit more will tip the scales. So it is my judgment that there ought to be a lot more than research work—we ought to take it step by step, create standards and criteria so that we can go as fast as we can without trying to go a whole mile at one time.

Mr. RAINVILLE. Thank you very much, sir.

The CHAIRMAN. Thank you very much, Mr. Howell and gentlemen. We appreciate your being here and having testified.

We next have the distinguished mayor of the city of Philadelphia, the Honorable James H. J. Tate. Is Mr. Tate here. I guess that we do not have him here. Is there anyone here appearing for the National League of Cities? (No response.)

We will next call then Mr. Spiro T. Agnew. You are appearing, I understand, for the National Association of Counties?

Mr. AGNEW. Yes, sir.

The CHAIRMAN. We will be glad to have your presentation.

STATEMENT OF SPIRO T. AGNEW, APPEARING ON BEHALF OF THE NATIONAL ASSOCIATION OF COUNTIES

Mr. AGNEW. Mr. Chairman and members of the committee, my name is Spiro T. Agnew and I am the elected county executive of Baltimore County, Md. I am appearing here today on behalf of the National Association of Counties.

If I may have the privilege, I would like to request that my statement be incorporated into the record, because of the fact that there is a certain part of my testimony that I think will be of great interest to the committee. And I would therefore like to depart from the prepared statement and comment upon the problem of solid waste disposal which faces Baltimore County and the Greater Baltimore Metropolitan area at the present time.

The CHAIRMAN. Very well, sir, your statement will be included in the record at the conclusion of your remarks, and you may proceed as you desire.

Mr. AGNEW. Thank you.

Preliminarily, I think it would be helpful if I would read you for the benefit of those members of the subcommittee who may not be familiar with the unique situation that the Baltimore metropolitan area encompasses, the fact that Baltimore County, while it surrounds Baltimore City on three sides, is not a part of Baltimore City, so that Baltimore County is one of the largest counties in the country with a present population approaching 540,000 and it includes in it no incorporated subdivisions or towns, so that the county government, in effect, is a municipality of a very special nature, a municipality that faces the problems of urban, suburban, and rural aspects.

It has been manifested for some time that the urban sections of Baltimore County have been moving along with Baltimore City, which is really our inner core, and certain sections of Arundel County

which is on the south side of Baltimore City into a situation where we can no longer use land fills as a method of refuse disposal. Every one of nearly 540,000 residents in the county are accountable for an average of about 2½ pounds of garbage a day. Every single week nearly 10 million pounds of refuse must be disposed of in our county. This is a rather staggering figure.

And the committee, in considering the amendments to the 1963 Clean Air Act, may react with some preliminary favor to the statements of those who would say that the Federal Government does not belong in any portion of the program of the solid-waste disposal, certainly, would appear to be superficially an area that the municipalities and the counties could handle on their own. I think, gentlemen, we have been in the middle of an incinerator fight for some year and one-half now and I can assure you that nothing is further from the truth.

There is no area in which the Federal Government needs to intervene to establish criteria, to get the leadership away from the local political factions as badly as it needs to get into this particular area. And I would like to explain what has happened with that in this regard.

Naturally, land fill is about three times cheaper than incineration, as long as the land fills are done in the rural area where the trouble of transporting the refuse to the point of ultimate disposal is not an extremely costly one. People in the locality after becoming used to land fill, pretty soon reach the point where they will rebel automatically, stimulated by certain extraneous political pressures which are bound to arise in local politics—they object to the idea of incineration not only from a local cost factor standpoint but from the standpoint that they feel that incinerators are the type that have been built unsuccessfully in so many areas over the years, the type that really has no safeguards. And an incinerator of the modern type that a metropolitan area must consider at the present time costs somewhere between $5,000 to $6,000 a rated ton.

We in Baltimore County are considering the erection of three of these facilities to be used jointly by the county and the city for the total cost approaching $12 million.

Now the metropolitan approach to refuse disposal really requires that the political subdivision lines be completely ignored because the real problem of incineration, a sophisticated method of disposal that you are going to turn to, are of no more momentum to the rural areas where land fill is still possible and acceptable and practical. The metropolitan approach is a necessity. It becomes extremely difficult because of the zealous guarding of political prerogatives by the elected officials of the various municipalities and counties.

I feel that if the Federal Government would get into this area of solid-waste disposal, it could do so in two ways: first of all, the Federal grants-in-aid for the construction of those particular methods of disposal which have been tested over the years, such as incineration. And, secondly, possible demonstration grants in the area of composting which is a very favorable method of disposal from the citizen's standpoint, but which has had little or practically no testing in this country. It has been done in Europe and has been done very successfully there.

We will have to consider that our garbage is different from that of the European nations. They have a much higher organic content. Ours contain paper and types of those sort of things that are difficult to compost.

So I would say that demonstration grants in the area of composting would be, certainly, something that would be received with great respect and pleasure by those people in the counties who are being pushed into this terrible measure to go to some method of disposal other than incineration, but who cannot afford to take the chance or the risk of deciding whether this is a practical solution, because once you dump about $3 million into the construction of a plant and it fails there is a political repercussion which is so formidable that no elective official would ever attempt it.

Another fact comes up insofar as Federal intervention assistance in this area is concerned, I think, that is most important. I have criticized our State government on many occasions, because of the aid that it gives to the subdivisions is not predicated upon any needed criteria of self-improvement. I feel that the National Government has not been remiss but has been extremely careful in making certain that where assistance is given that the channels of the assistance must be depended upon and adhere to certain theories of self-improvement for the local municipality. I feel that in regard to incineration the Federal act as ultimately amended could very well require that the type of facility built would contain the necessary restrictive provisions that would prevent the very careless building of facilities which are going to simply get us into trouble with air pollution.

So I would say, gentlemen, that if there is anything important in this act, certainly it is not as popular and attractive as the vehicular problem that you have heard so much about, but from the standpoint of assisting in the pollution problem, the problem of solid-waste disposal is important.

There is one factor and while I do not attempt to mention it to you to cover in any fashion what these amendments should contain—there is one factor that I think is extremely important and that could, possibly, be an amendment to the amendment, as it were.

Since incineration is a metropolitan problem it would seem to be very advisable to consider the adoption of these amendments, so that they will cover this. In short, we are having these three incinerators built in Baltimore County to serve the city and the county, to cover the entire metropolitan area, and we would hope to finance them at the present time, if we must finance them locally, through the issuance of revenue bonds, the bonds to be sold for the financing of the facilities by the Revenue Authority of Baltimore County, which is an existing entity that is presently unable to undertake this sort of thing. So I would like to see, if Federal grants are ultimately adopted and passed by the Congress, that they not be restricted only to the construction of these facilities by one particular subdivision or another, but that there be sufficient flexibility so that the authority would utilize moneys in contracts from two or more subdivisions or, possibly, even from industry participating in the relief of its disposing of its solid wastes in the same manner, which could be eligible for these grants.

I very much appreciate the subcommittee's latitude in allowing me to depart from the prepared transcript. I most sincerely thank you for the opportunity to present these views. I, certainly, will be most pleased to answer any questions that the members of the subcommittee may direct to me.

(The prepared statement of the National Association of Counties follows:)

STATEMENT OF THE NATIONAL ASSOCIATION OF COUNTIES BY SPIRO T. AGNEW, BALTIMORE COUNTY EXECUTIVE, MARYLAND

Mr. Chairman, my name is Spiro T. Agnew and I am the elected county executive of Baltimore County, Md. I am appearing here today on behalf of the National Association of Counties.

Air pollution's inability to recognize political boundaries and the economics of disposing of solid waste is ever increasing the role of county government in fulfilling these two governmental responsibilities.

First, with respect to the problem of the disposal of solid waste. We feel the question for this committee is how, not whether, the Federal Government should aid in solving this problem which is fast approaching the crisis stage. In our opinion, this assistance should be two fold: Federal grants to aid in the construction of solid-waste disposal facilities and a broad support program in the related areas of research, demonstration projects, surveys, studies, training, etc. I believe my own county of Baltimore is typical of the problem being experienced all across the country.

Every single week, nearly 10 million pounds of refuse, or garbage and trash, must be disposed of in Baltimore County. While this may be an astonishing revelation to some, the Bureau of Sanitation people who must handle this enormous job recognize it as a very real fact with which they live day in and day out.

Every one of our nearly 540,000 residents accounts for an average of 2½ pounds of this refuse every day. Each one of us calmly and confidently puts out his garbage and trash cans once or twice a week, secure in the knowledge that their contents will be removed and disposed of adequately, efficiently, and finally. Each of us knows that this refuse must go someplace. Few of us understand or even think of where it goes or how the county disposes of it.

This 1,350,000 pounds of refuse per day is currently being hauled by truck to four separate sanitary landfills It must be handled differently in the future because we are simply running out of land on which to continue an economically feasible, socially acceptable operation. In addition, fast and efficient collection cannot be accomplished unless the hauling distance between your garbage can and the final destination of its contents is short. Landfills have served the county well in past years, but two of them have completely outlived their usefulness and a third will need attention soon. Certain steps must be taken immediately to insure the efficient and economical future disposal of refuse in these areas. In our studied opinion, these steps lead, at least at this time, to incinerators.

Our studies and surveys have conclusively demonstrated that in order to meet our problem in Baltimore County, we must construct three incinerators at a cost of approximately $11 million within the next 5 years. This must be done if we are to provide our citizens with a healthy environment in which to live.

Costwise, incineration is three to four times more expensive than landfilling. For this reason, we intend to continue landfilling where possible as long as it is feasible and is not a nuisance or public health annoyance to an area. However, as previously indicated, this route is virtually exhausted.

While the cost of incineration is admittedly higher, a fact which we cannot escape, this method of refuse elimination opens up several new doors of opportunity to us. It offers the county the prospect of eliminating other nuisances. For example, through incineration we may be able to close down and eliminate all objectionable commercial land filling and antiquated unregulated private burning operations in Baltimore County in a few years. The plan is to have commercial haulers collect and haul refuse from commercial establishments for incineration at county-owned and county-operated incinerators (or for composting if that method is selected for the eastern section). The commercial haulers would thus participate in this county service on a cost-per-ton basis. This

revenue would defray some of the operating costs and debt service of such refuse disposal plants.

Just as the Federal Government has seen fit to aid our State and local Governments in meeting our water pollution problem, it should now assume a portion of the burden in our solid waste disposal problem.

We have one other recommendation regarding the Federal Government's role in the area of research and demonstration projects. I specifically refer to S. 306, as passed by the Senate, as a point of reference.

We recommend that the purposes for which grants and contracts can be used (sec. 204) be broadened to include all of the types of functions authorized in the bill (sec. 202) rather than restricted to merely research and training—as important as these are. We made this recommendation to improve the operation of the program. Particularly in the initial stages of program operation, it will be important for local governments to be eligible for grants and contracts for surveys, investigations, and studies. The experience of my own county vividly demonstrated the need of surveys and studies if we are to successfully solve the problem.

With further respect to research and demonstration projects, it should be noted that since it is becoming more and more difficult to establish refuse land fills convenient to production areas, it seems possible that refuse transfer stations, which have been found to be more practical in highly urbanized areas, might be one solution to this problem. Up to this time, this method of disposal is extremely costly. However, well conceived and executed research could furnish some alternatives which are desperately needed. Such research should begin with a study of present disposal procedures; establishment of freight rates of common carriers for refuse; and as a result of these, the needs and feasibility of new methods should become more obvious.

To summarize, some of the areas in which research is required are:

(1) The design and placement of sanitary land fills should be further investigated in order to utilize the most economical methods and to achieve the best uses of the sites when they are completed.

(2) Methods of reducing costs of incineration and elimination of their air pollution potential could result in additional application of this method of disposal within metropolitan areas.

(3) More efficient handling and loading methods at transfer stations, together with the development of improved method of transporting the waste should be undertaken including the use of hauling refuse by common carriers to distant disposal sites. Economic procedures for salvage of valuable by-products at these stations are worthy of study.

(4) Composting of rubbish is becoming more widespread; but additional research is needed to improve this method and to develop uses for the end product.

Adequate research might develop improved methods of creating usable land by filling areas along or adjacent to ocean shores.

The study of grinding solid waste for disposal to the sewer, as is presently done with garbage, should be given further consideration. The development of central grinding stations, or even home units, could result from such research.

Air pollution standards for controlling the emissions of pollutants from gasoline-powered or diesel-powered vehicles

The impact of motor vehicle emissions upon public health, and upon the quality of our atmosphere in this country, have been made clear by much of the testimony you have heard over several years, all of which I have followed closely. The record is equally clear that only by the enforcement of compulsory standards can the automobile industry be induced to take the necessary steps to reduce motor vehicle contamination.

Spokesmen for the automobile industry have admitted that if the rest of the Nation is to receive these improvements in automotive design, there must be similar legislation at the national level. For this purpose, it is desirable that there be uniform standards, which will serve as a minimum requirement so that the industry may have a specific target. On the other hand, it is clear that there is a difference in the degree of motor vehicle emission control needed in various localities. Communities with heavy traffic concentrations or more stagnant air conditions require more stringent controls. A large metropolitan area, such as Los Angeles, needs a greater reduction in vehicle emissions than does Bangor, Maine. Because of these differences, the legislation should say that

the Federal Government does not occupy the field in such a way as to exclude the States. The Federal standard should be looked upon as the minimum requirement that should apply to motor vehicles throughout the Nation, but each State should still retain the power to fix a more demanding standard, if air pollution conditions within its boundaries so require.

For these reasons, then, I suggest that the legislation leave unmistakable the intent that the Federal occupancy of the field is not exclusive and that a power remains in the States to enact and enforce standards that are more restrictive, but not standards that are less restrictive.

As I understand the present proposals, the means of controlling emissions are to be applied to new cars at the point of manufacture. If it should turn out that used vehicles are also brought under control, then installations should be limited to those made by dealers at the time of resale. Installers should be closely policed and carefully qualified.

It is also advisable to provide for a continuing review and reappraisal of the Federal standards with the objective of increasing their stringency to keep pace with improvements in control techniques, such as those which may evolve as the industry meets progressively more demanding State standards.

I would also suggest that the purchasing standard of the Federal Government be geared to the most stringent State emission standards, rather than to the lesser nationwide minimum standard. In other words, the Federal Government should buy only the best controlled vehicles that can be produced, not merely the minimum quality. This will enable Federal vehicles to move freely among the States without danger of ever violating any motor vehicle standard. This will also have the beneficial effect of increasing the pressure for better vehicles and of stimulating competition among the manufacturers. Those who produce the best controlled vehicles will have access to Federal business while a laggard in reducing vehicle emissions will find himself barred from competing for these sales. The impact of a Federal policy should reach even further because of the publicity attendant upon placement in a status of being unacceptable to the Federal Government. The net effect should be to drive down the level of motor vehicle emissions at the fastest possible rate.

In regard to the diesel provisions of S. 306, it does not seem clear as to whether the regulation of diesel emissions would apply only to vehicles manufactured after the date of the legislation or would apply to vehicles already in use before that date. Under some circumstances, it may be reasonable to apply these requirements to existing vehicles, and suitable wording should be inserted to provide for this.

To summarize: We approve and endorse the bills and their purposes. We suggest the following changes:

(1) That the Federal standards be described as minimum, not maximum.

(2) That the States retain power to enact standards that are more stringent, but not to enact standards that are less stringent than the Federal standard.

(3) That the Federal purchasing standards be those of the strictest State.

(4) That provision be made for a continuing review and reappraisals of the Federal standards.

I thank you most sincerely for this opportunity to present these views.

The CHAIRMAN. Thank you very much, Mr. Agnew. Do you have any questions, Mr. Rogers?

Mr. ROGERS of Florida. No questions at this time.

The CHAIRMAN. Dr. Carter?

Mr. CARTER. No questions.

The CHAIRMAN. Mr. Satterfield?

Mr. SATTERFIELD. No questions.

The CHAIRMAN. Mr. Mackay?

Mr. MACKAY. I would like to say that I am, certainly, impressed with the professional conduct of this particular witness. In our county we reached the point where landfill became objectionable. We had to go to an incinerator.

I feel that the point that you have made about the importance of making this bill inclusive enough is a very valid and thoughtful one.

I hope that the staff will react to this and prepare for us an amendment which would accomplish this.

I am curious about some of your remarks. I came out of a State legislature. Do you see any hope for the States adopting a significant role in this field?

Mr. AGNEW. I would give you a very forthright and, maybe, not as considerate answer from the standpoint of the States, but I would say that until we have a reasonable reapportionment that the urban problems will never receive the attention at the State level that they should.

Mr. MACKAY. We just completed a reorganization or reapportionment in our legislature. I am hoping that it is not too late for the State to accept some responsibility. It has been totally disinterested in this type of problem for many years past. We are looking to the Federal Government for leadership, but it seems to me, Mr. Chairman, because of the fact that we have some big metropolitan areas in many States that Federal legislation will be required in this area.

It is always a pleasure for me to hear from someone who has the competence evidenced by this witness.

Mr. AGNEW. Thank you very much.

The CHAIRMAN. Do you feel that the proposed amendments would be objected to by various subdivisions?

Mr. AGNEW. I really do not feel it would, Mr. Chairman. The proposed amendment so far as political subdivisions are concerned does not cause any political hardship at any level of Government. I do not anticipate any objection on the part of recipients to a reasonably good plan of Federal assistance in this area.

The CHAIRMAN. Well, of course, if you set up standards and criteria, why then they would be applicable to all?

Mr. AGNEW. Yes.

The CHAIRMAN. And if you wanted to do that on an individual basis in a given area why that would, certainly, it seems to me, be permissible. If you wanted to cooperate with multiple local entities, political subdivisions, that could be done.

Mr. AGNEW. The only thing that disturbs me and that I am worried about in the legislation would be if there were Federal grants-in-aid, that the application must come from a particular subdivision. I do not think that it was sufficiently spelled out that the authorities that are really instrumentalities of more than one subdivision would be eligible for these grants. I merely made the suggestion that, possibly, this might be an area of further investigation, Mr. Chairman.

The CHAIRMAN. Well, somebody will have to make the request. I do not think that you could have a half dozen separate requests to serve the same area.

Mr. AGNEW. I do not think that the chairman has quite followed what I have been trying to say. I have not said it as well as I would like to have said it. What I mentioned was that in our case the Baltimore metropolitan area, as far as incineration is concerned, could bring parts of the city and of Baltimore County and Anne Arundel County into it, rather than duplicating the terribly costly facilities by having the city build some and the county build some. We would prefer—and we have arranged through discussions for the county revenue authorities, which is an instrumentality of the county issuing revenue bonds for the purpose of financing this to build these facilities. That

will be jointly used by the three subdivisions. And there would not be any duplication of applications under this situation, but the question would be whether an instrumentality of the Government, such as a revenue authority created by the State legislature, in our case, would be eligible to apply for the grant, or whether the financing on the county side or the city side would have to be done with the general obligation bonds of that subdivision.

The CHAIRMAN. We cannot legislate on individual situations. We have to have a program that is across the board. And the localities would have to meet that.

Mr. AGNEW. Yes, sir. And there would not be any problem in the rural areas, because there pollution is a problem that really stems from intense population. Is that not true, so far as the committee has been able to determine?

Mr. ROGERS of Florida. Do I understand that it is your feeling, for instance, that if we set a standard, say, for automobiles, it would be your feeling that if the standard is set you would allow an individual community to set higher standards?

Mr. AGNEW. Yes.

Mr. ROGERS of Florida. How would the automobile dealer or the manufacturer comply with 50 different standards? Do you think that is a practical way to approach a problem, to let the standards be set for certain devices to be put on all automobiles at the community level?

Mr. AGNEW. Let me again be frank with my interrogator and say that the portion of the report that you have referred to represents the opinion of the National Association of Counties and not necessarily my own personal opinion. And, further, that I am not conversant enough to comment upon that.

Mr. ROGERS of Florida. You have had a great deal of experience in dealing with local government and the Federal Government, I am sure. If you could give me your personal opinion on that, what is it?

Mr. AGNEW. I conceive that in the areas of vehicular pollution it could lead to some confusion, unless it was very carefully handled. I have not really given it enough thought to say overall that the idea should be abandoned—that only one standard be adopted in every facet of pollution, but I think that in the area you point out that is a dangerous one, and one that the committee would undoubtedly want to go into very thoroughly before it made any determination of whether more stringent regulations could be adopted by the locality.

Mr. ROGERS of Florida. I would presume that the manufacturer would set a standard, which would be the highest standard to prevail in the most difficult situation. It, probably, would cover various communities. I would hesitate to tell every manufacturer to put the device on or to have a different device for every community. That would be a difficult way to handle the problem, it seems to me.

Mr. AGNEW. Right now without any Federal preemption in this area the localities have this right, do they not?

Mr. ROGERS of Florida. Yes. But I do not think that it has been administered except perhaps in one State.

Mr. AGNEW. Would you figure that the act should creat a preemption on the part of the Federal Government, so that the localities would be prohibited from legislating further in this area?

Mr. ROGERS of Florida. Well, I would think, perhaps, on a device on an automobile, if we require the manufacturer to do it, we might have a more reasonable approach, particularly when the standards can be changed from community to community. You could discuss having some standards, and about what that standard will be from now on, and you could do that until eternity. These are flexible. As the problem increases, or there is a new device, then the standards would be changed, but I would hesitate to say that every community ought to tell every manufacturer what device to put on an automobile.

Mr. AGNEW. I am inclined to agree with you, sir, but I would hope that the preemption, if it did exist, would only apply to those manufactured devices that are consistent throughout the country.

Mr. ROGERS of Florida. Yes, I would agree with that point. Thank you.

The CHAIRMAN. Thank you, Mr. Agnew. We appreciate having your testimony.

Mr. AGNEW. Thank you.

The CHAIRMAN. Is Mr. Tate here at the present time?

(No response.)

Our next witness is Prof. Benjamin Linsky, of the Department of Civil Engineering of West Virginia University, Morgantown, W. Va. We shall be glad to hear from you now.

STATEMENT OF BENJAMIN LINSKY, P.E., PROFESSOR OF SANITARY ENGINEERING (AIR POLLUTION), DEPARTMENT OF CIVIL ENGINEERING, COLLEGE OF ENGINEERING, WEST VIRGINIA UNIVERSITY, MORGANTOWN, W. VA.

Mr. LINSKY. Mr. Chairman and members, I appreciate the opportunity of appearing before you and the committee.

My name is Benjamin Linsky. I am professor of sanitary engineering (air pollution) at West Virginia University in the Department of Civil Engineering. I have been engaged full time in air pollution control since 1948. From 1951 to 1956 I was head of the city of Detroit's official air pollution control agency. From 1956 to 1963 I developed and directed the official San Francisco Bay Area Regional Air Pollution Control District, covering 6 counties and 70 cities. I was the 50th president of the National Air Pollution Control Association in 1956–57. I served on the U.S. Public Health Service Surgeon General's first National Advisory Committee on Community Air Pollution from 1957 to 1960. While I was in California, I served on almost all of the advisory committees to the State department of public health and the State legislature in drafting their motor vehicle pollution control laws and standards. I started the air pollution committee of the National Association of Counties.

I should like to present my statement for the record, and to present several points.

The CHAIRMAN. Your entire statement will be included in the record, Professor Linsky, and you may proceed as you desire.

Mr. LINSKY. Thank you very much. I would like then to emphasize some passages in my discussion and present a few points that have arisen as I learned about your hearings yesterday and as I heard

them this morning, so that I would be of assistance to you and the committee.

The Clean Air Act of 1963 took several important steps toward clearing the air for health and enjoyment of the people of this country. The providing of the grant-in-aid fund has resulted in a major number of improvements in local air pollution control programs and for the cleaning up of sources of pollution in which the State agencies are the obvious tools.

In addition, the Clean Air Act of 1963 provided for the first time specifically those tools for interstate pollution control problems, some of which have been troublesome for dozens of years, really.

In the proposed legislation of which I am aware the international boundary problems is a very real one. Our experience in Detroit, with the city of Windsor, Ontario, made it evident that years and years of study and recommendations and voluntary persuasion are fine and carry control a long way, but there comes a point where it is necessary to have a legal mechanism for enforcement to insure equal treatment so that the cooperators are not made succors by those who fail to cooperate.

In the field of solid waste disposal it seems that both the rural and the larger metropolitan areas have their troubles and that the Federal Government has a major stake in the game. As an air pollution specialist, I found it necessary to work out a solid waste disposal course for my graduate students, because I knew that I was involved with the solid waste disposal problem and the flood control problem for people, and that their methods of disposal could create air pollution problems, in addition to the stuff that we were attacking in the air disposal collections which had to be disposed of. This of course was taught by three professors, of which I am one, in order to give it proper coverage.

We heard from the Department of Defense this morning and we have heard from others. In addition to the problems that they have there, and let me call them troubles and not problems, because we have two kinds of things to talk about, Mr. Chairman—the troubles which are things we can handle and know how to handle and problems, at least, the way that I am using the word, is something that we need new information on and new developments.

So the troubles of the Federal agencies in their own operations are extensive. If we have a few problems which need some additional research and engineering development that is one thing, but they have a lot of troubles that they know how to handle and are not handling half as well as they know how. This has been simply because of failure to pay attention. It has been handled on a station-by-station, facility-by-facility problem basis. I think the entire Federal Government has six people working on solid waste disposal, providing technical information and practically no research development. It has been a pathetic situation. We have everything in the Federal Government from medical research, animal waste to be disposed of up to the disposal of rocket fuels that are wasted that were mentioned this morning.

In addition, from that, we have slum clearance, new roads, demolition debris, a disposal problem that exists everywhere in the United States, and in every single locality, as new buildings are being built.

The leadership ought to be provided by the Federal Government, because no county, State, city or university can afford to run a full-scale experiment with its own funds, and few cities, counties or States can stand the political heat of a full-scale experiment that fails. And some of these experiments are going to have to fail—there is no question about it, if they are really true experiments and developments of real, new solutions to technical problems.

The possibility of salvaging and recovering natural resources in the form of minerals, fuel values, vegetation, and nutrients should also be given appropriate consideration. For example, in incineration it is customary in this country to have good hot gases go out the stack. There is every reason for encouraging the development of having boilers to use that steam, either in municipal or in privately owned utilities steam generating plants. The technical know-how exists. It has been developed in Europe for years. It has not been applied in this country at all. It would reduce the pain and the cost of disposal of solid wastes without air pollution, with good air pollution control, in a manner that has not been approached anywhere in this country to date.

Another kind of conservation, in conformance with the general approach toward natural beauty and conservation which is now an increasing policy of the Federal and other governments even where there is sanitary land fill—and I must question some comments you have heard today—can be used. We have areas in this country where sanitary land fills have been run beautifully within a very few hundred feet of residential areas where there are $50,000 homes which have been built after the sanitary land fill operation started and are still running without complaint. By proper shielding, by building of banks, trees that really screen from view, by providing access roads so that they do not go by anybody's house but come in from the main thoroughfare. This takes good engineering planning and control. You find beautiful examples of this which are not known to very many people in the United States, neither the legislative leaders nor the citizen leaders in local communities. And, certainly, not even known to the neighborhood associations that come screaming before city council tables when there is a zoning law use application for either a sanitary fill or a good incinerator. This kind of information should be displayed. And I think that the most suitable agency, the most suitable level of government to collect and display this information, is the Federal Government and in this particular case the Department of Health, Education, and Welfare, in the sanitary waste, solid, disposal groups, so that they can put out good information in usable form, so that people who are your constituents will understand it in their terms and not in the engineer's terms.

By the way, for those who have been involved in, and come from the flatlands, one of the nice things that can be done with solid waste is to build a recreational hill. We have a few examples in this country. I know of just two where they have built hills made of rubbish. One of them is in Detroit on the banks of the Rouge River in Rouge Park. You know how flat the land is around Detroit. There is a toboggan slide in winter and a picnic field in the summer. This sort of thing can be done.

Again, it is a trouble—it is an opportunity for developing the resource—an opportunity that we can develop out of some troubles that exist, where there is no technical problem to be solved. In fact, it is not that kind of a situation.

I would like to turn to the subject of motor vehicle exhaust control which I know is one of the questions that you have before you.

We have varying degrees of significance of motor vehicle exhaust in different communities. Some of these cities in this country are gassy, dusty, and hazy beyond anything that Los Angles has ever experienced, but exist in these cities either from stationary sources, such as steel mills, oil refineries, cement plants, foundries uncontrolled, chemical plants uncontrolled, but even in these cities on the windless, quiet sunny day, a lovely day, these gases, including the automotive gases, get sun burned and add to the general smog. This, I do not think, has been clearly brought to your attention.

With respect to the diesel engine vehicle, there has been some confusion because of the failure to distinguish between—I can only call it the spitting distance of fire—diesel engine and the areawide air pollution effect. These are two specifically and separate things.

When I get caught behind that diesel part, or yourself, you take evasive action to drive around it, and so does everyone else. This has no relationship to whether it is a good or bad diesel. Even a good diesel well controlled, well fueled and well maintained emits this stink. This is completely apart from the question as to how many tons a day come out of diesel engines in a large area as compared to the tons that come out of other kinds of operations.

As we were writing the laws in California, we discussed the various things, and I can just picture your brother-in-law or my brother-in-law, I should say, who just bought a new automobile and paid an extra $40 or $50 for a tailpipe exhaust control device, who drives out of the new car dealer's showroom, and turns right at the next corner, and gets caught behind the first bus at the stop light and that bus takes off—he is going to come looking for me and say, "What is the matter, are you afraid of those guys—have they got you buffaloed? You make me spend my money to clean up my exhaust that nobody notices, and you let this man stink me out."

I appreciate that this is kind of a nonacademic language, but in very real terms it needs to be presented, I believe, to distinguish between the spitting distance of nuisance tanks and the areawide effect. It does become confusing.

And with respect to the localized spitting distance effect there is no reason why there should not be something done. There is every reason why there should be a national guideline on this, whether you are caught behind a diesel in Washington or in Detroit or anywhere else, whether it be 10 or 20 or 50 feet distance—it is the same, regardless of whether the wind is blowing or the sun is shining or not.

I would like to point out that one of the ways in which to get this kind of control developed—and there we have a technical problem in getting diesel exhaust controls and they are right now on the table, but none that we can reach and buy and install—and I am aware that there are none—we can do what we did in California, guarantee a market by legislation. We wrote State laws in California. We wrote in an X date in the law. It said, that on X date, when two devices are

certified that this was to assure competition—1 year after X date, or must have it, and then years after each will have it, and so on and so on.

You can do the same thing in Federal legislation by writing in an X date so that when two devices are certified as meeting the standards to be established by whatever agency you choose in this case, the Department of Health, Education, and Welfare, or whatever agency, for the spitting distance use effect alone.

And with the next generation of devices which may be 5 or 6 or 7 years from now, we may be able to establish standards for diesels for the areawide contribution, but I think that this kind of action which is in accord with the legislation which is before you can be truly helpful in meeting the troubles that we are faced with.

Beyond this I would like to point out to you that most of the air pollution control troubles that we talk about have not been technical problems for many, many years. You will note on page 6 of my prepared discussion that there is a brief rundown of the aids, of some of the kind of controls that do exist. They are now learning about these. There should be continued leadership in this kind of information which has been—I will not say concealed, but let us say that it has not been displayed before—this is very helpful and this is true even in the small cities, the city of 10,000 or 15,000 with 1 foundry that is messing up an area of a mile around it, and that foundry can be cleaned up for 3 percent a plant or 5 or 10 percent of the prime investment, and even at 10 percent of the prime investment, it only adds 1 percent to the cost of the product.

I hope that this has been helpful to you. I am open for any questions where I may be of assistance.

(The prepared statement of Benjamin Linsky, together with the document entitled "Is Clean Air Good Business and Better Health" follow:)

STATEMENT OF BENJAMIN LINSKY, PROFESSIONAL ENGINEER, PROFESSOR OF SANITARY ENGINEERING (AIR POLLUTION), DEPARTMENT OF CIVIL ENGINEERING, WEST VIRGINIA UNIVERSITY

My name is Benjamin Linsky. I am professor of sanitary engineering (air pollution) at West Virginia University in the department of civil engineering. I have been engaged full time in air pollution control since 1948. From 1951 to 1956 I was head of the city of Detroit's official air pollution control agency. From 1956 to 1963 I developed and directed the official San Francisco Bay Area Regional Air Pollution Control District, covering 6 counties and 70 cities. I was the 50th president of the National Air Pollution Control Association in 1956–57. I served on the U.S. Public Health Service Surgeon General's first National Advisory Committee on Community Air Pollution Control Association in 1956–57. I served on the U.S. Public Health Service Surgeon General's first National Advisory Committee on Community Air Pollution from 1957 to 1960. While I was in California, I served on almost all of the advisory committees to the State department of public health and the State legislature in drafting their motor vehicle pollution control laws and standards. I started the air pollution committee of the National Association of Counties. I am a member of the air pollution committee of the National Society of Professional Engineers and of several other organizations, including the American Society of Planning Officials, and am an affiliate member of the American Institute of Planners and the American Public Works Association. I received my academic degrees from Wayne State University and the University of Michigan, and I have held appointments as special lecturer and teacher at the University of California, Berkeley, Stanford University, and Wayne University. I am now chairman of the technical committee advising the State of West Virginia and the Federal Govern-

ment on its present study of air pollution in the Kanawha Valley, Charleston, preparing for the enactment of control regulations.

The Clean Air Act of 1963 took several important steps toward clearing the air for health and enjoyment of the people of this country. I am pleased to inform you that the providing of grant-in-aid funds for new and improved local air pollution control programs has resulted in one of my career graduates starting to work in the expanding West Virginia State air pollution control program. Another graduate student is dickering for employment this fall with a county control agency in another State. Neither of these control programs would have been able to expand without Federal support—to even approach the 25 to 50 cents per capita per year needed for a comprehensive air pollution control effort. The graduate training program I direct at West Virginia University receives most of its support from the Federal Division of Air Pollution. I have eight graduate students preparing for careers in this field. The university has also supported the program with State funds for laboratory equipment and for a special air pollution technical library of more than 11,000 publications and reports on microfilm, all of it highly cross indexed for rapid search and retrieval.

In addition, the Clean Air Act of 1963 provided specific legal tools for interstate air pollution control problems, many of which have been troublesome for dozens of years.

Proposed legislation.

Proposed legislation for air pollution control and solid waste disposal will, if enacted, take additional major steps and provide legal tools for other troublesome problems.

International boundary problems

Even before 1950, the city of Detroit and the city of Windsor, Ontario, were cooperating well in air pollution problems that didn't stop at the Detroit River bank. But we could not obtain adequate abatement of air polluion from ships passing through, nor from some industries in communities in the United States near but outside of Detroit's limits. We both went to the International Joint Commission, a treaty body, through proper channels. They undertook extensive studies and persuasion; but, as you know, actual legal enforcement tools must be available for occasional use in order to assure equal treatment. A legal mechanism for such situations is proposed in one of the bills.

Solid waste disposal

Information has already been available to you, I am certain, about the facts that solid waste disposal is one of the five king-sized financial and physical service troubles of cities, counties, industries, and institutions, generally ranking third behind roads and schools.

As an air pollution control specialist, I have always found it necessary to work on solid (and sludge) waste disposal problems, so that a year ago I designed a special course as one of five for our graduate students described as follows: C.E. 349. Solid Waste Disposal. 3 hour. PR; consent. Study of traditional patterns and problems of solid waste storage, transport, and disposal. Examination of various engineering alternatives with appropriate consideration for air pollution control, water pollution control, and land reclamation. Analytical approaches to recovery and reuse of materials; 2 hours rec., 3 hours lab.

The solid waste disposal course is taught by a team of three professors, each with different backgrounds. One is a civil engineer who knows about soil compaction, structures, and ground water drainage. I am a mechanical engineer who knows about material handling, incineration, air pollution, and city and county government organization and administration. One is a biologist who knows about bacterial degradation and the control of insects and rodents.

The Federal Government has a large financial stake in solid waste disposal costs and troubles, even though it has invested very little in research or engineering development to help itself or others.

Each of the Federal installations throughout the country (and abroad) generates various types of solid waste during ordinary operations. These include the whole range of traditional solid waste disposal problems, and from medical research animal cage sweepings to explosives and rocket fuels. Most federally supported activities such as roads, parks, slum clearance, flood control, and agriculture also have solid waste problems that need modern engineering developments. The costs of disposing of building demolition lumber without air pollution alone represents a total cost and a challenge that ought to be met. The

leadership that can be provided by the Federal Government is essential because hardly any city, county, State, or university can afford to run a full-scale experiment with its own funds, and few cities, counties, or States can stand the political heat of a full-scale experiment that fails.

The possibilities of salvaging and conserving natural resources in the form of minerals, fuel values, or vegetation nutrients should also be given appropriate consideration. Some of the salvage methods that may be developed may be profitable in the ordinary business sense, as has on many occasions been found in the past. Other materials and resources may be shown to justify subsidy for national conservation reasons.

Another type of conservation could be practiced widely at present, if there were adequate technical training and dissemination of information. I refer to the fact that there are several isolated instances, not widely known to most people, of land reclamation with solid wastes without any local annoyance during the operation. There is even a solid waste hill, in a flatland area, that serves as a toboggan slide in the winter and a pleasant play hill in the summer. Good engineering control is the key to success, if it is supported and authorized by better informed local legislative bodies—city councilmen, aldermen, county commissioners, etc.—and not objected to by better informed general citizens who now only know the messes they have seen and hate.

New ways of reclaiming land from which minerals have been removed could also be developed, especially if economists, lawyers, sociologists, and psychologists will join with engineers in working out new practical solutions, including citizen education.

Motor vehicle exhaust control

Many, if not most, cities in this country have stationary sources of air pollution so poorly controlled, even though practical controls are fully available at present, that automobile exhaust pollution is a minor factor. Some of these cities are gassy, dusty, and hazy beyond anything Los Angeles has ever experienced. But even in these cities, on windless sunny days, the "sun-burned" gases make it worse. Motor vehicles, including both diesel and gasoline engined types, emit hydrocarbons and oxides of nitrogen that are photoreactive to form new gases and microscopic droplets after some 20 minutes to 4 hours of sunshine. This is true even when the vehicles are so properly fueled and so properly maintained that they cannot be classed as blue smokers or black smokers or oil burning jalopies.

Of course, the diesel engines cause additional troubles with malodorous gases, and the gasoline engines cause additional troubles with carbon monoxide.

As you have learned, the present generation of motor vehicle exhaust control devices do not handle the malodorous diesel gases, nor do they handle the oxides of nitrogen. We can expect that when a market is guaranteed by proper laws for such improved devices, they will be engineered and made available.

In effect that is what we did when we wrote the laws in California. We wrote an X date into the law, which was the date any two devices were formally certified as meeting the standards for motor vehicle emissions.

We then set standards for carbon monoxide and hydrocarbons, and watched the competitors scramble to meet the market.

Some of these devices that were certified last year but are not being chosen by the automobile makers this year may still, with modification, meet the needs for even tighter hydrocarbon control, carbon monoxide control, and forthcoming oxides of nitrogen control and odorous diesel exhaust control.

In the legislation being considered by your committee there is some administrative leeway given to the Secretary of Health, Education, and Welfare in spelling out standards for motor vehicle exhaust control. It is my opinion that this is a better procedure than writing the standards directly into the law because it permits newer technical developments to be incorporated faster. This is especially important because better air pollutant measuring instruments are being developed rapidly.

We may soon expect to see a diesel stink-o-meter to be available that is better than the present meter plus nose combinations. The spitting distance effects of a diesel you are caught behind makes this source especially adaptable to national standards. There is little or no question about how many are operating in a given area, as there might be with gasoline powered vehicles. Each diesel is one you, yourself, take evasive driving action to get around. And the 2-cycle diesels seem to be worse than the 4-cycle diesels.

An old field—and new developments

Air pollutants of various kinds have been controlled here and there in a few citywide control programs and as a result of individual court and prelegal pressures for 100 years in this country.

It is now more than 50 years since good electrostatic precipitators were used on a cement plant or two.

It is more than 60 years since good bag houses of cloth filter collectors were used on a smelter or two.

It is more than 25 years since Los Angeles began to feel some twinges that had a slightly different sting than just their uncontrolled refineries, foundries, incinerators, etc. It has turned out to be a good thing they cleaned them up reasonably well or I believe that area would have had some recognizable disasters there, as we have had elsewhere.

But the most important result of the Los Angeles air pollutants is that they grew so rapidly the people could see it all happen and get mad enough to insist that control measures be applied. People in other localities are slowly learning that dirty branch plants in their towns have already been cleaned up in other towns, and they are getting mad about it and insisting on cleanups so that they can enjoy their homes and their cities, and so they can be attractive to modern industries that prefer cleaner air for their production and their employees' families.

It was 9 years ago, at a Great Lakes States Industrial Development Conference in Madison, Wis., that there was the first presentation of Linsky's First Law of Social Physics: "Bad mannered (air polluting) industries drive out and keep out well-mannered industries." It was at that conference that I learned about a new mattress factory that decided not to locate near an uncontrolled chemical fertilizer plant. I already knew about the problems of a bakery near an uncontrolled foundry.

To place all of this in better perspective, I know that you have recognized that there is no single answer, permanent solution to air pollution troubles and problems, or to solid waste disposal troubles and problems, any more than there is a single, permanent solution to education or traffic needs. We need to keep using our best minds and our best techniques and, hopefully, turn some of our troubles into opportunities for major gains.

It might be helpful to your committee to seek information about the costs of air pollution controls in terms that are familiar to businessmen and consumers alike:

(1) Percent of plant investment for equipment.

(2) Percent added increment to cost of the product.

I have taken the liberty of bringing along one table of figures giving such costs for cleaning up some gray iron foundry cupolas, which cause spitting distance as well as areawide troubles. It will also interest you to know that it costs less than 3 percent of plant investment to clean up a petroleum refinery, and the added cost increment on the product is just about zero, because some of the controls are profitable, although it may be at less than 2- or 3-year payout.

By comparison, 3 percent of a new car price of $2,500 is $75. In mass production, $75 pays for a lot of machinery, especially where there is a Government guaranteed marker. You can, for example, buy a sink garbage grinder, even after regular distribution for less than $50, and that is a lot of machinery.

One last comment, as a professional engineer whose first field was safety engineering:

I look forward to the day when gasoline engine exhausts are so well controlled that the hazards and deaths from accidental carbon monoxide poisoning become a thing of the past. Somehow it doesn't hit me as being very civilized, especially now when engines idle so quietly that you can hear the clock tick and forget the engine is running. Perhaps an earlier step will be an engine shut-off device when the carbon monoxide becomes too concentrated in the passenger area.

My last comment as an educator and as a citizen is that our "untidy society" so aptly named by Dr. Paul A. Miller, president of West Virginia University, can move a long way from that title if you enact the proposed legislation on air pollution control and solid-waste disposal, and then see to it that it is adequately funded and vigorously implemented.

We, in the universities, will do our best to furnish trained men, sound concepts, and usable facts.

IS CLEAN AIR GOOD BUSINESS AND BETTER HEALTH

Concepts and Phrases Used in Considering Air Pollution

Benjamin Linsky, P.E.
Professor of Sanitary Engineering
(Air Pollution)
Department of Civil Engineering
West Virginia University
Morgantown, West Virginia

SMOG AIR POLLUTION

Undesirable Effects:

On people,
On the things that people own, and
On the things that people like to do.

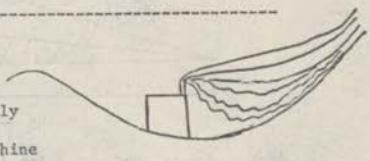
1. Annoyance to senses
2. Soiling
3. Interference with visibility
4. Sky darkening
5. Damage to vegetation
6. Damage to other property
7. Interference with production or services
8. Impairment of health.



Types of Pollutants:

Local — Large Dust
Droplets

Area Wide and Local — Very small dusts
Very small droplets
Gases
Primary polluting gases, directly
Secondary polluting gases, and
Double-Acting gases, after sunshine or in fog.



Single Sources: Nearby small source; farther large source

Multiple Sources:
Coal and heavy oil burning
Rubbish burning - industrial - commercial - multiple dwelling
Industrial processes
Residential rubbish burning
Motor vehicle exhausts
Etc.

The Weather and the Hills:

Don't create the pollutants
Sometimes hold man-made pollutants in an area:

Sunny days,
Foggy days and nights,
Other

Practical Controllability: - without economic ruin, for

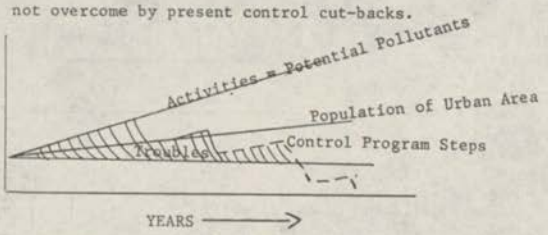
Almost all types of pollutants, now
Almost all types of sources,
The few remaining are now subjects of enough or too little engineering research and development.

Application of Practical Controls: - when

People learn they have been applied elsewhere.
People decide they want cleaner air - and insist on it, vigorously, with legislation resulting.

Growing Need for Technical and Legal Controls:

Growth not overcome by present control cut-backs.



More automated and precision industries want cleaner air for their new plants and new employees' homes.

Need for Presenting Specialized Technical Information in Non-Technical Language

More existing information is needed by non-specialists in air pollution.

Revised, 1956
Revised, 1957
Revised, 1963
Revised, 1964

The CHAIRMAN. Thank you for your presentation. It is a very fine statement. That is, the discussion of this matter from the academic standpoint as well as from the practical standpoint.

Do you have any questions, Mr. Rogers?

Mr. ROGERS of Florida. I, too, appreciate your most thoughtful statement.

Do you know of any research that would be helpful to require buses to place the exhaust pipe in the vertical position rather than in the horizontal position?

Mr. LINSKY. I know of work that has been done in the past. Right now my big fear is against it. My last recommendation, which was several years ago to the City Council of Detroit was against putting

the pipes vertically because there tends to be a collection of condensate while the bus is idling at the street corner, at a stop, and when the bus takes off, you get some of the condensates, which is black and dirty, raining down.

I have an ice cream colored suit which verifies that I have been caught in it myself. This by itself, I am afraid, would not be worthwhile. It would get you into other troubles. Even though it would minimize the spitting distance stink effect for the passenger, but I do not believe that it is a practical thing.

The CHAIRMAN. You could have one used for when it is raining and one used for when it is not raining.

Mr. LINSKY. This is condensate which develops because of the vapor formed in the combustion inside of the engine. It is not the rain.

The CHAIRMAN. I understand. You could get a device to put more air in and burn more of this.

Mr. LINSKY. If they burned it up, then it would be a solution.

The CHAIRMAN. Dr. Carter.

Mr. CARTER. You said that you could use the solid waste materials; that is, that that could be used to generate steam. Is that what you meant?

Mr. LINSKY. I am not taking personal credit for it. I am transmitting information which is known in our profession.

Mr. CARTER. That is a good idea. Are you suggesting that we build such? And then your idea about these sanitary landfills as ornaments which could be dressed up.

Mr. LINSKY. In a sanitary landfill, even when it is well engineered, you stop at the ordinary grade level, the established grade level of the area. There is no reason why they could not keep on going up and to screen it from view. You can build a dike around it, a solid dike, which you keep extending up, so that you are working inside and the people do not see it from around.

Mr. CARTER. This is part of the landfill proposal?

Mr. LINSKY. Correct. But it provides for more days and months and tons of material on the same acreage when acreage is in short supply and it provides a view spot for areas that are short of view spots in flatlands.

Mr. CARTER. Thank you very much. You have made an excellent statement.

The CHAIRMAN. Mr. Mackay.

Mr. MACKAY. I want to thank the witness for a tremendously interesting presentation. I was interested in his distinction between "troubles" and "problems."

Can you give us any percentage in the solution of pollution where you would acquire troubles and not problems?

Mr. LINSKY. I will make a stab at it, sir. If you will accept this simply as a ball-park estimate. In some areas that are in tight trouble and have done all that they could with their troubles—in Los Angeles their problems are 80 percent of their troubles. That is, their problems in Los Angeles. In the rest of the country the troubles are 70 to 80 percent of the troubles.

In other words, they are simply not doing as well as we know how to do given legislative determination and a policy budget and the like.

Mr. MACKAY. You said that it was politically untenable until somebody came in and showed how you could handle the landfill next to a subdivision. That certainly has not come to the attention of the local government officials in my county.

Mr. LINSKY. May I suggest a visit to some of the sanitary landfills that are being operated in the Los Angeles County? The name of the contact person that comes to mind immediately—there are two people—Frank Bowerman of the Los Angeles Sanitation District, and Ralph Blage, who, I think, is in the room, who heads up your Federal program. He came out of California. I was sorry to lose him. He was out there. These two people could show and ought to be able to provide very good movies of a good, well-run sanitary landfill that you would not be ashamed of 100 feet from your home.

The CHAIRMAN. Thank you very much, Professor Linsky. We are very glad to have had your testimony. I notice that you have some inclusions in your statement. These will go into the record along with your statement.

Mr. LINSKY. Thank you very much.

The CHAIRMAN. Give Ervin Stewart our regards.

Mr. LINSKY. I will be very pleased to do so.

The CHAIRMAN. Our next witness is William H. Cary, Jr. You are appearing here for the Conference of State Sanitary Engineers, are you not?

Mr. CARY. Yes, sir.

The CHAIRMAN. You may proceed.

STATEMENT OF WILLIAM H. CARY, JR., CHIEF PUBLIC HEALTH ENGINEER, DISTRICT OF COLUMBIA, DEPARTMENT OF HEALTH, ON BEHALF OF THE CONFERENCE OF STATE SANITARY ENGINEERS

Mr. CARY. Mr. Chairman and members of the committee, my name is William H. Cary, Jr., and I am the Associate Director for Environmental Health in the District of Columbia Department of Public Health, and as such, the Chief of its engineering activities. I am a registered professional engineer, and have had nearly 40 years' experience in public health engineering practice.

I am here today to testify on behalf of the Conference of State Sanitary Engineers regarding the provisions of S. 306, to amend the Clean Air Act and for other purposes. The Conference of State Sanitary Engineers consists of the chief sanitary engineers of the 50 States, District of Columbia, Puerto Rico, and the Virgin Islands. We are, therefore, on the firing line in the field of environmental health.

We are very pleased to see Congress take such interest in the widespread and ever-growing waste problems facing our expanding urban areas and communities.

The conference is pleased to give support to the bill under consideration here. The general intent and purposes of this bill have our full support. There are some comments regarding a few specific items which will be considered shortly.

Two years ago the conference concurred with Congress on the need to intensify the attack on air pollution, and supported legislative proposals which led to the passage of the Clean Air Act in December

1963. This was covered by the statement presented by Meredith Thompson—page 260–264 of the hearings before a subcommittee of the Committee on Interstate and Foreign Commerce, 88th Congress, 1st session, on H.R. 4415, H.R. 4750, H.R. 3507, and H.R. 4061, March 18 and 19, 1963.

The conference, by resolution, at their meeting in June 1964 urged that the program developed under the Clean Air Act provide for: (a) establishment of meaningful liaison between State and Federal programs, (b) realistic financial support for programs which will result in a maximum of effectiveness and productivity for each grant dollar appropriated, and (c) State participation in all contacts between the Federal program and municipalities. Further, the conference identified the duties and responsibilities which must be assumed and developed in State programs. This action was subsequently supported and endorsed by the Association of State an Territorial Health Officers with an accompanying recommendation that the States with minimal legislation seek to obtain stronger legislative authority.

We strongly support and urge the passage of those portions of this bill which would establish at national level, requirements and standards for effluent discharges from new vehicles. In this manner uniform requirements will prevail throughout the country and this makes sense, both from a health as well as an economic standpoint.

While we believe that the legislation requiring a reduction in air pollution from these automotive sources should be national in origin and scope, and should be promulgated as soon as practicable, caution should prevail in establishing effective control dates. An enforcement program should be preceded by the development of demonstrably successful control devices and the establishment of workable control facilities.

We have a problem before us for which at this moment there is no totally adequate solution. If we are to equip all new internal combustion engines with devices to control emissions from both crankcases and exhausts, and we think this should be done, some method of policing their continued operation must be available. This has not yet been established on a practicable basis. In addition, State and local agencies will need to provide enforcement staff and facilities. We support the legislative authority and funding required to make such State programs possible.

In order to resolve some of the basic scientific problems and to apply such knowledge to the practical control of air pollution, the conference supports the establishment of a Federal air pollution control laboratory. This is an urgently needed support facility to all of our activities—local, State, and National—in the prevention and control of air pollution.

Many current solid waste disposal practices are inadequate, inefficient, and present major public health problems, including a substantial contribution to air and water pollution. The open dump which, unfortunately, is the all too common method used by most of our communities, also adds a new dimension to our pollution terminology—"land pollution." Rats, flies, and other vermin all find harborage and food in the dump—but not all of them linger at the dump. They travel to nearby residences, causing environmental public health problems there as well as at the unsightly, odorous dump. The thick

clouds of smoke are generally more easily identified than these other hazards, but they all are very real public health problems. Blight to the landscape and defilement of the natural scenery are inconsistent with the objectives for a beautiful America highlighted by the President.

We therefore recommend the enactment of comprehensive legislation to provide Federal leadership and assistance on solid waste problems. We feel the emphasis placed by S. 306 upon the research and development aspects of solid waste disposal, including collection and storage, is certainly justified and needed. Funds, research, development, plans and time are all needed before a mass facility construction program could be profitably implemented. Unfortunately, the state of the art of solid waste disposal is not as far advanced as it should be when compared with our present-day complex technology in other fields. This is due primarily to a lack of research support in this very important field.

The general lack of adequate solid waste programs on both the State and local levels also points to the need for Federal leadership in this area. By making areawide surveys, studies, and plans; by providing money, manpower, and technical assistance; and by demonstrating urgently needed new methods and procedures, both State and local, the Public Health Service would be able to do a great deal nationally toward diminishing the serious solid wastes problems facing most of our communities.

There are two provisions of S. 306 which give us some concern and on which we recommend changes. The first is that we believe that the designation of air pollution agencies to receive grants for solid waste surveys and planning is too restrictive because the problem of solid waste disposal has much broader effects than air pollution alone. Most of the job to be done in conducting surveys and planning is only partially related to air pollution. We believe that other competencies are required in solutions of the total problem of solid wastes and that the designation of air pollution agencies as recipients of these grants is too limiting. We recommend that your committee consider modifying section 206 to provide for designation of the appropriate State agency nominated by the Governor. This will permit a State to use its resources in the most beneficial manner.

The second point on which we offer a suggestion is that the authority for grants (sec. 204) be broadened to include surveys, studies, and investigations. We believe that these additional functions will be extremely useful and important in initiating and developing effective solid waste programs in the States and communities.

In summary, the Conference of State Sanitary Engineers believes that S. 306, modified as recommended, would be an important legislative step in coming to grips with automotive exhausts and solid waste problems because it emphasizes the improvement and application of advanced technology in the field. We believe that with this type of assistance our States and local communities will be better equipped to handle their responsibilities of providing services which are essential to health, and general welfare and safety.

I appreciate the opportunity to appear before your committee to present the views of the Conference of State Sanitary Engineers. We hope that you will find our comments helpful and that you will give them favorable consideration.

Mr. ROGERS of Florida (presiding). Thank you very much, Mr. Cary. We do find your comments very helpful. We are very appreciative of your taking time to present the comments of the State Conference of Sanitary Engineers.

Do you have any questions, Mr. Carter?

Mr. CARTER. No questions.

Mr. ROGERS of Florida. As I recall, the District of Columbia did have a program on air pollution a couple of years ago.

Mr. CARY. We are establishing a program at this present time, sir. We do have an air pollution problem right in this community.

Mr. ROGERS of Florida. I am aware of that.

Mr. CARY. Our particular problem here is automotive exhausts. We believe that the establishment of some national standards and the requirement of these devices on most vehicles will be most helpful to us. Our automobiles are primarily transient automobiles, many of them coming in from neighboring States. We do not believe that the District itself should take this action, because only a small portion of the cars that create the problem in the District would actually be repaired or changed or modified.

Mr. ROGERS of Florida. You do not think that it would affect the problem by requiring all of the vehicles in the District of Columbia to have these devices?

Mr. CARY. My feeling is this, sir, that if the District of Columbia, by itself, as a single jurisdiction in this metropolitan area, should take this action to require these devices, with the cars that come from tourists across the country, and the automotive industry, the trailer business, and the cars that come into the District from Maryland and Virginia, unless these were equipped also, it would not be an effective program.

Mr. ROGERS of Florida. I agree that it will certainly be more effective to have it nationwide. Of course, this is the purpose of this legislation, but I do not share your feeling that it would not be of benefit to do something here. For instance, I doubt if most of the visitors get into this morning and afternoon rush with all of our employees coming in and out of town and going to their homes or going to work. And that is what I get caught with. I do not see too many visitors at that time, but they are people here going to or coming from work.

Mr. CARY. That is correct, sir. I agree with you entirely.

Mr. ROGERS of Florida. What is the District of Columbia doing?

Mr. CARY. The District of Columbia has one of the six national continuous air monitoring stations here. We are cooperating in this national network. We are establishing a program of local control, of local nuisances. At the moment we are looking to some national leadership in the problem of automotive exhausts.

Mr. ROGERS of Florida. As I recall it, a couple of years ago there was a drive on, that they were stopping automobiles with very heavy emission, that is, the police were during that period.

Mr. CARY. This is continuing, sir. This is a local problem that we are dealing with.

Mr. ROGERS of Florida. Do you have a local regulation on this?

Mr. CARY. Excessive smoking is covered by a local regulation on cars.

Mr. ROGERS of Florida. What can be done about it?

Mr. CARY. Locally registered automobiles can be required to be repaired to the point where they do not discharge this heavy smoke, but this is not the entire problem.

Mr. ROGERS of Florida. I understand that. You said this is being done?

Mr. CARY. This is being done.

Mr. ROGERS of Florida. I had not heard of it for a couple of years.

Mr. CARY. This is one of the continuing programs. You have not probably heard that we are chasing rats and would not, unless it was called to your attention. We do have a continuing program in this connection. All cars are inspected at least once a year. This is one of the points of examination.

Mr. ROGERS of Florida. How many would you say within the last year have been stopped and have been required to have their automobiles repaired?

Mr. CARY. I would have no notion.

Mr. ROGERS of Florida. Would there be any record of this?

Mr. CARY. I do not know whether this could be developed as a fact, but a number of them have come to my attention where people have complained about a particular car, and this complaint has been transferred to the proper authority for action and that includes some of our buses, too.

Mr. ROGERS of Florida. The buses, too?

Mr. CARY. The buses, too. We are working with the local bus company now on an experiment, in trying to control their exhaust problems with a device. One of the larger manufacturing companies is providing some devices. The bus company is providing some buses for this experiment.

We have not been very successful with that, but it is a step in the right direction. This kind of experimentation has to be carried out.

Mr. ROGERS of Florida. I wonder if you could submit for the record of the subcommittee information as to what you are doing in this field. I think that it would be helpful and to have the information as to the results you have had to date with an evaluation of this. That would be most helpful to the committee.

Mr. CARY. I will be glad to submit all of the information we have.

(The information referred to follows:)

AIR POLLUTION CONTROL IN THE DISTRICT OF COLUMBIA

The existing program for control of air pollution in the District of Columbia is comprehensive and has been developed over a long period of time. Perhaps the earliest legislation on air pollution was passed on November 19, 1875, and it is still enforced by the Department of Public Health. In essence, it covers so-called present-day public health nuisances which are concerned with odors, noxious gases, and dusts, resulting from certain natural causes or offensive industrial trades. There are also penalty and severability provisions. Since its inception, its legal effectiveness for controlling air pollution has been demonstrated by the Department of Public Health in proceedings conducted by the corporation counsel.

As urbanization developed this early ordinance on public health nuisances also served as a basis for regulations enforced by other disciplinary District agencies. For example, with the creation of a District Zoning Commission, by an act of Congress in 1920, regulations were subsequently adopted to prohibit those offensive trades which were previously recognized as being potentially a nuisance to the public.

Vehicular exhausts

In 1961, the District of Columbia traffic and motor vehicle regulations were amended to prohibit motor vehicle exhaust emissions darker than Ringelmann No. 2. As a result of this action, vehicles are checked at stations of the Department of Motor Vehicles for excessive exhaust smoke as a part of the required annual inspections of all motor vehicles registered in the District.

The effectiveness of measured used to detect and bring under control improper discharge of exhaust gases from vehicles within the District is revealing by reviewing the current data furnished by the Department of Motor Vehicles. In the registration year of 1964 (April 1, 1964, through March 31, 1965) there were a total of 358,880 inspections made of 238,824 vehicles for all types of defects. Excessive smoke violations were found and subsequently corrected in 2,654 (1.1 percent) of all vehicles inspected. The types of vehicles involved in the smoke violations were as follows:

	Vehicles	Percentage
Passenger cars	2,172	81.7
Trucks	206	7.8
Motorcycles	7	.3
Taxis	257	9.7
Buses	12	.5
Total	2,654	100.0

While these data disclose the effectiveness of the control procedures it precludes the manner in which the violations were initially detected and brought to the attention of the authorities. For this detailed information one month was selected at random and the records were examined. The month of April 1965 turned out to be a normal period and the data approximated one-twelfth of the total for the preceding year. There was an estimated total of 230 vehicles cited for smoke violations. Of this total there were 211 passenger cars, 12 trucks, 2 motorcycles, 4 taxis, and 1 bus. It is noted that passenger cars caused 92 percent of the violations. It is also of interest that of the 52 passenger cars referred to the inspection agency, most were from the Metropolitan Police Department with other referrals resulting from complaints by the public. Thirty-four of the referral cars were registered in the District, 16 in Maryland, and 2 in Virginia. In this sample 35 percent of the offending passenger cars observed on streets were from the two neighboring States. Public participation in reporting the license numbers of vehicles having excessive smoke to the authorities is helpful to the program.

Smoke abatement

The District of Columbia has had an active and effective smoke abatement program since 1936. The Congressional Act (P.L. 279, 74th Cong., 1st Sess.) was approved, August 15, 1935. The enforcement program is conducted by the Department of Licenses and Inspections. The regulations are, in general, similar to other smoke abatement regulations in that the Ringelmann Chart is used as a standard and considerable emphasis is placed on design features of fuel-burning equipment.

Although an act of Congress approved July 29, 1892, prohibits open burning between the setting and rising of the sun, it has been necessary to permit controlled open burning by the city of collected municipal refuse and by demolition contractors of building debris because of the lack of suitable and sufficient inceneration capacity.

A 12-month record of activities by the Department of Licenses and Inspections, during the period of June 1964 through May 1965, is summarized as follows:

Total smoke complaints received	417
Self-initiated field of observations	1,709
Violations found and corrected	147

Most of the activities occur from November to March due to the peak season for heating.

Technological programs

It is apparent that the aforementioned enforcement agencies are dependent upon organoleptic detection by these agencies and the public of contaminants in

the atmosphere. The agency responsible for refined measurements and effects of air pollution is the Department of Public Health. This Department has the several professional disciplines which are essential to conduct a comprehensive program to protect the health and welfare of the public. The program is supported by laboratory and field equipment and facilities, and maintains close liaison with the Public Health Service.

The Department of Public Health functions as the District's agency to participate in the several national air evaluation programs conducted by the Public Health Service. These are:

1. The operation of a continuous air-monitoring station since 1962 for automatic analysis and recording of carbon monoxide, sulfur dioxide, nitric oxide, nitrogen dioxide, ozone, total hydrocarbons. There are only seven such stations in the country where such data is collected for comparative purposes. Some of these contaminants are related to automotive exhausts; while others are associated with either natural phenomenon or effluents from the combustion of fuels. These data are automatically recorded continuously on charts and at 5-minute intervals on tape for automatic data processing. Soiling tests are being conducted and rainfall data has been collected at this station.

2. Since 1952 the District has joined more than 200 other areas in the national air sampling network to establish dust loading and to detect particulate constituents of the atmosphere. Although the District results compare favorably with the other urban stations, lower values are generally found in rural areas.

3. Exposure of metal plates to the air is currently being conducted for a 5-year period to measure the corrosive effects due to the elements and contaminants in the air. These studies will not be concluded for 2 more years. The District area is one of the eight national panel testing sites.

4. Similar panel exposure studies are underway to observe the effects on several types of fabrics dyed with a variety of colors. The District is one of the seven areas in the country where this study is being conducted.

In addition to these measurements the Department of Public Health is an active participant in an oxidant sampling network established by the Air Pollution Advisory Board of the Metropolitan Washington Council of Governments. Daily samples are collected and analyzed since oxidants are associate with eye irritation. Results indicate that several days in a year the oxidant levels are of such magnitude to cause an adverse effect.

While these technological studies are of real value and are an index to the existence of substances usually believed by the general public as having a prime bearing on air pollution, evidence is rapidly being accumulated that the total air pollution problem is much broader in scope. For instance, a substantial part of the population, estimated from 5 to 10 percent, is affected to varying degrees to airborne allergens. Others are susceptible to chemical sprays used to control insect infestation in urban foliage. These newer problems are on the horizon and the Department of Public Health is preparing to meet them for the benefit of the public but such ventures requires the full cooperation and understanding of all segments of the society.

Mr. ROGERS of Florida. We thank you very much.

I feel that Washington is developing very rapidly an air-pollution problem that is going to require even more effort on the part of the local people, as well as the Federal leadership and help, too. I would agree with you that we need that, too.

Thank you very much, again, Mr. Cary. Your testimony has been most helpful.

Mr. CARY. Thank you.

Mr. ROGERS of Florida. The next witness will be Mr. M. J. Mighdoll, executive vice president of the National Association of Secondary Material Industries, Inc.

If you would like to file your statement and give us your impressions, it would be acceptable.

STATEMENT OF M. J. MIGHDOLL, EXECUTIVE VICE PRESIDENT, THE NATIONAL ASSOCIATION OF SECONDARY MATERIAL INDUSTRIES, INC.

Mr. MIGHDOLL. Mr. Chairman and members of the subcommittee, my statement is quite brief, and I can read it very rapidly.

My name is M. J. Mighdoll. I am executive vice president of the National Association of Secondary Materials Industries, Inc., with headquarters at 271 Madison Avenue, New York City.

The National Association of Secondary Material Industries, Inc., represents approximately 600 of the leading firms in the Nation concerned with the collection, preparation, and utilization of the many types of secondary materials that have a vital place in our economy.

Our association is seriously concerned with the present wording of S. 306, since it unfortunately does not draw a clear line between the materials of economic substance handled by our industry and that which is truly "waste." Since it is actually our industry which plays a leading role in reducing the "solid waste" problem and provides the chief means of transforming that which would otherwise be discarded into an economically valuable material, it would certainly seem that our industry, and the commodities having economic value handled by it, should be clearly placed outside of the scope of this legislation. Governmental assistance certainly should be directed clearly toward the explicit "solid waste" areas where the absence of economic value results in the lack of normal disposal channels.

Therefore, to provide a clear definition in this regard, we respectfully propose and suggest that paragraph (d) of section 203 (line 24, p. 19) of S. 306 be amended to read:

"The term 'solid waste' means garbage, refuse, and other discarded solid materials, including solid-waste material resulting from industrial, commercial, and agricultural operations, and from community activities, *with no direct commercial scrap value in their present form.*" (The italic indicates proposed addition.)

We believe the addition of the above words are most important to the definition of "solid waste" in order to properly differentiate those materials currently causing the waste disposal problems from those commodities with value being properly and successfully handled by private industry.

Our association is primarily concerned with secondary nonferrous metals, paper stock, textiles, rubber, and plastic. We have, for instance, as one of our groups, the nonferrous scrap metal dealers, whose activities include the collection of many types of nonferrous items from industrial and local collection sources as well as highly specialized segregation and preparation of this material necessary for sale and shipment to consuming mills. Another of our divisions is actually comprised of these consumers of scrap metals and this segment of our association includes practically all of the leading smelters, refiners, ingotmakers, and others who depend upon scrap metals as a key raw material in the manufacture of their product. Similar economic functions are performed in the fields of paper, textile and rubber,

and plastic by other segments of our industry as represented in the association.

There can be no doubt as to the economic significance of our industry. The facts will clearly and quickly show that the raw materials supplied by our industry represent a substantial portion of the total raw materials supply utilized by our Nation's industrial complex. Here are some key facts to point up this economic reality:

Approximately 40 percent of the supply of copper is recovered from scrap.

The quantity of lead annually recovered from scrap has risen from insignificance in 1900 to over one-half million tons in recent years, surpassing by a wide margin the lead supplied from domestic ores.

It has been estimated that the annual business volume of aluminum scrap now totals more than $200 million, and represents about 25 percent of the total aluminum supply picture.

The Paley Report stated:

> The recovery of scrap in the secondary metal market is essential for the economic operation of the metal industry.

Consumption of paper stock processed by this industry is now nearing the 10 million ton level per year and represents about 25 percent of the raw materials supply utilized by paper and board mills.

The value of sales by textile waste dealers and processors has recently been estimated at approximately $300 million.

Reclaimed rubber counts for over 15 percent of the total rubber consumption in the United States.

There are many more statistical facts that can be cited to dramatize the great usefulness of the secondary material industry and its $5 billion annual volume to the Nation's economy. This economic importance has received high commendations over and over again—in times of emergency and in peace—by Presidents of the United States, by Congress, and by numerous other high Government officials.

Of equal importance to the economic significance of this industry is the proper understanding of the manner in which it operates and the sources of raw material on which it depends. The secondary materials industry is dependent on a vast collection system which enables all scrap materials having an economic value to reach the marketplace. At the local community level, there are the small "retail" scrap collectors whose function is to buy secondary materials from small business establishments, farms, and the general public. This scrap, often only segregated in a very basic way, is then sold to "wholesale" dealers whose technological know-how and equipment permit their processing the material into the detailed categories required, with contaminants and impurities removed, to be suitable for the eventual consumption by mills.

It is not necessary to carry our economic cycle beyond this stage to appreciate the role performed by the secondary material dealer as he is related to the local or national scene. It is obvious that this segment of our industry enables many thousands of byproducts of factory, farm, and home to have an economic value and to replenish our country's raw material supply. Just as industry is dependent upon our members for much of its raw material supply, so is the general public from the standpoint that this recovery of secondary materials minimizes the waste left unusable throughout the country.

Can you imagine what our cities and countryside would be like had not this industry pioneered and developed means of collecting, processing, and utilizing secondary materials. Today, the consumption of secondary materials is expanding with the growth of our economy itself and with the development of new means of utilizing the ever-increasing array of metals and other commodities comprising our products of living today. Increased automation and technology have made great strides in enabling our industry to handle the demands of volume and production operations. These growth factors and new techniques truly make our industry more important than ever as an industrial reclaimer, a direct adversary of "waste."

It is, therefore, our contention that those who are concerned with minimizing "solid waste" should also be interested in protecting the interests of the secondary materials industry in view of the valuable functions it performs. The failure to limit the scope of the meaning of "solid waste" as it applies to the provisions of S. 306 would cause serious repercussions for our industry should funds be made available to nonindustry sources for operational activities in competition with our industry. There could be chaotic consequences within our highly competitive industry, if the very funds intended for the solution of "solid waste" problems were actually utilized in a competitive manner, harmful to the industry responsible for recovering reusable secondary materials.

We do not believe competition with and disruption of our industry is intended by this legislation and, therefore, to avoid these disastrous results we recommend adoption of the revised definition of "solid waste" as previously stated.

Mr. ROGERS of Florida. Are there any questions, Mr. Carter?

Mr. CARTER. No questions.

Mr. ROGERS of Florida. Let me ask you this, please. Do you feel that there should be a complete exemption, then, for anything that is handled by your industry?

Mr. MIGHDOLL. Yes, sir; basically that is true. The economic value of the overwhelming proportion of the secondary materials handled by our industry, in our opinion require no Federal program to cope with this. The material has economic value. It flows in normal ways back into industry. We do not feel that the funds of the Federal Government should be placed in the hands of those who would be in competition with our industry.

Mr. ROGERS of Florida. I would presume that anyone who wanted to get rid of this type of material would have to spend money in trying to get rid of it and it would bring them no return. Would this not be true?

Mr. MIGHDOLL. That would be true of solid waste with no economic value. The past has been dotted, however, with instances where Federal funds of Federal agencies have been used to compete with private industry. We have had several instances of that in the past.

Mr. ROGERS of Florida. And someone goes out to buy the waste material just to destroy it?

Mr. MIGHDOLL. No, sir—to resell it, just as our industry does. At one time, to cite an example, the Department of Defense was operating an aluminum sweating operation in direct competition with our indus-

try and later legislation was passed to limit this to situations which were only in the national interest. The problem was resolved.

There are State and city governments trying to solve the solid-waste problems who are also expanding beyond what we consider the disposal of solid wastes.

Mr. ROGERS of Florida. Thank you very much, Mr. Mighdoll.

Mr. MIGHDOLL. Thank you.

Mr. ROGERS of Florida. The last witness this morning will be Mr. William A. Xanten, representing the American Society of Civil Engineers.

We shall be glad to hear from you now.

STATEMENT OF WILLIAM A. XANTEN, REPRESENTING THE AMERICAN SOCIETY OF CIVIL ENGINEERS

Mr. XANTEN. Mr. Chairman, and members of the subcommittee, I am here representing the National Society of Civil Engineers.

The official position of the American Society of Civil Engineers, backed up by the action of their solid wastes committee and the executive committee of the Sanitary Engineering Division, is as follows:

> The American Society of Civil Engineers has long recognized the need for a strengthened national effort to improve programs for solid waste disposal and endorses the recommendations in the President's message on natural beauty which in essence stated:
>
> (a) Assist the States in developing comprehensive programs for some forms of solid waste disposal; and
>
> (b) Provide for research and demonstration projects leading to more effective methods of disposing or conservation of solid wastes.
>
> The American Society of Civil Engineers strongly supports Federal legislation which would accomplish these objectives and offers to provide technical counsel to appropriate committees of the Congress on solid waste disposal engineering and management matters. Copies of this resolution shall be transmitted to interested congressional committees for their information and consideration.

While the above resolution constitutes an unequivocal general endorsement of Federal action in the field of solid wastes as contemplated by a number of bills before this committee, including S. 306, and while I am here primarily to present the formal position of the ASCE on the subject, may I also take the opportunity to briefly express some views which may be of some use to the committee in their consideration of this entire matter. Before doing so, it would appear to be appropriate that I qualify myself to some extent on background and experience.

I am now in private practice as a consulting sanitary engineer, have retired after 40 years of service in the Division of Sanitation of the District government, the last 30 years of which I was director of the Division. During this period I have been active in a number of professional societies and committees, a past president of the American Public Works Association, and chairman of the National Advisory Council of Keep America Beautiful, Inc. I am affiliated with the engineering firm of Black & Veatch of Kansas City, Mo., and for the past 5 years have been acting as solid wastes consultant to the Pan American Health Organization.

After what is obviously a lifetime in the "garbage" business, with a voice which many times seemed to cry out in the wilderness, you can imagine my emotion and deep sense of gratification at the oppor-

tunity of being heard on this subject at such a time and place. The field of solid wastes handling is so broad, and the time is so ripe for a strengthened national effort, it is difficult to do justice to the matter within the space limitations to which I feel I must adhere at this moment. Nevertheless, I shall attempt to point out what I consider to be some of the most compelling factors involved, and the justification for a "day in the sun" for solid wastes.

Much attention is being given, and rightly so, to the problems of air, water, and land pollution. It is incontrovertible that all three of these elements are involved, and heavily so, by present methods of land filling and incineration of enormous quantities of solid wastes. Without considering the impact of agricultural and industrial solid wastes, it can be estimated that the daily production of commercial and household wastes alone approximates 500,000 tons (some 2 million cubic yards). To prevent pyramiding, this staggering volume, like the U.S. mails, must be handled daily, and must find its way to low ground either in the form of incinerator residue or raw refuse. The air, water, and land contamination involved in such methods is obvious, and yet the technology and research in the solid wastes field has been relatively neglected.

Many reputable engineers have stated that the economic and technical complexities involved in the collection and disposal of solid wastes, and the lack of standard, or straight-line solutions to the problems of the larger communities, have kept them from entering the field. Without being too facetious, one could also say that the officials engaged in the work have largely been so busily engaged in performing the daily task, and finding immediate solutions to their problems, that they have not had much time to devote to the technical and progressive aspects. The stark truth is, however, that there is a great need to upgrade scholastic training and engineering talent in this field.

In summing up the National Conference on Solid Waste Research, at the University of Chicago in December 1963, Dr. Ross E. McKinney, chairman, Department of Civil Engineering of the University of Kansas, stated:

> There are challenges in fundamental reseach for the investigator who wants to probe the basic mechanisms of the various aspects of solid wastes. We need biological and chemical research in compositing, in sanitary landfill, in collection and storage, and in new treatment methods which have yet to be devised.

He stated further:

> We need a change in attitude as to the importance of engineers and scientists who are concerned with this aspect of environmental health. * * * The universities form the foundation for teaching and research. If the foundation is weak, the structure above it will fail. In the past the universities have failed to accept their responsibilities in solid wastes.

With these views I heartily concur. I would include as an area for fundamental research the desperate need for more economical and nuisance-free methods of incineration; which as of now constitutes an almost unavoidable approach in the large cities for optimum consolidation and short haul, particularly in regions where available land for filling is rapidly disappearing.

Under modern-day conditions, and in the face of ever-increasing per capita production and constant changes in the quality of solid

wastes, it is quite inevitable that the cost of performing the housekeeping functions of collecting and disposing of the great variety of solid wastes, including street sweepings, tree debris, refuse, demolition waste, sludge, catch basin cleanings, jalopies, refrigerators, and a host of other items, large and small, putrescible and nonputrescible, will continue to skyrocket. It has been estimated that the outlays have reached approximately 2½ billion annually. Of perhaps greater importance, however, is the complete absence of conservation procedures of any magnitude in dealing with the problem, brought about primarily by the absence of markets in most localities for potential by-products, or salvageable items, particularly in ferrous metals. Along the Atlantic seaboard, from Washington, D.C., to Boston, Mass., it is believed that something in the neighborhood of 2 million tons of miscellaneous ferrous metal in the form of tin cans, and so forth (and I might say not including jalopies) is being deposited in landfills. Here again is an area for some study and research, logically at Federal levels.

I am sure your attention has been brought to the report of the APWA Research Foundation (project No. 113) on solid wastes research needs, as well as to the current activities of the Academy of Science, Committee on Pollution, who are including in their studies the impact of solid wastes on land, water, and air pollution.

The extent of the official position of the American Society of Civil Engineers is that recorded in the resolution. I trust that it, and my own brief statement above, will serve a useful purpose in your deliberations.

Mr. ROGERS of Florida. Thank you very much, Mr. Xanten. It is most helpful. We are grateful to you for appearing here.

Are there any questions?

Mr. Satterfield. No questions.

Mr. ROGERS of Florida. Mr. Carter?

Mr. CARTER. No questions.

Mr. ROGERS of Florida. Let me just ask you this question.

The previous witness, Mr. Mighdoll, said that they were handling all of this ferrous metal and did not want any agency to get into it. And now you tell me that they are not doing a very good job of handling it.

Mr. XANTEN. No, sir.

Mr. ROGERS of Florida. With these many million tons of ferrous materials that are being put into these landfills. Is Mr. Mighdoll still here, or has he gone?

(The following letter and supplementary statement were received later from Mr. Mighdoll:)

NATIONAL ASSOCIATION OF
SECONDARY MATERIAL INDUSTRIES, INC.,
New York, N.Y., June 21, 1965.

Representative OREN HARRIS,
Chairman, Subcommittee on Public Health and Welfare, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR REPRESENTATIVE HARRIS: I want to express my appreciation to you and the members of your subcommittee for providing us the opportunity to present testimony at the hearings on S. 306.

We believe it most important that the subcommittee consider revising the definition of "solid waste" in order to assure that the activities and funds

authorized under this legislation be properly used for the real waste problems in this country, not for activities competitive with our industry which handles material of economic value.

After our appearance before the committee, the latter witness, Mr. William A. Xanten, was asked certain questions by Representative Rogers, which we believe need clarification. Representative Rogers sought to have me clarify this matter directly but, unfortunately, I had already left the hearing room. Therefore, I have attempted to provide a clarification in the enclosed supplementary statement and ask that it be made part of the record of the hearing.

We hope the subcommittee will give serious consideration to the views expressed in our statement and will agree an amendment in the definition of "solid waste" is necessary in order to avoid serious consequences with the handling and flow of secondary materials into the Nation's economic supply lines.

Thank you again for your kindness in making our appearance possible before the committee.

Sincerely yours,

M. J. MIGHDOLL,
Executive Vice President.

SUPPLEMENTARY STATEMENT OF M. J. MIGHDOLL, EXECUTIVE VICE PRESIDENT OF NATIONAL ASSOCIATION OF SECONDARY MATERIAL INDUSTRIES

Reference is made to the testimony of William A. Xanten, representing the American Society of Civil Engineers. Following Mr. Xanten's prepared testimony, Representative Rogers raised a question in connection with a statement Mr. Xanten had made regarding "miscellaneous ferrous metal" which, according to Mr. Xanten, was not being consumed by the scrap industry. Representative Rogers inquired as to the relationship of this statement to earlier testimony I had presented.

Without having any specific knowledge of the statistical example used by Mr. Xanten, it would seem that the point being made by Mr. Xanten is not in conflict with statements made earlier by me, but rather reemphasizes the importance of establishing delineation between secondary materials having economic value and solid wastes which, by the very nature of their physical composition, do not have commercial value in their present form. Our association well realizes that there are considerable amounts of solid waste—that is, materials of all types having no or insufficient economic value to warrant the processing of them by regular industry outlets. Such items lacking economic value are solid waste and should be clearly designated so in S. 306.

Our recommendation for redefining solid waste would establish an economic base in order to assure that the activities and funds that would be authorized by S. 306 would be utilized for the true solid waste problems, such as those concering Mr. Xanten. On the other hand, those materials that have economic value and which are being appropriately handled by private industry, certainly should not be made a part of the problem, since they do not create any burden on any segment of our society. Far from it, as a matter of fact, since they constitute an important part of our Nation's raw material supply. Our proposal for redefining solid waste would assure that the entire force of the activities and funds that would be authorized by S. 306 would be exerted toward the true solid waste problem areas.

The above is the clarification I would have liked to have given to Representative Rogers in connection with the question arising out of the statement by Mr. Xanten.

Mr. XANTEN. I am sure, Mr. Chairman, I did not mean the metal that is occurring every day in the field of solid wastes. He is talking about the metals that are separated at the source and brought to them.

Mr. ROGERS of Florida. I understand that.

Mr. XANTEN. That is in a separate condition. This is a big industry. It ignores the fact of the tremendous tonnage of this material that is incorporated in the solid waste that is disposed of.

Mr. ROGERS of Florida. Which is recoverable and could be reused?

Mr. XANTEN. It is a magnetic method of recovery that is used. There is no need to recover a material for which there is no market. There is no market for certain types of this material.

Mr. ROGERS of Florida. Thank you very much, Mr. Xanten. Your statement has been most helpful.

According to the list of witnesses, this concludes the hearings today. We will recess the committee until 10 o'clock Tuesday. The committee is adjourned.

(Whereupon, at 12:35 p.m., the committee adjourned to reconvene at 10 a.m., Tuesday, June 15, 1965.)

CLEAN AIR ACT AMENDMENTS

TUESDAY, JUNE 15, 1965

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON PUBLIC HEALTH AND WELFARE OF THE
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met, pursuant to recess, at 10 a.m., in room 2123, Rayburn House Office Building, Hon. Oren Harris (chairman) presiding.

The CHAIRMAN. The committee will come to order. This morning as we resume hearings on numerous bills with reference to clean air, the first witness will be Mr. Harry Barr, chairman of the Engineering Advisory Committee of the Automobile Manufacturers Association.

Mr. Barr, I believe you have with you Mr. Frank Isbrandt, vice president, American Motors, Mr. B. W. Bogan, Chrysler Corp., and Mr. Misch, of the Ford Motor Co.

Gentlemen, we are very glad to welcome you here in connection with this important legislative program. I assume that you have a procedure that you wish to follow. You may proceed if you desire.

STATEMENT OF HARRY F. BARR, CHAIRMAN, ENGINEERING ADVISORY COMMITTEE, AUTOMOBILE MANUFACTURERS ASSOCIATION; ACCOMPANIED BY RALPH ISBRANDT, VICE PRESIDENT, AMERICAN MOTORS; B. W. BOGAN, VICE PRESIDENT, CHRYSLER CORP.; HERBERT MISCH, VICE PRESIDENT, FORD MOTOR CO.; WILLIAM F. SHERMAN, SECRETARY, ENGINEERING ADVISORY COMMITTEE; AND CHARLES HEINEN, CHRYSLER CORP.

Mr. BARR. All right, sir. Thank you Mr. Chairman. I think I should start by saying my name is Harry F. Barr. I am vice president in charge of the engineering staff of General Motors Corp.

Today, however, I am appearing before you in my capacity as chairman of the Engineering Advisory Committee of the Automobile Manufacturers Association. And, of course, several other members of this committee are here today and I should like to introduce them again so you can see who they are.

On my extreme left, Ralph H. Isbrandt, vice president, automotive engineering and research, American Motors Corp. Next, Mr. Herbert L. Misch, vice president, engineering and research staff, Ford Motor Co. On my immediate right, Mr. B. W. Bogan, vice president,

director of engineering, Chrysler Corp., and the secretary of the engineering adivsory committee and on the AMA staff, Mr. William F. Sherman.

Mr. Chairman and members of the committee, speaking on behalf of the Automobile Manufacturers Association, I want to say that we welcome this opportunity to express our views on H.R. 7429 and other proposed legislation on air pollution.

In our several previous appearances before National and State legislative committees dealing with air pollution, representatives of the automobile industry have taken a cooperative and constructive stance, to help assure that if legislation is passed, it will be good legislation, will meet recognized needs effectively, and will be in the public interest.

HAVE REPORTED ABILITY TO PRODUCE EXHAUST EMISSIONS CONTROL SYSTEMS

It was with this cooperative attitude that representatives of our industry testified just 2 months ago on Senate bill 306 before a Senate Subcommittee on Air Pollution. The need for careful evaluation of the air pollution problems in various areas is recognized, as well as the need for ambient air quality standards. At that time we also stated that our research and development efforts on air pollution control systems had progressed in the industry to the point where we were in a position to manufacture and install exhaust control systems, which would satisfy California State requirements.

We made several recommendations to the Senate subcommittee with regard to S. 306 and found the Senate to be responsive to the suggestions made in the interest of good legislation. However, the evolution of the test of that bill has introduced other elements about which we desire to comment here in view of the fact that S. 306 is pending for House consideration.

Mr. Chairman, it is against our background of research and development that we are able to say that, if Congress decides that all new cars should be equipped with exhaust control systems of the types now becoming available to meet the standards set in California, the automobile manufacturers will cooperate fully to manufacture and install the equipment, on our vehicles nationally. For national application the climatic extremes of temperature and humidity require extensive field tests, and possible resultant modifications to our systems. Additional time also would be required for extensively tooling the much larger volume required on a national basis.

The CHAIRMAN. Mr. Barr, if you will permit an interruption for just a moment. We have a distinguished group of high school students who have just come in. They are from one of the great districts of this Nation—I will refrain from saying the greatest because I have that one myself—from the State of Ohio. I am glad to recognize our esteemed colleague, Mr. Gilligan, in order to give these students an appropriate welcome.

Mr. GILLIGAN. Thank you, Mr. Chairman and colleagues of the committee. There are a dozen students from various high schools in the First District of Ohio around Cincinnati here this morning. They are involved on a 4-day Government study tour and they are now studying this morning the most important phase of the Federal Gov-

ernment, that is, the committee system of the House of Representatives, and so with this distinguished panel of automotive experts here this morning, I am sure they will learn a great deal and I am very grateful to you, Mr. Chairman, for the chance to welcome them to this committee.

The CHAIRMAN. For the committee I would like to join in welcoming this outstanding group of young people. We always encourage young people to visit us to see your Government actually in operation. It is in committees such as this one that legislation is designed and developed and reported to the House. Legislation then makes its way through the Congress and becomes a part of our laws governing what we refer to now as the Great Society. We know you will derive a lot of benefit out of your visit and your study of your own government.

We are glad to have you remain with us as long as you can.

We are now considering legislation that will make the air you breathe clean and fresh. I am sure that you will wish us well in this undertaking.

Thank you very much.

You may proceed, Mr. Barr.

Mr. BARR. The vehicle manufacturers, given sufficient time, can do the job required in legislation being considered, but we believe this proposed legislation poses certain questions that need to be considered before it is finalized. Here are some of the questions that should be answered:

Does a nationwide photochemical smog problem exist? Do the facts indicate that motor vehicles are the only air pollution source that should be controlled on a national basis?

How severe is the air pollution problem and photochemical reaction in various cities, areas, and States? To what extent will control of vehicle emissions significantly improve their kinds of air pollution problems?

What has been the experience of efforts to control the many sources of air pollution in California?

What are the economic aspects of the problem? Will expenditures on the part of the automobile owners to control vehicle emissions reduce air pollution in varied communities in commensurate amounts; or where can additional costs be best applied in other directions to derive the greatest and most immediate benefits?

NATIONWIDE PHOTOCHEMICAL SMOG FACTS NOT ESTABLISHED BY USPHS NETWORK DATA

In the testimony before another committee of Congress last year, it was stated that more information was needed to establish whether vehicle emissions do represent a problem to a degree that warrants a national control system, and the expense to car users, and other complications involved, as is now required in California. A great deal of significance attaches to this point if a decision is to be made by Congress that will require substantial initial investment and annual maintenance cost by every motorist in the Nation.

In this connection we want to cite the data from the Public Health Service National Air Sampling Network, published in the report of the hearings of the Senate Special Subcommittee on Air and Water Pollution last June 1964.

The data are based on an oxidant level of 0.15 parts per million, the criterion used by California to indicate the threshold at which eye irritation, reduced visibility and plant damage from photochemical smog may occur. The tabulations show the number of days in various cities during which the oxidant value reached or exceeded this threshold value for one hour or longer. The 1963 data are published on page 887 of part 2 of the 1964 Senate committee hearings.

The tabulation for 1963, reported that Los Angeles experienced at least 102 days during which this threshold was reached. Philadelphia never reached this level in 1963.

You might observe the table which is displayed on page 6 of our transcript.

On the other hand, Chicago, San Francisco, Cincinnati, New Orleans, and Washington, D.C., reached this threshold for 1 hour or longer, or only 2 to 5 days of the entire year.

Now, more recent data, using the same standard of 0.15 parts per million, the full year 1964 shows that Los Angeles had 83 days, Philadelphia 9, Chicago 0, San Francisco 1, St. Louis 6, and Washington, D.C. 4.

This information, supplied from the National Air Sampling Network through the Taft Engnieering Center shows fairly wide variations, as you can see.

Such disparities in the data indicate at least a need for further research. The figures do not indicate that photochemical smog is a major problem in communities listed other than Los Angeles or that motor vehicle exhaust control systems are likely to make apparent differences in the air pollution situations observed in these communities. In terms of either scientific measurements or citizens' observations this is an important fact.

VEHICLE EMISSIONS ALREADY REDUCED

For these communities, and the Nation as a whole, it is important to note that a reduction of 30 to 40 percent of total vehicle emissions of unburned hydrocarbons was achieved in 1963 and subsequent model automobiles by use of crankcase blowby controls. This followed 2 years of experience with blowby control equipment on automobiles in California. As older cars are retired from registration, the percentage of cars with this control will increase until the entire car population will have achieved 30 percent or more emission reduction noted for new cars, thus providing a significant reduction in automobile emissions everywhere.

An important purpose of this statement is to bring your committee up to date on the efforts of the vehicle manufacturers during the past year and to report the progress made toward compliance with the California emissions standards which are based specifically on a target of re-achieving 1940 quality air in the Los Angeles basin.

MEETING CALIFORNIA REQUIREMENTS FOR 1966 MODELS

At this time last year the individual automobile companies were engaged in their engineering, design, and testing programs aimed at achieving compliance with California exhaust standards by the time of 1967 model introduction. It had been made clear to the California

authorities that a comprehensive and orderly program of this sort, plus the tooling that would be required, would be applied to about 175 engine-transmission combinations in vehicles produced by the various companies.

However, California urged that an attempt be made to comply on all 1966 models instead of the 1967 models. Such a foreshortened schedule could be met only by a substantial variation from normal development, testing, and tooling efforts. To make this feasible the total task was measurably reduced, when the California officials granted an exception to meeting the standards for every 1966 model. Each of the companies was given an opportunity to file a list of exemptions, particularly relating to models which are distributed in California in limited volume. In addition, testing procedures were changed to utilize industry facilities, and trucks above one-half ton rating were excluded, pending more research and development.

CALIFORNIA REGULATORY PROBLEMS STILL BEING SOLVED

This change in the size and detail of the task led the companies to announce that they would meet the California exhaust standards on over 95 percent of 1966 passenger car models and light trucks. The programs to do that are just now at peak intensity. California officials are now driving and evaluating many of the vehicles to confirm our tests of compliance. Accelerated programs such as these have presented engineering and production problems which are being solved as they appear. However, the legislative problem of mandatory maintenance and inspection have not been solved in schedule, and this factor jeopardizes orderly regulation of controls in that State. Thus California air pollution control officials are still without the detailed and specific legislative backing on mandatory maintenance and inspection requirements to be able to set up their own program in detail.

Also, in trying to meet the California schedule the vehicle manufacturers have of necessity concentrated on the evaluations that relate primarily to California operating conditions; they obviously have not had sufficient time to acquire field experience with production-built vehicles on the wide variety of climatic conditions that exist throughout the country.

QUESTIONS AND PROBLEMS IN CALIFORNIA

Meanwhile, administrative officials and legislators in California have been dealing with many other questions raised by the public in that State, as motorists have attempted to accommodate themselves to the present laws. The most serious problem has been that of gaining public acceptance of mandatory installation of even the relatively simple crankcase blowby emissions control systems on used cars. Difficulties are also being encountered in attempts to establish an annual mandatory maintenance program for exhaust control systems and a program for State inspection of crankcase emissions control devices on both new and older cars. At the present time, major revisions of the existing California smog laws and regulations are being debated in California in an attempt to cope with these questions.

Currently, also, scientists in California are reviewing many technical aspects of that State's requirements. While more stringent exhaust standards are being planned for 1970 application, they are trying to determine which hydrocarbons are really the most reactive ones in the atmosphere and most in need of control, and whether control of oxides of nitrogen will improve or worsen the smog situation, because controversy has arisen in this point.

HEAVIER TRUCKS NOT YET INCLUDED IN CALIFORNIA ENFORCEMENT

With respects to trucks, attempts to apply the California standards to trucks above one-half ton rated capacity are presently in early exploratory stages. Tentative test procedures have been written, and initial evaluations of the test procedures are underway. It is recognized that heavier trucks must be dealt with separately, because many differences are involved in truck operation, including high-load factors, requirements for very long life and durability, and the fact that truck and passenger car operations do not follow the same cycles of operation. At this point, test methods, basic knowledge for development programs, and hardware to apply to trucks in the heavier categories are not available to implement standards.

The economic aspects of control of vehicle emissions have become more clear as California has reached the point of approving specific methods of control. It appears, for example, that the total cost of original equipment and subsequent maintenance for exhaust emissions control on millions of individual motor vehicles is very high in comparison with the cost of controlling air pollution from some larger stationary sources such as chimneys and stacks. Unfortunately, no exact comparisons can be made, but it is evident that installation of technically sophisticated control equipment and periodic maintenance on the many millions of individually owned motor vehicles—as compared with the control of emissions from a much smaller number of industrial and utility plants—results in an escalation of cost, in addition to multiplication of the individual problems to be handled.

ECONOMIC FACTORS OF MAJOR CONCERN TO INDIVIDUAL CITIZENS

The figures that are pertinent, and can be submitted for your general information, are the estimates made last year by the California State Motor Vehicle Pollution Control Board on exhaust control devices. They related to the installation, inspection, and maintenance of the three catalytic mufflers and one exhaust afterburner which the board had tested and approved to activate the legal requirements in that State.

The minimum price and installation estimate on any one of the four units was $50, with a range up to $95.

The minimum average annual gross cost for maintenance was estimated at $49.63. Multiplied by annual new-car and truck registration (875,000 in California) the indicated annual cost of this equipment for new vehicles would be more than $43 million. If the total of 9,500,000 vehicles which are registered in California was equipped with these devices the annual maintenance costs would be more than $450 million. The indicated costs to individual vehicle owners are

high and a pressing need must be established to justify the expense of such control programs in the public mind.

Although the automobile manufacturers have now developed new systems, the initial costs and maintenance will still be quite expensive.

EXPERIENCE AVAILABLE

The California accumulation of experience with its control program indicates the level of complexity and costs of vehicle emissions control, and provides the only experience available to evaluate other proposals to regulate motor vehicle emissions.

The motor vehicle industry has cooperated closely in the California program from the beginning. It has loaned scientists and engineers to help implement the program, and has been an active participant in the technical studies and development of test procedures, in attempts to avoid regulatory pitfalls. California has experienced many legislative and administrative problems in carrying out its program, especially in regard to public acceptance. At the present time major revisions in the California program are underway which concern equipment to be made available on our vehicles this fall.

RECOMMENDED FUNDAMENTAL STEPS

If Congress is to determine whether automotive emissions contribute significantly enough to air pollution all over the Nation, so that national control measures should be initiated like those in California:

It would appear first to require that Federal ambient air quality standards be established, a basic requirement already recognized in section 3(c)(1)(2)(3) of the Clean Air Act, but not implemented by the Department of Health, Education, and Welfare. This is a starting point for the evaluation of any emission sources. Then the objectives in controlling vehicle emissions would become definitive and measurable. The ambient air quality standards should be realistic and acceptable to the States and communities where they would be employed. This would help to put the vehicle in perspective, along with other sources of emissions, and would supply meaningful interpretation of the contaminant effects of fossil-fuel burning, beyond the bare fact that motor vehicles consume currently about 16 percent of the total fuel of this type.

A Federal exhaust emission standard evolved to apply to motor vehicles would need to be acceptable to the individual States. Otherwise, variation deemed essential by local authorities may result in a condition that cannot be met by the manufacturers with a uniform product. Proposed legislation does not insure that a uniform national standard will actually result from a Federal standard. Our industry's experience is that States retain their regulations even in cases where Federal action has occurred, as in the application of regulations of the Interstate Commerce Commission pertaining to truck equipment.

Successful procedures exist which utilize voluntary standards developed in national engineering societies, with cooperation and coordination of the States and the Uniform Vehicle Code, to achieve nationally a high degree of uniformity on many aspects of vehicle regulation. Automobile lighting, turn signal indicators, and many

other items have been developed by this method, which has proved effective through the years. More recently, authority granted by Congress to the States in the Beamer resolution, to form compacts, has been implemented by the States, affording them an opportunity to improve and accelerate their mutual action on safety equipment through the Vehicle Equipment Safety Commission. Such interstate compacts are parallel in many ways to the approaches being used to deal with interstate air pollution problems of a general, or nonautomotive type, also under authorization by Congress.

Technical details of exhaust-emission standards should not be written into law; rapid evolution in air pollution technology particularly indicates this. This concerns research in basic air pollution chemistry and engineering developments to facilitate vehicle emission test methods. Our industry is continuing its extensive studies in these areas, in addition to engineering developments to improve the emission control systems on our vehicles.

Any timetable established should be thoroughly realistic and should not impose unreasonable risks in an attempt to meet target dates without adequate preparation. If the automobile manufacturers were to be involved on a nationwide basis, sound experience dictates that it would require at least 2 model years for passenger car and light truck compliance with exhaust control provisions. This time is needed for further development of the California exhaust systems for wider application, for climatic experience and reliability testing, and to gain production experience. Also many months would be required to complete tooling for the greatly expanded volume. This means that the industry should be advised of requirements to be met 2 full years prior to the start of the model year in which control systems are to be provided.

Trucks are special: Since there is no truck experience as yet with control systems on vehicles above half-ton ratings, and no systems available, it is not feasible now to set any timetable limit which could predictably be met on the larger trucks or the many special purpose vehicles built by truck manufacturers.

Diesel engines: The situation with regard to diesel vehicles is less well established than it is with gasoline-engine-powered trucks. Diesel smoke can and should be controlled by proper maintenance procedures and fuel selection. Control of diesel odor, however, is beyond present technical capabilities despite extensive research efforts in this area. Certainly every effort will be made to learn more about the diesel-odor phenomenon, and to explore all possible methods of control.

Air pollution control legislation to require control systems on vehicles will not be effective unless periodic inspection is provided to be certain the emission control systems continue to function properly as new cars accumulate mileage and become older cars. Without inspection and maintenance, costly investments in emissions control equipment on vehicles will be wasted. Adequate inspection will require action and cooperation of the States to initiate programs and integrate inspection of emission control systems into inspection of safety features of cars; as in existing State inspection programs, it should be coordinated directly with State registration and enforcement programs. Of course, any such inspection must be done locally where

the vehicles are being used and where inspection facilities and know-how exist.

Further, with respect to practical State inspection programs, the States must justify the added cost to their motorists during the years that will intervene before the systems will have been included on enough cars to effect a noticeable improvement in the atmosphere. Unless the States are willing to accept this responsibility, and enforce it, the failure of the vehicle owner to maintain the emissions control system will render the entire program useless and wasteful, even though every new car is properly equipped when it leaves the factory.

Since Congress authorized the interstate safety compact for the express purpose of dealing with this type of situation, the Vehicle Equipment Safety Commission should be used for this purpose. The interstate safety compact is designed to obtain State cooperation and interest in the application and enforcement of uniform safety features on cars. If Congress acts on bills now under consideration, a resolution of Congress, or suitable language in pertinent legislation, should commend to the Vehicle Equipment Safety Commission, and to the States, that they concurrently implement inspection programs to insure continued effectiveness of installed air pollution control equipment.

It is our view that information for administrative officials, and education for the motoring public as to the need for emission control measures, will be most important parts of any national program that is attempted. The public must understand that intent and purpose, and be confident that decisions made by regulatory bodies are sound, to insure their support and cooperation. If this is accomplished, the need for the initial investment cost, mandatory inspection, and good vehicle maintenance practices will be more acceptable to the owners of vehicles.

As indicated earlier in this testimony, it is our desire now to comment on some specific provisions of bills which are now getting consideration, in particular H.R. 7429, H.R. 8398, and S. 306.

COMMENTS ON H.R. 7429

This bill to amend the Clean Air Act would require federally purchased vehicles to be equipped with exhaust control measures. It is therefore comparable with the proposed standards of the General Services Administration. The effective date, October 1, 1966, could be achieved on the volume of vehicles which would be purchased at the Federal level.

However, as written the bill does not recognize that diesel vehicles are not a part of this problem, and need to be treated separately from gasoline-powered vehicles. Also, it does not recognize the fact that control equipment has not been developed or tested for application to trucks above half-ton rating and that no hardware is available for such application. The GSA standards do recognize this fact, as do the California laws and regulations.

In addition, H.R. 7429 does not provide for appropriate maintenance and inspection measures. We regard this matter of maintenance and inspection as a vital requirement if air pollution control results are to be achieved.

COMMENTS ON H.R. 8398

H.R. 8398 is very similar in many respects to the original draft of S. 306 on which industry comments were submitted in public hearings on April 7, 1965, in Detroit. The present version of S. 306 includes provisions for many of the comments that we made at that time. We would be pleased to submit a copy of the April 7 testimony for the information of this House committee in reference to H.R. 8398.

COMMENTS ON S. 306

The present text of Senate bill 306 as passed by the Senate provides recognition for many of the practical suggestions which were made during public hearings on the original draft. However, supplementary comments seem warranted with respect to export provisions in section 204(b)(3), line 13.

The language provides an exemption for export vehicles from compliance with U.S. air pollution requirements but only where it "would make the vehicle unacceptable to purchaser or the consignee." It should be understood, and possibly stated, that "unacceptability" might include questions of cost to the purchaser. The better solution, we believe, would be to have an unqualified exemption for vehicles exported from the United States.

More important, however, is our comment on the deletion of any vehicle inspection or maintenance requirements from S. 306.

Senate Report No. 192 indicates that no inspection program for vehicles is included because there are variations in State procedures and lack of suitable testing equipment for large-scale inspection. We believe there is a misunderstanding on this point and would like to clarify it. State procedures for safety inspection do vary somewhat in detail but they are generally in conformance with the requirements of the Motor Vehicle Inspection Code of the American Standards Association, and make use of technical specifications of manufacturers with respect to particular items of equipment on vehicles, based on design and service requirements. Despite procedural variations, they achieve similar results in terms of safety performance. There are differences in political structure or administrative control of inspection procedures in the States, and some differences in the particular items required to be submitted for inspection, but the technical requirements themselves are not diverse or conflicting. The automobile manufacturers have specified the necessary inspection procedures to assure compliance with California blowby device requirements.

The Automobile Manufacturers Association member companies are currently providing similar information regarding maintenance and inspection steps necessary for exhaust control systems.

Now most important, inspection in this situation does not constitute running an emission test on the vehicle but rather a series of simple mechanical checks of certain specified items. This is necessary in any emissions control program, State or National, and should not be neglected, in our opinion.

As indicated earlier in this testimony, any legislation to require exhaust control systems will be defective unless provision is made at the

same time for a suitable type of periodic maintenance and inspection. As suggested, the States, acting through the established channels of the vehicle equipment safety commission, could effectively deal with this problem; action on it should be recommended to them concurrently with any action taken on this bill. By appropriate means Congress should indicate its intent to insure that there is periodic maintenance and inspection.

S. 306, however, proposes vehicles inspection and enforcement at the factory or warehouse level in sections 207 and 208. And in section 208 provision is established for manufacturers to maintain records, make reports, et cetera, presumably so the Federal agency can determine whether the manufacturer is complying with the legal requirements.

The provisions of sections 207 and 208 are unnecessary. They are not likely to achieve desired results because the mere physical inspection of a new vehicle or an engine will not indicate whether it will emit pollutants, or not.

Moreover, such a procedure could not be employed in the factories or premises of foreign manufacturers of vehicles, who will be exporting their products to the United States and selling the products, presumably in conformance with the same U.S. legal requirements.

It appears likely that this wording and type of provision may be based on those employed in the inspection of foodstuffs or drugs at their source of manufacture or warehousing, where processing or spoilage sometimes presents health problems. However, the problem in these fields of commerce is entirely different from that in the motor vehicle industry, and on the highway where milage accumulations may have effects on vehicle emissions.

In practice the Automobile Manufacturers Association member companies provide published specifications with each new model vehicle. These specifications pertain to equipment and performance characteristics. Even prior to the introduction of new models, the companies develop and publish texts on maintenance procedures, tolerances for mechanical and electrical parts and other components. They also train many thousands of mechanics to perform necessary adjustments so there is a wealth of widespread disseminated technical information about the products.

The industry regularly complies with laws of the States for equipment, including crankcase blowby devices, and will shortly be complying with California laws and regulations on exhaust control systems, without imposition of such requirements as those in section 208 and 207.

The point to be emphasized is not the question of new vehicle compliance—which is the manufacturers' responsibility—but rather continued compliance as these new vehicles become older. This is important to the total emissions control question, especially as the vehicle population in future years grows in numbers. The performance of current vehicles in 1970 or 1975 is really the pertinent question, and it can only be assured by proper maintenance and inspection procedures which we have already suggested.

For these reasons the provisions proposed in sections 207 and 208 are neither necessary nor practical. Such a system of inspection in factories and warehouses would not serve a useful function.

For the reasons indicated, and consistent with normal procedures in the regulation of motor vehicle equipment, we believe that the penalty provisions of section 206 are unnecessary and unwarranted. Our industry has consistently cooperated with public officials and complied always with legal requirements imposed by both State and Federal agencies. We request deletion of section 206.

In conclusion, we repeat our desire to work cooperatively with Congress and its committees to achieve good legislation in the public interest, and pledge also that the automobile industry will continue to cooperate with any agencies that may be involved in establishing standards for air pollution control.

We want to thank your committee for affording us this opportunity for a comprehensive statement on behalf of the Automobile Manufacturers Association member companies, each of which takes a deep and serious interest in air pollution control, and is giving it maximum attention.

Mr. ROGERS of Florida (now presiding). Thank you very much, Mr. Barr, for your testimony on behalf of the Automobile Manufacturers Association. It is very helpful and perhaps there will be some questions.

Mr. Satterfield.

Mr. SATTERFIELD. As I understand it, one of the main points you make is that mere installation of this equipment will never be enough, that there has got to be inspection to show that it continues to function properly.

Mr. BARR. This is correct, sir; and I would like to open the question and answer period to other members of the AMA Engineering Advisory Committee, if any of the gentlemen here would like to reply to a question. As stated toward the last of our statement, I believe you are concerned with the air pollution and air quality in 1970 and 1975.

This is one concern that the Department of Health, Education, and Welfare has indicated—that it is more the future air quality that they are concerned about, it is the reason they are even considering these applications now. And we are stating that a 7- or 8-year-old car will not be doing the job that a new car is designed for unless some followon inspection is provided in the model.

Mr. SATTERFIELD. I take it you are not advocating that the Federal statute require that there be specific inspections, are you?

Mr. BARR. Well, it would be good in our opinion to pass recommendations to the States who have this regulatory ability in being, to consider that, in application of the law to their area.

Mr. SATTERFIELD. It seems to me this is nevertheless a matter that ought to be regulated by the State and it seems to me, too, that we have a special problem here insofar as automobiles are concerned. Since they can move throughout the country indiscriminately the problem is whether your industry is going to be subjected to the requirements of 50 individual States or whether it would be better for the Federal Government to act.

Mr. BARR. Maybe one of my colleagues would like to comment on that. Will you, Herb?

Mr. MISCH. We, of course, prefer one standard that will be acceptable in all areas wherever possible. In support of the point Mr. Barr

made with regard to inspection and also partly in answer to your question, we would not necessarily like to see specific inspection standards established but we do favor the provision for appropriate inspection which will undoubtedly change as the systems and the requirements change over the years. By taking such action now inspection can be and will be provided throughout the lifetime of the equipped vehicles to assure continued emission control to the degree that it was intended when these systems were installed on new models.

Mr. SATTERFIELD. What you are really saying is that there ought to be some source to which the States can look for guidance.

Mr. BARR. Right.

Mr. SATTERFIELD. Is this what you are saying?

Mr. MISCH. Yes, sir.

Mr. SATTERFIELD. I was interested, too, in your suggestion that—first of all, as I read it, there are four separate types of units that can be installed, is that correct? Three catalyst type mufflers and one afterburner?

Mr. BARR. This is going back to the four devices that were approved by California over a year ago to trigger their law for compliance. Their law stated that when two or more devices were approved, this would trigger the law and exhaust controls would have to be installed.

Mr. SATTERFIELD. This doesn't mean you have to have all four on one vehicle, does it?

Mr. BARR. No, sir; and none of these four is actually the one our industry is applying to our vehicles.

Mr. SATTERFIELD. I was interested in your figure that each unit would cost approximately $50 installed and that you estimated the cost of maintenance annually to be $49.

Mr. BARR. This, sir, is not our estimate. This is the reported figures to the California Air Pollution Control Board about a year ago.

Mr. SATTERFIELD. In other words, you would practically replace this unit every year.

Mr. BARR. In effect that is what that would say.

Mr. SATTERFIELD. Well, is it the nature of these units to actually take the hydrocarbons and pollutants out of the exhaust fumes or merely to provide a greater ratio of air to the exhaust?

Mr. BARR. Well, if we can get our minds off of those four systems that we mentioned there which were approved by California to trigger the law, the systems our industry is using consist of major engine design modifications in carburetion and distributor spark timing.

Mr. SATTERFIELD. This would change the ratio of air to combustible fuel, and the burning quality within the cylinder?

Mr. BARR. This would be true to some extent and then some of our company members use air injection to inject air into the exhaust stream to further promote oxidation.

Mr. SATTERFIELD. In essence, then, you would be reducing the content of pollutants per cubic area of exhaust rather than eliminating those pollutants?

Mr. BARR. This is correct. And the California standard of 275 parts per million maximum value on a prescribed test cycle is a reduction of something like 60 to 70 percent. Most engines on automobiles will be putting out in the area of 600 parts per million and up

without equipment as they are now running on the street today, to as high as 900 or a thousand.

Mr. SATTERFIELD. Is it possible that some of this can be achieved and perhaps will be in time with engineering in terms of the engine itself rather than some gadget that would be placed on the engine?

Mr. BARR. We don't like to call the air injection pump a gadget.

Mr. SATTERFIELD. Let's say device.

Mr. BARR. It is part of the job. But I think perhaps Mr. Bogan of Chrysler might like to comment on that question.

Mr. BOGAN. You ask is it possible to improve the engines eventually and we are inclined to think it is. We haven't got the answer. If we did, we would be using it. But we are working on it.

Mr. SATTERFIELD. That will be a longtime proposition in any event.

Mr. BOGAN. That is right. If you are on the same track we are thinking about, there is no question about that.

Mr. SATTERFIELD. Thanks. I have no other question, Mr. Chairman.

The CHAIRMAN. (now presiding). Dr. Carter?

Mr. CARTER. No questions.

The CHAIRMAN. Mr. Mackay.

Mr. MACKAY. Mr. Chairman, Mr. Barr, I want to thank you for this very fine presentation. I am sure that a lot of technical questions should be answered.

I am interested in page 4. I want to see if I read this correctly. The burden of what you have to say is that you feel that any national standard is premature, that this legislation is premature until you get the answer to that first question, does a nationwide photochemical smog problem exist? You are not sure that we have reached a point where we ought to establish a national standard?

Mr. BARR. Well, we are saying that the situation probably needs more definition. We don't know. We feel there is not an appropriate answer to that question at the present time.

Mr. MACKAY. Well, I will state my question this way. Does your group feel that the 1963 Clean Air Act should be amended in this Congress?

Mr. BARR. Should——

Mr. MACKAY. Should the 1963 Clean Air Act be amended in this Congress? Do you see any deficiencies in the act or do you feel that we should wait until we have more information before we legislate further?

Mr. BARR. What we tried to indicate in our prepared statement a bit is the overriding requirement that the public be fully informed and that they realized the need for the proposed increased costs that they will be assuming, and this is the only area where we have question about doing a very efficient job so far as our industry is concerned.

Now, as to the need, we showed the tables and there is diversity there in the situation in various cities, but what that will be in 1970 or 1975 is perhaps impossible to guess or project but this is something than should be attempted, some projections should be made as to what ambient air quality is going to be, based on any available information

or any growth potential that the Department of Health, Education, and Welfare could obtain.

Mr. MACKAY. Certainly public understanding of any law is necessary but you have the technical information. I really would like to know whether you feel that this year it is premature for the Congress to attempt to define standards.

Mr. BARR. I think my answer on that is to the extent that the public is not fully aware of the possible costs and inconvenience of such equipment on their automobiles, until they see that they are getting a good buy for their money in the national interest we question it.

Mr. ISBRANDT. I believe until the questions on page 4 are pretty well defined, that it could well be premature. If we apply these devices to all our vehicles, and then do not see any improvement in the air quality in areas other than California where we do expect to see some improvement, I think that we could well have repercussions from the public that might make it inadvisable at this time to have such a law on the books. I certainly agree with the intent of the law, to obtain better air quality, and especially looking forward to the future, to maintain the air quality or see that the air quality level doesn't drop further.

Mr. MACKAY. Do you have any projections on the number of motor vehicles expected in the country? We were given a figure of 84 million vehicles currently on the highways. Do you have any information as to the rate of the increase of vehicular traffic?

Mr. BARR. I think Mr. Sherman—did you hear the question? He is asking what the car population might be in 1970.

Mr. SHERMAN. I do not have such information available here but we can supply various figures that have been projected, yes, sir.

Mr. MACKAY. Thank you.

(The information requested follows:)

SOME RECENT ESTIMATES OF FUTURE VEHICLE OUTPUT, STOCKS, AND MILEAGE

NOTE.—Analysts are referred to original sources for description of methods and assumptions used in developing the various estimates.

Summary of anticipated population, registration, and travel

Item	1960	1972	1975	1980
Population	179,500,000	217,600,000	225,500,000	243,000,000
Total vehicles registered [1]	74,000,000	103,400,000	109,500,000	120,000,000
Persons per vehicle	2.4	2.1	2.1	2.0
Passenger cars registered	61,600,000	86,460,000	91,410,000	100,650,000
Cars in use [2]	56,000,000	78,640,000	83,100,000	91,500,000
Cars in use per thousand population	312	361	369	376
Vehicle miles traveled (millions)	[3] 728.0	[4] 1,058.5	[4] 1,117.5	[5] 1,277.5
Percent urban	47.6	56.4	57.6	60.0

[1] Includes trucks.
[2] Yearend number of cars registered about 10 percent greater than cars "in use." Difference attributable to cars removed from use (junked or wrecked) during course of a year; duplicate registration (licensed in more than 1 State due to migration of residents); cars held for resale on used-car lots; etc.
[3] With existing road systems.
[4] With Interstate System complete.
[5] With all freeway needs complete.

Source: Wilbur Smith & Associates. "Future Highways and Urban Growth." New Haven, 1961.

Estimates of vehicle miles of travel in the United States, 1960–80

Year	Assumed status of freeway program	U.S. population	Cars owned per 1,000 population	Vehicle miles of travel	Urban vehicle miles as percent of total
		Millions		*Billions*	
1960	Present status	179.6	312	728.0	47.6
1972	Interstate stretchout	217.6	361	1,050.0	56.2
1972	Interstate built	217.6	361	1,058.5	56.4
1975	do	225.6	369	1,117.5	57.6
1980	do	243.0	376	1,230.0	60.6
1980	All needed freeways built	243.0	376	1,277.5	60.3

Source: Wilbur Smith & Associates. "Future Highways and Urban Growth." New Haven, 1961.

Total number of vehicles (passenger cars)

[Millions]

	1959	1976	2000
Owned by:			
Families and individuals	50.3	92.0	163.5
Business and Government	6.3	8.3	12.5
Total	56.6	100.3	176.0

Auto travel volume, 1955–76

Year	Average miles per car	Intercity passenger miles (in billions)	Car miles (in billions)
1955	9,359	585	487
1956	9,348	617	507
1957	9,391	644	529
1958	9,494	[1] 629	545
1959	9,529	[1] 659	571
1976	10,000	1,400	1,000

[1] Series in process of revision. Figures for 1958 and 1959 on revised basis; revisions reducing estimates for 1957 are underway.

Source: Outdoor Recreation Resources Review Commission. "Projections to the years 1976 and 2000: Economic Growth, Population, Labor Force and Leisure, and Transportation." Washington (Superintendent of Documents), 1962.

Ratio of population to vehicles in the United States, 1952 and 1962–72

Year	Population (in millions)	Vehicle registrations (in millions)		Ratio of persons per vehicle in total population	
		Total vehicles	Cars only	Total vehicles	Cars only
1952	157	53.3	43.8	2.95	3.58
1962	187	78.6	65.6	2.38	2.84
1963	190	80.7	86.6	2.35	2.81
1964	193	82.9	69.5	2.33	2.77
1965	196	85.2	71.5	2.30	2.74
1966	199	87.5	73.5	2.27	2.71
1967	203	89.8	75.5	2.26	2.69
1968	206	92.1	77.5	2.24	2.66
1969	210	94.4	79.5	2.22	2.64
1970	214	96.8	81.5	2.21	2.63
1971	218	99.3	83.6	2.20	2.61
1972	222	102.0	85.9	2.18	2.58

Motor vehicle needs in the United States, 1963–72

[In millions]

Year	Replacement			Growth			Total need		
	Cars	Trucks, buses	Total	Cars	Trucks, buses	Total	Cars	Trucks, buses	Total
1963	4.8	1.0	5.8	1.8	0.3	2.1	6.6	1.3	7.9
1964	4.9	1.0	5.9	1.9	.3	2.2	6.8	1.3	8.1
1965	5.0	1.0	6.0	2.0	.3	2.3	7.0	1.3	8.3
1966	5.2	1.1	6.3	2.0	.3	2.3	7.2	1.4	8.6
1967	5.4	1.1	6.5	2.0	.3	2.3	7.4	1.4	8.8
1968	5.5	1.1	6.6	2.0	.3	2.3	7.5	1.4	8.9
1969	5.7	1.1	6.8	2.0	.3	2.3	7.7	1.4	9.1
1970	5.9	1.1	7.0	2.0	.4	2.4	7.9	1.5	9.4
1971	6.0	1.2	7.2	2.1	.4	2.5	8.1	1.6	9.7
1972	6.1	1.2	7.3	2.3	.4	2.7	8.4	1.6	10.0
10-year total	54.5	10.9	65.4	20.1	3.3	23.4	74.6	14.2	88.8

Source: American Road Builder, October 1962.

Mr. BOGAN. Could I add something?

Mr. BARR. Mr. Bogan would like to add something, Mr. Chairman.

The CHAIRMAN. Yes, Mr. Bogan.

Mr. BOGAN. Addressed to Mr. Mackay. If you look on page 15 there, which I know you read, we feel that where it says "it should first require that Federal ambient air quality standards be established," and so on, that the Health, Education, and Welfare Department has the authority to do that and they should do it before we get into all these other adoptions of the systems and equipment which is going to cost the public some additional expense.

Mr. MACKAY. That could hardly be done this year, could it? Those standards?

Mr. BOGAN. I believe we feel it should be done first.

Mr MACKAY. It ought to be done this year?

Mr. BOGAN. Yes.

Mr. MACKAY. Thank you.

The CHAIRMAN. Mr. Nelsen.

Mr. NELSEN. I was interested in what results have been shown by the use of this turbine engine that I have see some experimental models of. Do you find the gas emissions from the exhaust greater or less with that type engine?

Mr. BOGAN. They are a little less.

Mr. NELSEN. A little less.

Mr. BOGAN. Yes, sir.

Mr. NELSEN. I noted in the testimony the suggestion for a nationwide criteria of tests. I presume by that you would mean that in certain communities there may be need of installation of equipment to remove some of these gases. There may be other areas where it is almost a waste of money, where we live in the wide-open spaces. It is your contention, I presume, that in areas where there is a problem, there should be some national standards and inspection to suit the circumstance that exists in these areas. Is that not true?

Mr. BARR. I think what we are saying is, if we put equipment on our vehicles in any area, then there should be follow-on inspection to see that the vehicles are complying in future years, 1970, 1975. I think

we also made the point that it might be less costly to clean up the concentrations of pollutants in local areas from stationary sources first.

Mr. NELSEN. One more question. In an automobile that is new, the combustion chamber is in proper mechanical condition, carburetion properly set, there is a very minimum, is there not, of problem, I would guess, and then what would happen, what happens when you have an old jalopy on the road with the pistons ready to double up and the rings worn out and the emission is there. There is not much you can do, is there?

Mr. BARR. On an older vehicle there isn't much you can do, as California learned by sad experience when they tried to put crankcase devices on older vehicles, 1950 model forward. The required maintenance on these older cars to get them in condition so that then the applied crankcase ventilation device could do its job was usually quite expensive. So it is economically unfeasible to consider applying control systems or devices to past model vehicles.

Mr. NELSEN. Do they do anything out there in California where these old automobiles are on the highway when you see gas emissions from the exhaust? Do they do anything about that at all? Are they permitted to continue to drive regardless?

Mr. BARR. I don't know.

Mr. HEINEN. There is a regulation against "smokers" and it is enforced quite strongly in Los Angeles County, somewhat less outside.

The CHAIRMAN. Would you identify yourself, sir, for the record?

Mr. HEINEN. I am sorry. I am Charles Heinen, from Chrysler.

Mr. NELSEN. No more questions, Mr. Chairman.

Thank you.

The CHAIRMAN. So I will not have to run for the dictionary and analyze it otherwise, what do you mean by "ambient quality."

Mr. BARR. Well, by ambient we mean the prevailing quality. If we would say the ambient temperature in Washington today is 68°, it means the prevailing condition in the atmosphere, I presume.

The CHAIRMAN. Now, Mr. Rogers, I will recognize you. You can proceed.

Mr. ROGERS of Florida. As I understand it, you feel that there is no need for inspection in the factory, to have a physical inspection made. That is the position of the automobile manufacturers. Is that correct?

Mr. BARR. I think what we stated—our position is that we build our vehicles to prescribed specifications. We do this every year. We have this experience, as we mentioned, on lighting. We have built our lighting equipment to certain standards and this is recorded with the States concerned for their approval at the time a new model is introduced. So we do have in this case a place where States do administer uniform lighting procedures and we furnish them our specifications and our compliance is practically guaranteed. This is our responsibility, to comply with the specifications we present to them.

Would you want to add to that, Ralph?

Mr. ISBRANDT. Yes, I think if we compare the exhaust emission system, as an example, to the safety of the steering of the automobile which is a very important factor, we have no inspection from outside sources other than our own. We as manufacturers accept that re-

sponsibility and fully comply with the needs for seeing to it that the vehicle goes out as it should go. I would see no reason why the exhaust emission system would fall in any other category.

Mr. ROGERS of Florida. Well, I would agree with you. I think that is correct and in fact the Department of Health, Education, and Welfare, when they testified in answer to my question along these lines also agreed with this and saw no point in having section 207 in the bill.

Now, as for records, I would think this would not be difficult just to make a statement of records available that you placed so many of these on the automobile. What is your feeling there?

Mr. BARR. Every year we publish specifications at the time of new car announcement that indicate a complete Automobile Manufacturers Association specification sheet.

Mr. ISBRANDT. Very complete data and this would merely be an addition to that data.

Mr. ROGERS of Florida. All right. Now, I noticed in your statement you said these devices, exhaust devices, would cost about $50, you thought.

Mr. BARR. We said a low of $50; a range up to $95.

Mr. ROGERS of Florida. I thought we had been furnished some figures eariler that Chrysler perhaps had, I do not know.

Mr. BOGAN. Yes.

Mr. ROGERS of Florida. More reasonable than these.

Mr. BOGAN. We were not here competing first, but we stated——

Mr. ROGERS of Florida. No, I understand.

Mr. BOGAN. You are correct. We stated in the State of California a year ago, approximately, that the prices for the California package had been given as between $13 and $25. That is a matter of public record. That is for the California application and it might vary on a nationwide basis depending upon other factors.

Mr. ROGERS of Florida. Yes, but this is your exhaust emission control item.

Mr. BOGAN. System.

Mr. ROGERS of Florida. Well, it would seem to me that perhaps by conferring, there would be no difficulty in the companies getting together to try and get some device that would be as cheap as possible and yet effective.

Mr. BARR. I don't think the companies get together on this one, sir. We have certain standards to meet and we have individual ways to meet this. There is no getting together on the means whereby we accomplish our compliance.

Mr. ROGERS of Florida. I see. I thought you had gotten together on the safety belt feature, for instance, and some of the others.

Mr. BARR. That is quite a simple mechanical structure as compared to what we are talking about here.

Mr. ROGERS of Florida. Well, of course, if standards were set that in fact were helpful in bringing about a determination that it can be done on a cheaper basis, I presume all companies would be willing to adopt this approach.

Mr. BARR. Do you want to comment on that, Ralph?

Mr. ISBRANDT. Yes; I might make a comment on that point. In that particular case we had some engines that can be treated in one

manner. Other engines, because of their characteristics, et cetera, cannot be treated in the more simplified manner. However, I should indicate that while in the one case, which is more costly to begin with, the maintenance costs are less, we feel, than they are in the case of the lower cost device as first applied, so it is a matter of how you treat the particular engine that you are using.

The question was raised here earlier about what we might expect of engines in the future. We know from our development now, I am sure this applies to my colleagues here, that our newer engines that are in the course of design, we are able to reduce the original emissions without the addition of devices. However, not to the degree that the California law requires. But substantially from that of engines that we knew about 4 or 5 years ago.

Mr. ROGERS of Florida. Now, I noticed, in your testimony, you said you thought the cost for maintenance would be about $50 a year. Would this——

Mr. BARR. Let's straighten that out. Again, this is a suggested maintenance cost for the four devices. They were three catalytic mufflers and one afterburner that California had approved when they triggered the law over a year ago. That is the only data available in that statement.

Mr. ROGERS of Florida. So this is based on what would be required in California?

Mr. BARR. That figure is based on the California estimates, yes.

Mr. ROGERS of Florida. Do you think this would hold nationwide if we go into this program or could it be reduced?

Mr. BARR. You see, that system isn't being used at all on any. That was merely the system that triggered the law and it was put in the text of our statement to indicate at some economic value, one State had made a decision on economic facts presented to them, that this was in the public interest at the cost quoted there.

Mr. ROGERS of Florida. Because I would think this would be a rather high maintenance cost, as high as a new unit. Would it not?

Mr. BARR. It is higher than we think is practical; yes.

Mr. ROGERS of Florida. You think nationwide this figure would not prevail, then, if we move into this program?

Mr. BARR. That figure doesn't apply to our equipment.

Mr. ROGERS of Florida. What would you think would be the maintenance cost of your equipment?

Mr. BOGAN. I would like to, I think, give you some information that might help you there. Inasmuch as our system, Chrysler system, already approved, we have given to the State of California, and these include information based upon California labor rates, maintenance cost of about $35 a year on our system.

Now, you say what is that maintenance? Well, it is the simple things that you, a good automobile owner, would do normally and that we recommend for our vehicles anyway, such as spark plugs, distributors, ignition cables, batteries, and the carburetor cleaner, and manifold heat valve, and so on; those items that are normally in the system, that when and if properly maintained, aid in the reduction of emissions and allow our system to properly come within the limits that California has set.

Mr. ROGERS of Florida. Of course, a lot of this maintenance would be done in the regular maintenance work anyhow, so it should not necessarily be attributed to this device.

Mr. BOGAN. Out of that list of items that we feel are reasonable and should be attended to on an annual basis, less than $2 is attributable to the actual emission parts in there.

Mr. ROGERS of Florida. About $2?

Mr. BOGAN. Well, that is—on that basis of reasoning; yes, sir.

Mr. ROGERS of Florida. That gives us a different picture and I appreciate that. That straightens out that.

Now, just a few more questions here.

I, of course, understand from your testimony that you feel all of this is not very worthwhile unless there is some system of local inspection.

Mr. BARR. Correct. If you are concerned with the ambient air quality of the air in 1975, we will not get there without some kind of mandatory inspection on the motor vehicles.

Mr. ROGERS of Florida. Also, as I understand, you feel Federal standards should not be set by law but should be allowed to be done administratively.

Mr. BARR. We have so stated; yes, sir.

Mr. ROGERS of Florida. As to exemptions for exports, you feel that we should not require any of these devices on automobiles to be exported from the United States.

Mr. BARR. Well, that reasoning is very simple. We would be putting them on vehicles in this country to be used domestically to improve our air pollution or reduce the emissions of our engines because of the air pollution problem. So it follows that if we are shipping our vehicles to foreign countries in competition, that this would be an undue commercial burden on vehicles that we might export elsewhere.

Mr. ROGERS of Florida. Unless they also had them.

Mr. BARR. Of course, if they had laws, we would have to comply with the laws in those countries just as the imports that are being brought into this country should also have the same requirements as those that are produced domestically.

Mr. ROGERS of Florida. Of course, the argument goes, should we go ahead and send an item over to help pollute their air or not but we will not get into that.

You make a great distinction between trucks and the automobiles. From testimony we have heard the other day, we were given the impression that this is not too great a difficulty and that by getting some ratio between the load of the truck and the power of the motor, this could be handled somewhat and the use of gasoline and proper maintenance. What would be your comments on that?

Mr. BARR. Well, I think we would merely reaffirm what we say in the statement. At the present time there is no test cycle set up for trucks above one-half ton rating and that is 6,000 GVW, not 10,000 as specified in GSA. So there is no hardware or equipment available for trucks above 6,000 GVW at this moment, although the California Air Pollution Control Board and others are making tests to determine the proper cycle for trucks.

Mr. ROGERS of Florida. What about the Automobile Manufacturers Association? What work has been done? Surely you have done some work on this above 6,000.

Mr. BARR. Yes. We have run some tests ourselves and are working on this problem.

Mr. ROGERS of Florida. So that work is proceeding to try to do something about this problem of trucks and buses?

Mr. BARR. We are working on it.

Mr. ROGERS of Florida. Because I think people are very much concerned, I know I am, about the bus situation where you drive down a street or on the road behind them and they just envelop you in this cloud of pollution and I would be very hopeful that the industry would give real attention to this.

Now, the Department of Health, Education, and Welfare suggested that there be no differentiation between diesel engine treatment and gasoline engines.

Mr. BARR. Well, that would be somewhat like saying there should be no differentiation between men and women. They are different type engines. They have different kinds of engines.

Mr. ROGERS. of Florida. I realize that, but as to the problem and the time element, there is no reason why you cannot find a cure for a man as you could for a woman, in the same time.

Mr. BARR. We could comment on that because several others here do manufacture diesel engines and there has been parallel and extensive test work going on this area, and as we said in our short statement concerning diesel engines, there are two problems here. One is the smoke that you see which is particulate matter. This is pieces of matter and they are not contributors to smog at all. They are merely dirty and that is the extent of any damage from them.

Mr. ROGERS of Florida. They have an obnoxious odor.

Mr. BARR. But so far as the black smoke is concerned, with proper maintenance and good fuel selection as we indicated, this can be greatly minimized. Again it is a matter of maintenance.

Mr. ROGERS of Florida. And the actual load, as I understand, of the vehicle, does that have anything to do with it?

Mr. BARR. Very definitely, because by setting the mixture, air-fuel ration, on the rich side, more power can be obtained from a diesel engine and this is why it is often to the benefit of the operator to do this.

Mr. ROGERS of Florida. Yes. Now, could you as a manufacturer set the standard for these buses or trucks, saying the load factor would be such and such for the engine and have this standard and then an inspection could be made to see if that was being carried out, or would this be feasible?

Mr. BARR. Inspections could be made to see that the original specifications were on the vehicle but they can be altered in the field. They cannot——

Mr. ROGERS of Florida. If we had an inspection, say, in the city while they are being used, if we could stop one and, say, have an inspection to see, would this be a fairly easy thing to do?

Mr. BARR. It could be done but it wouldn't be easy.

Mr. ROGERS of Florida. It would not be easy. You would have to pull the truck in and——

Mr. BARR. I think you would have to take it where you could make an adjustment on the needles and injectors, and make sure there is a proper air-fuel ratio.

Mr. ROGERS of Florida. But it could be done.

Thank you.

Actually, I think the industry has done a great deal in this field and I know the industry has cooperated certainly with our committee over the years and the work you have done on safety features has been most helpful and I commend you for trying to give constructive advice in the handling of this problem.

Mr. BARR. I think our comments that were made, Mr. Chairman, concerning these two issues, the larger trucks and diesel engines, are not with any consideration that we are not aware of the problems in these fields. They are being worked on as rapidly as we can bring technical knowledge to bear.

Mr. ROGERS of Florida. Thank you.

Mr. SATTERFIELD. Will the gentlemen yield for one question?

Mr. ROGERS of Floria. Yes.

Mr. SATTERFIELD. One thing I am a little confused about. And this question is for my personal information. When we talk of measuring these pollutants are we talking about a specific amount of pollutant, that is a measurable quantity or are we talking about ratio of pollutant to the remainder of gases by volume or are we talking about rate of flow or a combination of all these?

Mr. BARR. Do one of the rest of you want to try this?

Mr. SATTERFIELD. I am a little confused about this.

Mr. MISCH. Actually the California standard relates to the ratio of pollutants to the total flow of exhaust gases during the prescribed cycle of operation.

Mr. SATTERFIELD. Is that by flow or volume or combination of the two?

Mr. MISCH. Well, it is by volume.

Mr. HEINEN. It is by total volume on a prescribed cycle of operation. Certain events have to follow chronologically. Now, that results in a certain volume which actually turns out to be something of the order of 25 cubic feet per minute.

Mr. SATTERFIELD. Is that measured in terms of the rate of flow?

Mr. HEINEN. Yes, indirectly. That brings about a regular flow. You accelerate at a certain speed, you have a certain flow of gas coming through. You operate at a certain steady speed, you have a fixed rate of flow coming through in order to operate that.

Mr. SATTERFIELD. What I am getting at is that there are certain impurities in the fuel that you really do not get rid of. It is just a question of what diluted form——

Mr. HEINEN. No. I thought you were understanding that earlier. You do get rid of the impurities. They are oxidized. They are changed to water and carbon dioxide essentially so that you do destroy the impurities. The measurement, however, is based on what extent have you destroyed them in this fixed amount of flow.

Mr. SATTERFIELD. I see. That answers my question.

Mr. BARR. Mr. Chairman, if I might ask Mr. Satterfield, before you used the word "impurities" in the fuel. When you use the word "impurities," what did you mean there?

Mr. SATTERFIELD. I really mean by the word "impurities" what we are referring to as pollutants.

Mr. BARR. OK. Because there are other impurities that are filtered out.

The CHAIRMAN. Mr. Barr, do I gather from what has been said by your distinguished panel here that you feel that this matter can be more appropriately dealt with on an area-by-area basis?

Mr. BARR. Well, I think we concur here that if we are to put equipment on our automobiles to control emissions on a national basis, we like for it to be one system. This is quite obvious. It would be chaotic if we had 50 different systems prescribed. This is where recommendation to the States on the standards could be effective. However, we feel that in the local areas the first job is ambient air quality projection, these things that we talked about, and what can be done on stationary sources of air pollution first.

The CHAIRMAN. Well, now, you talk about one system. Do you mean the same kind of a device that would work on all engines regardless of what company?

Mr. BARR. Do you want to try that one, Herb? I think the differences exist.

Mr. MISCH. In answer to that question, Mr. Harris, we do not necessarily feel that one system would apply to all engines or to all engine-transmission combinations. As manufacturers, we would like to retain the flexibility necessary to minimize the variety and complexity of the systems built and installed in our manufacturing and assembly plants. We may elect, for example, two or three approaches that would adequately satisfy the specific needs in various areas of the country in an effort to minimize the economic impact on the consumer. We may find, after appropriate ambient air quality standards have been established, that the 30 to 40 percent reduction already achieved by the installation of crankcase blowby devices will satisfy the requirements in most localities; or additional engine modifications, involving leaner carburetion and retarded spark, may be required for certain other regions; or, finally, still further engine and vehicle modification for more stringent exhaust controls, would be necessary for other areas with unique problems, such as California.

I think we are all quite concerned about the economic impact of these controls on the consumer and the degree to which he would be receptive to the cost. We are of the opinion that there might be quite a difference in the consumer's willingness to accept the economic burden when he becomes truly aware of the need for these controls in his own community.

The CHAIRMAN. Well, of course, that theory, it would seem to me, would work all right if you were not going to permit automobiles to drive from one area or community to another. But with our system of highways, and particularly the nationwide interstate system, I don't see how you can say that a given automobile or numerous autobiles is going to operate in California with a device on it and in Nevada without a device.

Mr. BARR. Mr. Chairman, actually the same thing exists in the State of California. As you well know, there is perhaps 80 percent of the vehicles in areas where there is an air pollution problem.

The CHAIRMAN. Well, I know they are trying to get help out there, trying to get a resolution adopted by the State legislature to make two

States out of California so the people up in the north wouldn't have to suffer the problems of the southern part of the State. So I imagine you do have a problem.

Mr. BARR. They have the same problem that you have on a national basis, that there is a part of their motorcar population that are in areas where air is quite clear. And you would have that same condition on a national basis from one point to another.

The CHAIRMAN. Well, I just seem to feel that if it can meet the problem in California, the Nation could very well gain a lot of experience, profitable experience, out of it. With the continued work of you gentlemen in your industries, as you are doing to meet the problem, perhaps it could be accomplished before it would be necessary to suffer the same handicaps in every part of the Nation as the people are going through in California at the present time.

I did not much believe this business of smog in Los Angeles. I heard so much about it, and I was out there several days and nothing happened. I thought somebody had a mental block somewhere, but about the third day, the darn stuff hit me, and something was really in the air. I learned then what a problem smog can be.

I think that the automobile industry could very well accomplish something by volume production and continued cooperation to bring this estimated cost way down. This may need to be applied nationwide, because automobiles from the cities now are traveling to the countryside in great numbers, so what affects the people of Washington now is going to be applicable to the people of Arkansas or Colorado.

It seems to me that now is the time to do it. I am not for a crash program. I can understand why California did say, "Let's do it now," because they are experiencing the difficulties right now.

But I do believe with the fine work that you have accomplished, that in time this problem will be resolved.

Gentlemen, thank you very much, Mr. Barr and your associates. We are glad to have your very valuable and constructive presentation here this morning on this subject.

Mr. BARR. Thank you very much.

The CHAIRMAN. Dr. Alfred Fletcher.

Dr. Fletcher, I believe you are the director of the New Jersey Division of Environmental Health, Trenton, N.J.

Dr. FLETCHER. Division of Environmental Health, State Department of Health, of the State of New Jersey.

The CHAIRMAN. Glad to have you.

STATEMENT OF DR. ALFRED FLETCHER, DIRECTOR OF THE NEW JERSEY DIVISION OF ENVIRONMENTAL HEALTH, TRENTON, N.J.

Dr. FLETCHER. I am testifying for the State Department of Health of New Jersey. I would like to direct my remarks to section 206 which amends section 104 of the Clean Air Act by inserting at the end thereof a new subsection (d).

This subsection (d) provides for grants to State or interstate air pollution control agencies for making or arranging for surveys of solid waste disposal practices and problems within the jurisdictional

areas of such agencies and of developing solid waste disposal plans for such areas.

The State Department of Health, New Jersey, is in favor of the intent of this subsection to encourage and support surveys of solid waste disposal practices and problems and of developing solid waste disposal plans. We respectfully suggest that on page 25, line 16 and 17, the words "air pollution control" be deleted so that the assignment of responsibility to an agency of the State government for making such surveys and developing such solid waste disposal plans be left to the discretion of each State.

In New Jersey, two agencies in one division of our State department of health cooperate to supervise and control solid waste disposal areas, one agency supervising the total problem of waste disposal while the air pollution control agency moves to control open burning wherever found which includes at times fires on some land filling operations.

We respectfully suggest that the control of solid waste disposal include such problems as the disposal of industrial solid and liquid wastes on land filling operations which are responsible for some of the fires on such operations. This is due to chemicals.

Second, the disposal of demolished building wastes as from urban renewal projects now taking place in many urban areas. The problem of securing cover material in the preparation of site which frequently involves large dragline operations or dredging. The disposal of sewage treatment plant sludge and sludge from the cleaning of septic tanks. The control of insects and rodents and other nuisances. It may involve the licensing and control of trucks in disposal areas to eliminate the collection of waste by trucks that have no disposal areas and dump in vacant lots and at unauthorized hours. And the control of underground burning at abandoned completed land fills.

The solution to most of these problems I have just enumerated is not yet known. After solutions are found, control programs must be developed and carried out. To emphasize the magnitude of these operations, we suggest that the cost of collecting and disposing of solid waste probably exceeds the cost of collecting treatment and disposal of liquid sewage and industrial wastes. Control of garbage and refuse is a major municipal public works and control problem that we suggest should not be assigned to the air pollution programs in all States. It is possible but not likely that some States would assign this problem to the air pollution control agency. This assignment in S. 306 appears to us to be unwise and unnecessary.

Thank you.

The CHAIRMAN. Dr. Fletcher, thank you very much for your statement and your suggestions and recommendations.

Any questions?

Mr. ROGERS of Florida. I just have one, Mr. Chairman.

You stated that you would allow the States and indivdual areas to set their own standards. Did you mean on——

Dr. FLETCHER. No. To suggest—leave to the State the assignment of the responsibility for making the studies and develop plans for programs rather than assign garbage and refuse disposal to air pollution.

Mr. ROGERS of Florida. I see. Fine. Thank you very much.

The CHAIRMAN. Any further questions? Thank you very much, doctor. We are glad to have your presentation.

Mr. Samuel A. Hart. Mr. Hart is from the Department of Agricultural Engineering, University of California.

The CHAIRMAN. Mr. Hart, we are glad to have you. You may proceed.

STATEMENT OF SAMUEL A. HART, DEPARTMENT OF AGRICULTURAL ENGINEERING, UNIVERSITY OF CALIFORNIA, DAVIS, CALIF.

Mr. HART. Mr. Harris, thank you very much.

Gentlemen of the committee, my University of California is very much concerned about the problem of solid waste disposal. We are eager and willing, we are ready to start work on a program of research, on training, and on demonstration to work out some of the solutions to this solid waste problem. We are slightly concerned that the solid waste provisions are a part of the Clean Air Act and thus subservient to it.

Part of this discussion indicates that the research, the training, the demonstration grants as provided in this act, are contingent upon open dump burning prohibition. Well, we believe that soil waste disposal should be predicated on not polluting the waters of our Nation. We believe that it should be predicated on not pulling or desecrating the land. So we want to develop a program of solid waste management in consideration of all of our resources and we feel it is a shame to only tie it to say that it must be controlled only by the air pollution aspects.

We of the University of California are very ready to perform this research without regard to the patent problems. You have in this Senate bill 306 a page and a half discussing how the patent requirements will be applied with this. Certainly with our university and past grants that we have had from the Federal Government through the National Institutes of Health, we have worked out a satisfactory patent agreement with you.

On the one hand, you are encouraging research and training and demonstration with funding to the State, to the universities such as mine, and on the other hand, you are holding out with the idea of the patent requirements. The corollary is that in sewage treatment, many different companies have produced sewage plant equipments that have patents on them. And this has not hurt the development of good sewage treatment plants.

I feel that the restriction on the patents might well slow down the very plan that you are trying to develop; that is, of new and advanced systems of solid waste disposal, and I would urge that you reconsider this.

My university is real pleased that a solid waste program is in the offing, and we are delighted that you are working on this.

Thank you for this opportunity of presenting these ideas on it.

The CHAIRMAN. Mr. Hart, thank you very much for your statement and your suggestions.

Any questions?

Mr. CARTER. I just want to say that certainly as a member of this committee I do recognize the big problem of disposal of solid wastes, and certainly we do not want to neglect it.

That is the only point I had.

The CHAIRMAN. Thank you very much, Mr. Hart.

Mr. HART. Thank you.

The CHAIRMAN. Mr. William S. Story.

Mr. Story, you may identify yourself, if you will, and proceed.

STATEMENT OF WILLIAM S. STORY, EXECUTIVE VICE PRESIDENT, THE INSTITUTE OF SCRAP IRON & STEEL, WASHINGTON, D.C.

Mr. STORY. My name is William S. Story. I am executive vice president of the Institute of Scrap Iron & Steel, Inc., an international trade association representing the processors and brokers of iron and steel scrap. We have our headquarters here in Washington.

Our association has 1,200 member companies. Last year, American steel mills and foundries purchased from this industry about 32 million tons of prepared scrap which was remelted into new steel to make new products. Our sales were $2.4 billion in 1964. We exported about 8 million tons of scrap and we estimate that our members handle approximately 90 percent of the prepared ferrous scrap which is consumed in this Nation.

Our members are not in the junk collecting or autowrecking business. Junk collectors assemble all manner of waste and materials—paper, rags, glass, nonferrous metals, iron, and steel scrap—sort them out and hold them for sale to processors. The autowrecker strips a car of parts for reconditioning and resale. He sells the hulk to the scrap processor. It is the scrap processor who manufactures and ships a basic raw material to mills and foundries.

Our primary interest is in the solid waste disposal program offered in S. 306. There are, however, aspects of this industry affected by the proposed Clean Air Act, also contained in the bill.

Most of what is popularly considered to be solid waste is, in fact, a valuable resource of this Nation. We estimate, for example, that over 30 million tons of scrap are harvested annually from iron and steel products which wear out, are destroyed by catastrophes, rendered obsolete, or come from production of new steel products. About one-third of the tonnage comes from America's factories as leftovers of new iron and steel when products are made, such as automobiles. Far from being considered a waste, factories think of this scrap as an important source of income because this prompt industrial scrap is a highly desirable raw material. Our members pay the factories for the right to take away their scrap output.

We wish to point out that the present definition of solid waste does not fully recognize that much solid waste does have economic value and that very substantial industries exist to salvage that material. In this respect, we share the views of our fellow organization, the National Association of Secondary Material Industries, which were presented to the committee on June 11, 1965. There should be a clear differentiation between the materials whose disposal represents a serious problem to the community and those which have value and for

which an organized salvage industry of private businesses already exists.

The institute therefore endorses the suggestion that paragraph (d) of section 203 of S. 306 be amended to read:

The term "solid waste" means garbage, refuse, and other discarded solid materials, including solid-waste material resulting from industrial, commercial, and agricultural operations, and from community activities, *with no direct commercial scrap value in their present form.* (Italic indicates proposed amendment.)

Such language would, we believe, channel Government assistance into those areas which need it most. We feel there is no need for the expenditure of Federal funds to construct scrap or nonferrous metal processing facilities in the belief that private industry does not now have the capacity or the willingness to undertake this function. The tremendous tonnages of processed scrap now being shipped to mills indicate the willingness is present. The capacity exists as well, most dramatically illustrated by the more than 300 hydraulic guillotine shares; hundreds of presses for materials ranging from cars to machine shop turnings; and the 5 automated shredding machines and smaller shredders now in operation in this industry and used primarily for shredding automobiles.

It is the institute's belief that governmental interest and assistance should be directed into research programs which would seek out more efficient solid waste disposal processing methods and greater commercial use for the salvaged materials. Because all but a very few companies in the scrap industry are small businesses, by most standards, they are unable to enter into research efforts on their own. Through the institute, this industry has expended a considerable amount in research. However, much remains to be done and in moving forward in this important work, we welcome the Federal Government's interest.

Some well-defined and well-known problems exist for this industry. The disposal of old cars is a good example. Each old car represents a ton of usable scrap. Since scrap is the metallic equivalent of pig iron in making new steel, scrap therefore conserves the iron ore, coke, and limestone which is used to make the pig iron from which in turn is made new steel.

There are some 6 million cars a year going off the roads. Steel mills do use auto scrap, contrary to some reports. However, there is an unsightly backlog of cars because steel mill demand has not kept pace with the supply of auto scrap.

Autos are the most difficult type of scrap to prepare because much of it contains copper, plastics, lead, and other materials which contaminate the steel. These must be removed. The quickest, most efficient way to clean these materials out is by burning. Local smoke and air pollution control laws make this practice impossible in many areas. Naturally, this has discouraged many scrap processors from taking in cars. Very few can afford the expensive and time-consuming methods of hand-cleaning a car. Steel mills will not accept unclean scrap.

While there are automobile incinerators in operation, we feel there is need for additional research in developing a truly effective, smoke-

less unit. The institute itself has spent more than $50,000 in basic research on this subject. The rising number of cars abandoned on the streets of major cities makes development of truly smokeless automobile incinerators a project of considerable value for our larger communities.

Individual scrap firms have spent up to a half million dollars to install the best incinerators presently available. There is no question that private firms will use such units, if they can be effective. We suggest, therefore, that Government research, in conjunction with private industry, would be most valuable in this area.

This Nation can ill afford the waste of a raw material that is represented by old cars. Nor can it afford the waste of reusable steel found in tin cans, refrigerators, stoves, freezers, and similar appliances. The basic problem is the same, from the scrap processor's viewpoint, with all these products: all of them are coated or fused with nonmetallic or contaminating materials which must be removed to obtain usable scrap.

Study is needed into new devices for the removal of metallics and nonmetallic items of this nature. There are concepts on the drawing boards and some techniques in limited use which should be developed more fully. If research funds were made available for these projects, no doubt quicker progress could be made. To speed that progress, this industry is presently developing plans for a scrap research foundation, which would be the first venture of its kind in this business.

Our industry has been deeply concerned with solid waste disposal problems since it provides the disposal services to the communities for metal waste—at no cost to the taxpayer. Without the scrap and its related salvage industries, individual citizens and many businesses would have to bear this additional financial burden.

What we seek is aid in developing new and improved means for doing our job. This greater efficiency will, in the long run, benefit all citizens, by continuing to save the cost of financing public disposal services, and by maintaining a healthy salvage industry.

The CHAIRMAN. Thank you, Mr. Story.

Any questions, gentlemen?

We are glad to have your statement and your suggestions. They will be considered in due course.

Mr. STORY. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Robert W. Frase.

Mr. Frase, how much of a statement do you have?

Off the record.

(Discussion off the record.)

The CHAIRMAN. Back on the record.

You are Mr. Robert W. Frase, of the American Book Publishers Council and American Text Book Publishers Institute.

STATEMENT OF ROBERT W. FRASE, AMERICAN BOOK PUBLISHERS COUNCIL AND AMERICAN TEXT BOOK PUBLISHERS INSTITUTE

Mr. FRASE. Right.

Mr. Chairman, our concern is not with the substance of the bill but with section 204(c) which was inserted in the Senate committee and which deals with patents and copyrights, and our concern is exclusively with copyrights. We had no opportunity to testify on this

matter in the Senate committee and there was no debate on the Senate floor on the matter. However, it is our belief that so far as copyrights are concerned, the inclusion of this provision in this bill and any other bill in which it is introduced would defeat the purposes of the Government in the dissemination of research on which Federal money is expended.

We feel this because whether the publishing house is a nonprofit journal, a university press, or a commercial publisher, ordinarily the publishing organization will not wish to publish something for which it does not have copyright protection. With copying machines as common as they are now, a chapter of such a work could be copied around the world by industrial corporations and completely destroy the market for the publication.

The result would be to throw back onto the Government a large volume of publication which is now carried on privately either by nonprofit organizations such as university presses or commercial publishers.

If Government publication were done by way of mimeographed reports and that kind of thing, distribution would be rather inadequate. The same would be true if the publication were through the Government Printing Office which does not have facilities for effective distribution of works through the normal channels of bookstores, mailing lists, salesmen, and so forth.

We feel that this is a subject which ought not to be handled piecemeal on individual bills but considered in connection with the general revision of the copyright law which is being considered at this very moment in hearings before Subcommittee No. 3 of the House Judiciary Committee, chairman of which is the Honorable Edwin E. Willis, of Indiana.

We would urge, therefore, that that committee be allowed to consider this aspect of copyright revision as well as all others and that the word "copyright" and "copyrights" be deleted from section 204(c) of this bill.

Your committee might wish to ask the opinion of the copyright office on this particular provision of the bill because we understand that the copyright office was not consulted before the Senate committee introduced this provision in the bill before you.

I would like to have my complete statement put into the record. I think this gives the gist of the argument.

The CHAIRMAN. Yes. You may have your statement included in the record in full. And we appreciate your testimony and your calling to our attention the importance of this provision. I have some concern over it myself. It will be given consideration as the committee considers this entire problem.

Mr. FRASE. Thank you very much, Mr. Chairman.

The CHAIRMAN. Thank you very much. We appreciate your being with us today.

(The prepared statement of Mr. Frase follows:)

TESTIMONY OF ROBERT W. FRASE ON BEHALF OF THE AMERICAN BOOK PUBLISHERS COUNCIL AND THE AMERICAN TEXTBOOK PUBLISHERS INSTITUTE

My name is Robert W. Frase and I am director of the joint Washington office of the American Book Publishers Council and the American Textbook Publishers Institute. These are the two trade associations in the book publishing field

whose combined membership accounts for over 95 percent of the volume of book publishing in this country. The institute membership is made up of firms publishing textbooks of all kinds, reference books, educational tests and maps. The council membership publishes all other types of books including general or trade books, juvenile books, scientific and technical books, religious books, paperbound books and books published by university presses and publishing departments of religious denominations.

COPYRIGHT PROVISIONS OF S. 306, SECTION 204(C)

I shall confine my remarks to the inclusion of the words "copyrights" and "copyright" in section 204(c) of S. 306—amendments to the Clean Air and Solid Waste Disposal Acts—as it passed the Senate on May 18, 1965. We recommend that the words "copyrights" and "copyright" be struck from this section of the bill because they involve a complicated subject which is now being considered in lengthy hearings before Subcommittee No. 3 of the House Committee on the Judiciary under the chairmanship of Representative Edwin E. Willis. Mr. Willis' subcommittee is considering H.R. 4347, a bill for the general revision of the copyright law, introduced by Chairman Celler of the Judiciary Committee and drafted by the copyright office of the Library of Congress.

Section 204(c) was included in S. 306 in Senate committee without invitation to interested individuals or organizations to testify or submit prepared statements, and without securing a report from the copyright office. The Senate committee report on the bill (S. Rpt. 192) merely describes section 204(c) but does not indicate any reason for including it. There was no discussion of this section on the Senate floor when the bill was being debated on May 18.

I shall not attempt to discuss in detail the effects which would follow from the inclusion of the words "copyrights" and "copyright" in section 204(c). I would, however, like to repeat briefly the substance of testimony on this subject which was presented to the Education Subcommittee of the Senate Labor and Public Welfare Committee on May 20 by Mr. W. B. Wiley, president of the American Textbook Publishers Institution, in connection with a similar proposed amendment to S. 600, the Higher Education Act of 1965.

We have had some exploratory discussions on this amendment and we understand that its intended effect so far as copyrights are concerned would be approximately as follows: materials resulting in whole or in part from Government science and technology research and development grants and contracts could be copyrighted. In other countries the American copyright owner would enjoy all the usual rights. In the United States, however, anyone would have a blanket license to reproduce and use the material without limitation. In other words, for all practical purposes the material would be in the public domain in the United States.

Section 204(c) with the word "copyrights" retained will have the following effects on the publication of research and development results in areas covered by any bill to which it is appended:

(1) It will reduce the publication of research results and thus limit dissemination.

(2) It will increase the cost to the Government of whatever dissemination is made.

(3) It will tend to defeat the purpose of Federal research and development expenditures by limiting the audience to which these results will be made known.

(4) It will transfer publishing activity from the private sector of the economy (both profit and nonprofit) to the Federal Government.

There is one basic reason why these results will flow from the Long amendment if copyright is ineffective on material resulting in whole or in part from Government research expenditures. Publishing organizations—whether commercial firms or nonprofit university presses, or professional societies publishing journals—will ordinarily not find it economically feasible to publish without the copyright protection which constitutes their only title to the literary property. If a university press or a publishing house specializing in scientific and technical books should be offered a book by a physicist who has had some Government research grants, it would in many cases be necessary to refuse if copyright was not obtainable. Books of this kind are ordinarily published in very small editions because of the limited market, and therefore have to be priced quite high. If this small market should be further reduced by lack of copyright protection the price might become so high as to make the whole project uneconomic.

This reduction in the market might very well result if major corporations, for example, could make multiple copies of the book or copy portions thereof without permission or payment. The market for a normal 2,000-copy edition might thus shrink to half or less and the $10 price jump to $25. On books of this kind which incorporation advance research results, the cost of typesetting is controlling, and these costs must be met regardless of the number of copies sold. If the market is too small the typesetting cost will make the whole edition impossible.

In a case like this, with non-Government publication out of the question for lack of copyright protection, the Government agency responsible for the research grants would have three alternatives, none of them very satisfactory. It could take a few typewritten copies of the professor's research reports produced under the grants and endeavor to distribute these to a few key people, allowing the more comprehensive book to remain unpublished. Or it could subsidize the cost of publishing by a private or university press publisher, permitting the price to be set at the normal $10 a copy, but making up the difference between that price and the actual cost of $25 per copy. Or it could publish the book through the Government Printing Office, paying the high price of the total cost of the limited small edition and getting an inferior job of distribution. Government Printing Office books are not generally handled by bookstores, are not advertised, and are frequently not even reviewed in the appropriate professional journals.

SUMMARY

Although the inclusion of the words "copyrights" and "copyright" in section 204(c) of S. 306 might at first glance appear to be equitable and in the public interest, it would in practice defeat the purposes of Government in making public funds available for research and development. It would make the results of such research expenditure less, rather than more, available to the public. It would also tend to socialize—turn over to the Government—a large area of private endeavor, both profit and nonprofit.

We would therefore urge that your committee not attempt to deal piecemeal with copyright questions in this bill but leave that subject to the Committee on the Judiciary, which has primary jurisdiction, and which is at this very time holding hearings on H.R. 4347, a general copyright revision bill.

The CHAIRMAN. This concludes the hearings for this morning and the committee will adjourn until 10 o'clock in the morning.

(Whereupon, at 12:10 p.m. the committee recessed, to reconvene at 10 a.m., Wednesday, June 16, 1965.)

CLEAN AIR ACT AMENDMENTS

WEDNESDAY, JUNE 16, 1965

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON PUBLIC HEALTH AND WELFARE OF THE
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met, pursuant to recess, at 10 a.m., in room 2123, Rayburn House Office Building, Hon. Oren Harris (chairman) presiding.

The CHAIRMAN. The subcommittee will come to order.

In view of the number of witnesses we have this morning, I think that we will start the hearings. Other members will be along later, I am advised.

Scheduled as the first witness will be a representative of the Department of the Interior, Mr. Max N. Edwards, Assistant to the Secretary and Legislative Representative of the Department of the Interior. Mr. Edwards, you may present your statement for the Department.

Mr. EDWARDS. The Secretary of the Interior regrets very much, Mr. Chairman, that he is not able to be here in person this morning, because he has a very strong interest in the legislation which the committee is considering.

The CHAIRMAN. I regret that we are deprived of the pleasure of having him here this morning. Will you tell him that?

Mr. EDWARDS. I shall do that.

The CHAIRMAN. You may proceed.

STATEMENT OF MAX M. EDWARDS, ASSISTANT TO THE SECRETARY AND LEGISLATIVE COUNSEL; ACCOMPANIED BY JOE B. ROSENBAUM, ACTING ASSISTANT DIRECTOR, MINERALS RESEARCH, BUREAU OF MINES; HARRY PERRY, DIVISION OF COAL RESEARCH, BUREAU OF MINES; AND DAVID B. FINNEGAN, ATTORNEY, OFFICE OF LEGISLATIVE COUNSEL, DEPARTMENT OF THE INTERIOR

Mr. EDWARDS. Mr. Chairman and members of the subcommittee, I have with me Mr. David B. Finnegan, Mr. Harry Perry, who is the Director of the Division of Coal Research of the Bureau of Mines, Mr. Joe Rosenbaum, who is the Acting Assistant Director of the Minerals Research of the Bureau of Mines.

The CHAIRMAN. We are very glad to have you here with us.

Mr. EDWARDS. Mr. Chairman, I welcome the opportunity to appear before this committee in support of legislation which will help us in reducing or eliminating some of the pollutants that adversely affect

the air we breathe. This legislation deals with matters basic to the conservation and utilization of our natural resources and with natural beauty.

President Johnson in his recent natural beauty message forcefully pointed out that pollution destroys the natural beauty of our country, menaces the public health, reduces our efficiency and property values, and raises taxes. Throughout his message he emphasized the need for greater efforts in the control of motor vehicle exhaust emissions and in the disposal of solid wastes.

S. 306 which has passed the Senate offers the best approach to the problems of air pollution resulting from the combustion of fuels used by our many automobiles and trucks and from the disposal of solid wastes. We strongly endorse S. 306 with the modifications suggested by this Department and the Department of Health, Education, and Welfare.

S. 306 adds to the Clean Air Act a new title relating to the disposal of solid wastes. This new title authorizes the Secretary of the Interior to carry out a comprehensive program to meet the problems of solid waste disposal.

The disposal, control, and reclamation of waste products resulting from the extraction, processing, and utilization of mineral substances are important technologic and economic factors in the effective conservation of mineral resources. The Department of the Interior, through the Bureau of Mines, has for many years approached the problem of minimizing waste mainly from the standpoint of conserving the resource. Specifically, we have sought instances where improved recovery systems would reduce mineral losses, and incidentally reduce the volume of the products finally discarded. We have concentrated our attention to those instances where improvements in recovery promised direct economic gains to the industry. Under this approach the present level of the Department's activities in solid waste disposal research and resources investigations is approximately $2.7 million annually.

S. 306 requires the Federal Government, specifically this Department, to emphasize the effects of mineral industry-based wastes on the total environment. It requires that more attention be given to instances where waste disposal practices might be improved for the purpose of conserving the resource itself and other resource values, including natural beauty.

S. 306 directs this Department to encourage and give financial and technical aid to public and private agencies and institutions in the conduct of research, investigations, experiments, training, demonstration, surveys, and studies relating to the operation and financing of solid waste disposal programs, the development and use of new and better methods of disposal, and the reduction of the amount of waste and unsalvageable waste materials. The Secretary is also authorized to carry out these activities directly. It enables us to carry out a comprehensive program designed to meet the problems of solid waste disposal in the mineral industry.

Today we have a wealth of technical knowledge and financial resources to utilize in dealing with myriad problems of our increasingly crowded and interrelated life. We must devote some of this wealth

to the problem of pollution. The legislation before you today proposes new steps to cope with some of these problems.

The Department of the Interior, in carrying out the solid-waste provisions of S. 306, will emphasize the development of economically feasible methods for the disposal of industrial wastes inherent to the minerals and fossil fuels industries in a manner that will not be detrimental to other natural resources, including natural beauty. Further, with our responsibility for the conservation of material resources, we will also seek more complete utilization and recovery of industrially useful products present in these so-called wastes.

Increasing attention is being given in this country to correcting the mistakes of the past associated with the minerals and fossil fuels industries. Reclamation of stripped coal lands, protection of surface and underground water supplies from oilfield pollution, correction or elimination of streams polluted with acid water draining from abandoned mines, filling of underground mines to prevent surface subsidence—all these are being undertaken now under various governmental or private programs. But these worthy actions are not enough. The requirements of an expanding population for maximum efficient natural resource utilization, often with multiple land and water use as an absolute necessity, make mandatory the development of better mineral extraction, processing, manufacturing, and utilization methods. We cannot continue with methods that lay waste the land surface, or result in deteriorating water quality, or cover land valuable for agriculture or recreation with huge waste dumps.

It is our belief that the most efficient and the most logical way to attack these problems is to seek to eliminate them at the source—not merely to treat the symptoms when they appear. The solids in waste resulting from the extraction processing, and use of mineral substances may take the form of particular matter rising in a smokestack or going down the drain with the effluent leaving smelters or steel mills. They may also be in the form of dust being produced in a minerals processing plant, of slag dumps and refuse piles rising ever higher beside a miner, or of unsightly accumulations of metal scrap. Our belief is that the earlier you atack these problems in the process—be it the mining process, the manufacturing process, or the utilization process—the greater your chances of success.

The Department under S. 306 could make grants to municipal or regional bodies for dual-purpose land use planning which could, over a period of time, provide open pit sources for sand, gravel, and stone which then could be utilized for planned waste disposal. Other planning grants could be made for waste disposal methods involving mineral materials, both to deal with present unsightly waste accumulations and with future waste problems.

S. 306 would also allow in-house and contract research into other aspects of mineral industry waste disposal. Areas for research could include:

(1) Uses for waste materials from mining, including accelerated use of microbiological organisms in recovery techniques;

(2) Ways of preventing air and water pollution from mineral waste dumps and mines;

(3) Mineral dressing studies to reduce contamination of streams when plant wastes are disposed of;

(4) Utilization of metal scrap in leach recovery of minerals in underground mining;

(5) New underground mining systems which could economically supplant block caving and open pit mining; and

(6) Additional research on extreme high temperature waste incineration.

A critical problem may arise when an oil shale industry gets underway, and disposal of spent shale warrants extensive research at this time. The extent of the problem is this: The Bureau of Mines estimates that at present 3.3 billion tons of mining waste material are disposed of annually on the Nation's land surface; a total daily shale oil production of 1 million barrels per day (13 percent of present U.S. crude production) would produce a spent shale waste at the rate of approximately ¾ of a billion tons per year—enough to cover 20 acres every day to a depth of 30 feet.

We expect that ultimately mining, processing, and utilization techniques can be integrated into total mineral production systems. This would involve mining methods that utilize the major part of the waste from mining and mineral treatment as backfilling to support the voids created by mining, thus simultaneously solving the problems of surface waste disposal, surface subsidence, and water pollution.

Also, we foresee mineral treatment processes that produce valuable byproducts from the remaining wastes without in turn creating other disposal problems; and refineries from which all of the effluents can be salvaged as useful products.

I have stressed here this morning the portion of S. 306 which relates to solid waste disposal because of its importance to the Department of the Interior. But I would not want to leave the committee with the impression that we in Interior are not mindful of the equal importance of other provisions of the bill for the control of exhaust emissions from automobile engines.

On the contrary, we believe that S. 306 offers the best approach to the problem of automobile emission control and will aid in preventing further pollution of the air from this omnipresent source. The Interior Department has considerable experience in this troublesome area through research in fuels used by automobiles and the constituents of automobile exhausts which contaminate the air. Our expertise will be available to the Secretary of Health, Education, and Welfare to aid in developing acceptable standards as called for in S. 306.

A few years ago we were greatly concerned about the "ugly American." Today we must act to prevent the "ugly America."

For once the battle is lost, once our natural splendor is destroyed, it can never be recaptured. And once man can no longer walk with beauty or wonder at nature, his spirit will wither and his sustenance be wasted.

It is my firm belief that S. 306 provides the means of fulfilling this worthy challenge. We in Interior strongly recommend its enactment with the suggested amendments of the adminstration.

The CHAIRMAN. We are very glad to have had your statement. Thank you, Mr. Edwards, for your statement on this subject.

Do any of the other gentlemen have any comments that they wish to make?

Mr. EDWARDS. They have no prepared statements, Mr. Chairman.

They are experts in their fields and are familiar with the work that is being done by the Department and the nature of the proposed legislation as it would affect them. They stand ready to answer any questions which the members of the committee may have.

The CHAIRMAN. Now, does this mean that we have a substantial organization within the Department of the Interior that will work toward carrying out this program, together with the rather large organization in the Department of Health, Education, and Welfare if this program is established?

Mr. EDWARDS. The limitation in the legislative proposal would confine our activities to minerals and fossil fuels and the effect that they have on air pollution; some of the work that is now being done and the research measures being conducted at the Bureau of Mines right now.

The CHAIRMAN. Does this mean that insofar as the mineral problem is concerned; that is, the problem with mineral products, et cetera, the program would very likely be the responsibility of the Department of the Interior?

Mr. EDWARDS Yes, sir.

The CHAIRMAN. In other words, that would be in the field of solid waste disposal more than any other phase of the program?

Mr. EDWARDS. Yes, sir; that is correct.

The CHAIRMAN. There is great concern on the part of the coal people on this subject. You mentioned your responsibility with reference to the coal industry. There is great concern in the coal industry over the proposed program, particularly the bill I introduced, H.R. 7429, which has been supported and recommended by the Department of Health, Education, and Welfare. I assume from what you have said in a very brief statement, that you subscribe to it?

Mr. EDWARDS. That is correct.

The CHAIRMAN. The coal industry has great concern that this will permit the Department of Health, Education, and Welfare to put into effect a proposal that will put some limitations on the use of certain fuels, coal, and certain oils in Federal buildings and installations.

Have you given thought or consideration to that problem?

Mr. EDWARDS. I have not. I think that Mr. Perry may be able to shed some light on that, because of recent meetings that he has attended and which I do not know about.

Mr. PERRY. We are greatly concerned about this, because it would, indeed, make it impossible for the Federal Government to use these fuels for its buildings and installations.

The CHAIRMAN. It would make it impossible, you say?

Mr. PERRY. Virtually impossible.

The CHAIRMAN. To what extent would you say, sir?

Mr. PERRY. It would be as to this residual oil.

The CHAIRMAN. The representative of the Department of Health, Education, and Welfare stated it differently.

Mr. PERRY. We had some meetings that were called by the Bureau of the Budget, and the availability which goes to the Department of the Interior's responsibility was discussed at some length there. And we produced information for the Department of Health, Education, and Welfare and for the Bureau of the Budget to the extent of this.

The CHAIRMAN. Well, is there going to be anything secret about the information that you are going to present to the Department of Health, Education, and Welfare and the Bureau of the Budget?

Mr. PERRY. No, sir.

The CHAIRMAN. Could you not give this committee the benefit of that information, too?

Mr. PERRY. Yes, sir.

The CHAIRMAN. After all, this is a legislative proposal that is being considered—it is not merely a regulation.

Mr. PERRY. Yes.

The CHAIRMAN. That is, by some bureaucratic action being taken without sufficient information. If they are incorrect about what they said the other day——

Mr. PERRY. We will be happy to supply the information.

The CHAIRMAN. I wish that you would do that, because we want to know what the facts are. If they are correct in what they told the committee the other day, that is one thing. If they are incorrect, then it seems to me that both the Department of Health, Education, and Welfare and the Bureau of the Budget have not done their homework.

Mr. PERRY. I cannot speak for either of those sir; but we have looked at this problem in some depth. While it may be possible to supply both coal and oil with lower sulfur content, which is a constituent which is of some consideration, it would enter very logically into the cost of the product.

(The information referred to follows:)

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., July 8, 1965.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. HARRIS: During the recent hearings held by your committee on S. 306, a bill to amend the Clean Air Act to require standards for controlling the emission of pollutants from gasoline-powered or diesel-powered vehicles, to establish a Federal Air Pollution Control Laboratory, and for other purposes, which has passed the Senate, you requested that we make available to your committee further information on the proposed instructions for the control of air pollutants from new Federal installations.

In order to carry out the directives of the Bureau of the Budget Circular A–11, discussions on the nature and type of instructions applicable to Federal installations are now being conducted within the executive branch. These discussions are centered around the levels of sulfur dioxide which should be specified in the instructions. These levels are being discussed from, among other things, the viewpoint of adequate protection of human health and effects on plants and wildlife resources, and include consideration of the cost to the Federal Government and any impact on the minerals industries. We will keep your committee advised as to the results of these discussions.

In the meantime, there is now pending before your committee the Senate-passed bill, S. 306, which relates only to the control of exhaust emissions from new motor vehicles or new motor vehicle engines and to solid waste disposal. It is not related to the proposed instructions on air pollutants at new Federal installations.

We hope that your committee will give early and favorable consideration to S. 306 which will aid the Federal Government in enhancing the natural beauty of the Nation by decreasing air pollution, and by providing for solid waste disposal programs.

The Department of Health, Education, and Welfare and the Bureau of the Budget have also indicated that they concur in the comments made herein.

Sincerely yours,

STEWART L. UDALL,
Secretary of the Interior.

The CHAIRMAN. At a much greater cost, you say?

Mr. PERRY. At a greater cost; yes, sir.

The CHAIRMAN. Are you in a position to comment on the decision that apparently has been reached as to the sulfur content of such fuels?

Mr. PERRY. I cannot address myself to the amount of concentration of sulfur dioxide in the air which would do medical harm to people or to plants and foliage. This is not my side of the story. I can say, however, that it is my understanding that no final decision has been reached about the sulfur content that will be permitted in Federal buildings and installations.

The CHAIRMAN. It has not been reached?

Mr. PERRY. No, sir; it has not been reached. That is my understanding. We are still being consulted about it.

The CHAIRMAN. I do not see how any of the proponents within the Federal Government, the several agencies, the President himself—I cannot see how they could expect us to pass upon this subject until a decision has been reached. Have you been cooperating as a part of the conference?

Mr. PERRY. Yes, sir. We had a meeting as recently as Friday on this subject, in which members of the coal industry, the fuel industry, representatives of the electric utilities, the Department of Health, Education, and Welfare, and the Department of the Interior were represented to study the level which should be used.

The CHAIRMAN. Did you have the benefit of what was told our committee last week?

Mr. PERRY. Yes, sir; we had people here to listen to that testimony.

The CHAIRMAN. I assume then that the information that was developed here was discussed in connection with the meeting with representatives of the industry?

Mr. PERRY. Yes, sir.

The CHAIRMAN. Very well.

Mr. Springer.

Mr. SPRINGER. May I ask unanimous consent at this point that whatever comes out of these hearings, of these conferences, when it is written in its final form with the conclusions, et cetera, that we include them as a part of the record so that they will be in the record of the hearings?

The CHAIRMAN. I would much prefer to leave it this way, that whenever a decision is reached that we be advised of it with the understanding that it will become a part of the record but I may want to ask appropriate people familiar with this to come up and give further explanation as to it.

Mr. SPRINGER. I think that would be a good idea. I just wanted to be sure that at some future time anyone who may look at the record could see what we have been talking about if it is in the record. I understand what you are talking about, Mr. Chairman. That is fine, so far as I am concerned.

The CHAIRMAN. We will leave the record then in this position, with an effort to try to develop the full information as we go along.

Mr. EDWARDS. We stand ready to follow any directive that you may give us in this regard.

The CHAIRMAN. Thank you very much. I appreciate this. It does appear to me that there has not been a meeting of the minds, No. 1, as to what was necessary and, No. 2, the extent of the requirements that would be necessary; and, No. 3, whether or not a firm decision has been reached on this subject.

So far as I am concerned I want more definite information on it before I am willing to include it in the record. That is, with regard to legislative authorization to permit somebody arbitrarily or otherwise to take action when they do not seem to know what the real facts are at this time.

I mentioned the other day an incident as to how these things work, the illustration of various fuels in connection with Federal buildings and installations, a particular Federal installation at which there were bids made as to what kind of fuel was to be used, in an area where natural gas is all around—pipelines come through that area within a reasonable distance, and within a reasonable distance, too, there is oil, and oil refineries. Yet they decided it would be best to use coal as the fuel to be shipped into there from some distance. It just does not seem that that is the proper thing, but I guess that maybe they know. They have been doing it all of the time. I cannot see it myself. I cannot see shipping coal from Ohio and Illinois all the way in there, and maybe western Oklahoma, when you have other fuels running right by. Particularly since they are going all the way to New York and Chicago and Ohio and other places in order to set it up there. Sometimes it makes you wonder about how we do things around here.

Do you have any questions, Dr. Carter. I do not want to discriminate.

Mr. CARTER. We do use coal. I hope that it is of a lower sulfur content.

It is my understanding that they have set the available limit for the content of sulfur at seven-tenths of 1 percent, is that not true?

Mr. PERRY. Yes.

Mr. CARTER. Of course this would eliminate coal from Indiana, Illinois, and areas such as that, is this true?

Mr. PERRY. Yes.

Mr. CARTER. That is all I have on that.

I have another question on a different part of this.

You mentioned the accelerated use of microbiological organisms. I want to question you about that. That is on page 5 of your statement. I wonder how you are going to use that in the mining waste disposal program. Can you answer that question?

Mr. ROSENBAUM. In the recovery of additional values from waste mined from copper mining operations by the use of certain active bacteria, the rate at which the copper minerals can be recovered from the waste dump can be markedly accelerated.

The Bureau of Mines has been a pioneer in developing the techniques to increase the mineral value from these wastes and from the overall reduction in the volume of waste.

Mr. CARTER. Thank you.

The CHAIRMAN. Mr. Satterfield.

Mr. SATTERFIELD. No question.

The CHAIRMAN. Mr. Springer, do you have any questions?

Mr. SPRINGER. Are you an Assistant to the Secretary?

Mr. EDWARDS. I am Assistant to the Secretary and Legislative Counsel to the Department.

Mr. SPRINGER. Did you have anything to do with the drafting of S. 306?

Mr. EDWARDS. Yes. I think that we furnished the drafting service initially; yes, sir.

Mr. SPRINGER. You are familiar with the contents of it?

Mr. EDWARDS. I think so; yes, sir.

Mr. SPRINGER. On page 7 of your statement, the second sentence in the paragraph, you state—

> But I would not want to leave the committee with the impression that we in Interior are not mindful of the equal importance of the provisions of the bill for the control of exhaust emissions from automobile engines. On the contrary, we believe that S. 306 offers the best approach to the problem of automobile emission control and will aid in preventing further pollution of the air from this omnipresent source. The Interior Department has considerable experience in this troublesome area through research in fuels used by automobiles and the constituents of automobile exhausts which contaminate the air.

Are one of these three men experts in this field?

Mr. EDWARDS. Yes, sir.

Mr. SPRINGER. Have you made these tests?

Mr. PERRY. The Bureau of Mines, largely supported by the Department of Health, Education, and Welfare, has been conducting research in this field for about 7 years. The amount of funds for the Bureau is about $300,000 a year—it is at that level—we have developed techniques for measuring the kinds of constituents from automobile exhausts; we have investigated the effects of fuel composition in producing these agents. We have studied the reaction of it and at present the action of sunlight and oxides. We have followed it very closely, and have contributed much to the understanding of what the problem is.

Mr. SPRINGER. Assume that you have done all of this and that it is true, have you then applied your tests?

Mr. PERRY. We have not. The work that we have done with the Department of Health, Education, and Welfare has been along those lines. Our knowledge has been in the field of the fuel, the engine, and the products that are made from it.

Mr. SPRINGER. Then you are not saying that you have had any experience or testifying to any credible evidence as to the application of the tests you have made?

Mr. PERRY. That is correct.

Mr. SPRINGER. Did you come to any conclusion as to the level which you could have where it would not be dangerous to the health of the public?

Mr. PERRY. We have no knowledge as to the level that affects health. We have evidence, but we have no knowledge as to how it affects health.

Mr. SPRINGER. Who has made those tests?

Mr. PERRY. The tests are being made by the Department of Health, Education, and Welfare, the results of which I am not familiar with.

Mr. SPRINGER. In fact, the national public health network did these tests, did they not?

Mr. PERRY. They have. The network which is trying to measure the level of the various pollutants and the like.

Mr. SPRINGER. They came to a conclusion that 0.15 parts per million was the criteria, did they not?

Mr. PERRY. You will have to discuss that with the Department of Health, Education, and Welfare. I am not familiar with that. I know what they did, but I do not know what the criteria on that is. I am sorry.

Mr. SPRINGER. The reason that I asked that question, Mr. Edwards, is to find out whether or not you people know anything about any tests that have been made and the application of these tests in the application of any of the background work that you have done in that field on engine emission.

Mr. EDWARDS. Will you repeat the question?

Mr. SPRINGER. Will you strike that question, Mr. Reporter.

Then, insofar as the Interior Department is concerned, you have no knowledge of any effect that oxidants have using the background of the tests that you have made?

Mr. EDWARDS. I think that is true—that is a correct statement.

Mr. SPRINGER. If you do, you certainly ought to have some knowledge of the application of your tests to the various places in the United States where they would be important if you are going to testify about air pollutants, insofar as gas emission from a gasoline engine is concerned. I am not trying to pin you down, but I am just trying to find out how far your testimony goes, and just what weight this committee will give to it or should give to it.

Mr. EDWARDS. I think that Mr. Perry can answer that, with reference to specific figures.

Mr. PERRY. The Department of the Interior's role in the air pollution problem is twofold. One is that we do have this information which is given out by the Department of Health, Education, and Welfare and is available. Whether it is coal or gas or both. We have information about the utilization of mineral fuels.

When it comes to the health aspect of it, which is the question that you are addressing yourself to, some of our experts follow this up as general interest in the field. We do not claim any particular expertise in this. Our tests have been to determine the level that is in the exhaust of the gasoline engines, the function and the type of fuels that are used. We have not concerned ourselves in the field of what level should be prescribed in the atmosphere.

Mr. SPRINGER. Could you give us the level of that?

Are you putting aside the fact that there ought to be controls in S. 306 on gasoline engines?

Mr. EDWARDS. Yes, sir. I think that this is the best approach. However, after what Mr. Perry said I would make the observation that we may not have that certain expertise in this field. And I did not realize that our work was quite as limited as it appears to be so far.

Mr. SPRINGER. Now getting down to what I want to talk about, because I felt sure that you did not know anything about the application of your tests—the U.S. Public Health Service has done a job and, therefore, insofar as this committee is concerned, I suppose that we would have to rely on it.

The CHAIRMAN. Yesterday we had representatives of the automobile industry here, from Chrysler, Ford, General Motors, who gave us the benefit of their studies.

Mr. SPRINGER. All right. The Public Health Service has a national air network—would you believe, Mr. Secretary, that if you had large cities that it ought to be of more than an inconsequential amount in the air?

Mr. EDWARDS. Are you asking me whether it should be effective?

Mr. SPRINGER. I am asking if you believe that the oxidants in the air, I will say above 0.115 ought to be more than consequential in order to have this effect.

Mr. EDWARDS. I do.

Mr. SPRINGER. I want to give you these figures and see if you think this is inconsequential or consequential. Their tests showed that the number of days in which the oxidant level was exceeded, that is, 0.115 for 1 hour or longer than that—you live in Washington, do you?

Mr. EDWARDS. Yes, sir.

Mr. SPRINGER. I just want to test your knowledge. How many days would you think that it ought to be consequential in Washington—how many days of more than 1 hour out of 365 days to be consequential?

Mr. EDWARDS. Well, I do not know. I suppose that it would just depend on what an individual's activities were and what he was doing. I would say that 1 day would be consequential.

Mr. SPRINGER. You think that 1 day would be?

Mr. EDWARDS. Yes.

Mr. SPRINGER. Of 1 hour or more?

Mr. EDWARDS. Yes, sir.

Mr. SPRINGER. Well, then, there is a matter of variation. It surprises me that in the year 1964 there were only 4 days out of 365 where the oxidant level exceeded what they said was permissible. In other words, there were 4 days in which it was more than 1 hour. That means that there were 361 days when there was not even 1 hour.

In St. Louis it was 6 days. In New Orleans there were no days. In Cincinnati there were no days. In San Francisco where California recently passed a law, it was 1 day. In Chicago no days. In Philadelphia, 9 days. In Los Angeles, I think it was consequential—there were 83 days. That is the only city in which it seems to me that the matter is consequential. This is an opinion only.

I raise this question because I should like to ask you how much do you think it would cost—what do you think it will cost the American people to put these things into operation—do you have any idea about that?

Mr. EDWARDS. I have some ideas. And they range from $15 to $20 up to $130, but I certainly am not an expert on this.

Mr. SPRINGER. I think probably it would be somewhere around $50. How much would the total cost be to the American consumer in the way of that expense?

Mr. EDWARDS. I do not know. This is an honest approach to it. I think that if you have only a few days in a few years you might have consequential effects.

Mr. SPRINGER. Well, now, first, this may be true. Even here in Washington where it is 4 days you say that this is consequential. I doubt that it is. If you say so, I take your word that it is. I have not had a letter from anyone in my district in the 15 years that I have been here with reference to this problem, and yet figuring out what it will cost my district to put this into effect, it would be a couple of million dollars. I am talking about the consumers. This is why I raised this as to whether this is a national problem. Is it a problem that we ought to approach from a national position standpoint?

There would not be anybody to say in the State of Illinois, for example, so far as I know that they would want it. This would be a substantial cost to the people to do this kind of thing at $50 an automobile. You would have to put it on that basis. I raise this question because I think that when you assess all of these facts and have them all in mind, and when you put your weight behind such a bill you should know not only whether it is of national importance, but whether or not it is a matter that is of such great consequence to the country that we ought to have it, where it would have such a wide-ranging effect, where it would affect some 70 or 80 million automobiles.

Mr. EDWARDS. I apologize to the committee for not being able to answer every question. However, I still feel that this is the proper approach. I think that it is a serious problem. I think it requires considerable research, but I do believe we should get busy and that we should try and find out some of these things.

Mr. SPRINGER. That is what we are trying, really, to do, to separate the wheat from the chaff. If it is a needed problem we want to be for it. On the other hand, some of the evidence is not quite as convincing. It has not convinced me that it is national.

Thank you.

The CHAIRMAN. Mr. Secretary, you are familiar with the California situation?

Mr. EDWARDS. Yes, sir.

The CHAIRMAN. I had some questions about the extent of the smog as reported. I was in California in 1960. And for about 3 days out there I experienced that. I still did not believe that was more than, maybe, a myth, more than anything else, but the 4th day it hit me. My eyes started to burning. I suddenly realized that it was a problem.

Are any of you experts who are here with you now familiar with the effects that the weather would have in a given area of the United States on the extent of, I will say, smog?

Mr. PERRY. Mr. Chairman, actually, the conditions in the given area are very important; that is, the weather conditions in a given area are very important in determining the smog level. The disasters that have been reported before this committee on several occasions, such as in London on two occasions, and in northern Pennsylvania, all were the result of severe atmospheric pollution arising from excessive weather conditions. The condition exists where the temperature goes up rather than down and these concentrate pollutants that are released into the atmosphere and have no way of being removed from the at-

mosphere. The meteorology of a given situation is extremely important in such situations.

The CHAIRMAN. Well, now, the situation like that could develop affecting the general public where several million people are involved, such as happened in California. Therefore, is it not reasonable that you could expect sooner or later such a development in other metropolitan areas of the country?

Mr. PERRY. I believe that the Department of Health, Education, and Welfare, in their network, which has been referred to previously, is attempting to evaluate this problem in the Nation as a whole. And the information that has been accumulated, and the additional information that is being accumulated as to what these levels are, as to the effect of the meteorology and the weather conditions at a given time, city by city, will be in that information.

The CHAIRMAN. I am somewhat impressed by the positive action of the automobile industry. They were here, as indicated a moment ago, yesterday—that is, representatives of the major automobile manufacturers, such as General Motors, Ford, Chrysler. They advised the committee of their long years of research and attention to this field. They have come to this situation in California during the last 2 years because of the effect of the pollutants on the people of that community and they are proceeding to meet the standards that have been set up by the California Legislature.

I am one of those who feel that we have not yet reached utopia in this field and that it is not going to be resolved in California by the present efforts, but I do compliment the industry in its effort and willingness to meet the problem. I have no doubt but what it will meet it. It seems to me, however, that instead of having a crash program on a national basis that we should do whatever is necessary to provide the tools to cooperate with the automobile manufacturers and the States and the Government agencies, such as yourself, to meet the problem as it tends to develop on a nationwide basis. If we continue to expand in every field of activity, with the population increase, it will be only a matter of a few years when the same conditions will develop in other areas of the country.

I do not want to see any action taken whereby there would be any restrictions on efforts to meet the problem, but, on the other hand, I think that it is imperative that we do recognize the fact and that you in your own responsibility and the Department of Health, Education, and Welfare in its responsibility, cooperate in this problem as it develops. I feel pretty strongly on this. Evidently, the people of California are willing to pay whatever the added cost is going to be. And I understand that in 1966 the automobiles are going to contain this additional device. I have referred to it heretofore on several occasions as a gadget and they objected to that terminology, and I accept their objection and I will call it a device, in an effort to meet the problem. And they testified yesterday that Chrysler seems to be able to meet their problem at a cost of something like $20 or $25; General Motors said that it would be $50. Now the increased cost that you referred to a moment ago, Mr. Secretary, I assume had to do with the maintenance of it, because they did say that it would take about $50 a year to maintain this device which would give a cost of anywhere from $75 to $100 or $110 or $115, as you mentioned a moment ago.

I was somewhat impressed with the fact that by volume production this cost can be materially reduced and that, in my judgment, over the years it can give us a program that will protect the public from the unfortunate experience they have had in California, but I assume, as I said before, that your major effort is in the field of solid waste disposal.

Mr. EDWARDS. That is correct, sir.

The CHAIRMAN. Where else in the country is this a problem? Are they in certain oil fields, insofar as the oil industry is concerned, or where secondary efforts are underway, or in the coal mines that have pretty well been developed?

Mr. EDWARDS. Well, I think that you have hit upon it in these areas where we have mining refuse and abandones mines—in these areas. I will let Mr. Rosenbaum expand a little bit on that more technical nature, if you will.

Mr. ROSENBAUM. The reduction of wastes in mining operations, in extracting the minerals from the ore in doing which you bring out several tons of waste material. Gas is in the ore. As an illustration in the iron mining operation in Minnesota you remove a lot of low grade iron ore and put it through the concentrator and, perhaps, 3 tons out of every ton that is removed from the mine is disposed of.

The CHAIRMAN. Disposed of how?

Mr. ROSENBAUM. Into a pile. Perhaps, 25 million tons of iron extracted may be produced in the waste heap.

The CHAIRMAN. What do they do with it?

Mr. ROSENBAUM. This material just simply covers up the landscape from now on in.

The CHAIRMAN. Are you familiar with the bauxite situation?

Mr. ROSENBAUM. I am familiar with the red muck. It is one of the Bureau programs that we have. In a small way we have dealt with that. There is some utilization with the red muck that results from the production of bauxite. We have red muck in connection with beryllium ore; and with the phosphate ores in Florida we have the same problem. It is very difficult to handle.

The CHAIRMAN. Is this work that you hope to get to ultimately?

Mr. ROSENBAUM. We hope to find ways of devising mining systems whereby raw materials can be used economically in processes leading to further mineral recovery, which can be stored underground in the cavities that are left in the original mining operations.

We are, also, addressing ourselves to the recovery of the valuable constituents so that there will be an economic asset and at the same time lessen the amount of these wastes which do cover up the landscape.

The CHAIRMAN. I hope that you do not have in mind to pursue a program that will prevent low grade ore from being mined.

Mr. ROSENBAUM. Our program is to find out how to mine low grade ore, to process it economically, and to do this with a minimum of disruption of the original ground surface. We certainly realize that the Nation's economy is very heavily involved with minerals. We require ever increasing amounts of minerals. And in order to obtain them we have to use lower grade ores. We have a program for the utilization of these low grade ores in an integrated system that will not disrupt other phases of the country's mining needs.

The CHAIRMAN. Is there a problem in the Appalachian area in depleted ore fields?

Mr. ROSENBAUM. I know of no real substantial or major problem with these depleted mines.

The CHAIRMAN. Are you familiar with the problem in south Arkansas, particularly, as it exists there, and in east Texas and in certain areas of Louisiana?

Mr. ROSENBAUM. I am not familiar with the problem you have addressed yourself to.

The CHAIRMAN. Are you familiar with the secondary recovery program which seems to be getting at this problem which not only further depletes the resources but adds to the pollution of the air?

Mr. ROSENBAUM. We have in the Bureau of Mines a secondary system of recovery of ores.

The CHAIRMAN. I think that the industry with the cooperation of the State governments has done an excellent job where we at one time, as an example, largely burned off into the air the natural gas and where we polluted the streams with salt water and certain oils. We now are not polluting the air with the burning of gas or polluting the streams.

Mr. ROSENBAUM. I wish that had been included, the subject that the chairman is addressing himself to. The original work on the use of oil in secondary recovery programs, by using the grinds for additional recovery which was actually participated in by the Bureau of Mines. And so to some extent we felt much of that kind of ore could be used and that there could be an additive to the water that was subjected to this brine. And as a result of this it has been possible to reduce the brine by secondary methods of recovery, rather than discarding the brine with the resulting water pollution.

The CHAIRMAN. I have used up too much time. I would like to take this occasion, however, to extend a cordial welcome to a large group of 4–H boys and girls who are here. I know that some of them are from my State of Arkansas. There may be some from other States. If so, why we welcome all of you. We are very glad to have you visit this committee and, particularly, during one of the hearings on the important legislative proposal before us. This is a hearing on an effort to do something about cleaning up the air. And as I said yesterday morning, if you have any problems with it then you can blame it on the Department of the Interior or the Department of Health, Education, and Welfare, and not this committee. [Laughter.]

We are glad to welcome this large group of 4–H boys and girls here on a citizenship short course. From our State we have Mr. Wallace C. Cummings, who is a research development specialist from Little Rock, Ark.; Mrs. Dorothy F. Sitton, the district home demonstration agent of Little Rock, Ark; Edward McFarlin, adult 4–H leader, from Craighead County; Mrs. Lester Shell, adult 4–H leader, of Jefferson County. And of course, they are from what I think is the greatest State in the United States. We do thank you for visiting with us and having an opportunity to observe your legislative branch of Government in action. This is the place in which legislation is developed and considered, reported, and, ultimately, you will see the results in action which protects the lives of the American people. The witnesses before us today are from the Department of

the Interior. They are testifying on this important program of pollution, solid waste disposal, and so forth.

We hope that you will remain with us as long as you can and that you will derive some benefit out of this.

Do you have any questions, Mr. Mackay?

Mr. MACKAY. No questions.

The CHAIRMAN. Mr. Gilligan?

Mr. GILLIGAN. No question.

The CHAIRMAN. Mr. Rogers.

Mr. ROGERS of Florida. Thank you, Mr. Chairman.

I believe it is stated in your prepared statement that you are spending about $1 million annually on research on the waste disposal research investigation?

Mr. EDWARDS. That is correct; yes, sir.

Mr. ROGERS of Florida. What do you contemplate doing on the proposed law?

Mr. EDWARDS. I am not thoroughly familiar with that. You are talking about it figurewise?

Mr. ROGERS of Florida. Yes.

Mr. EDWARDS. Mr. Finnegan says that he has some information on that.

Mr. FINNEGAN. We do not have any exact figures, but we have some estimates that have not been cleared through the Bureau of the Budget—estimates that we could give now which would be, approximately, $4.5 million for the first fiscal year of this operation.

Mr. ROGERS of Florida. And what do you anticipate for the next 5 years?

Mr. FINNEGAN. We have not developed estimates beyond the first year, sir.

Mr. ROGERS of Florida. Not beyond the first year?

Mr. FINNEGAN. No.

Mr. ROGERS of Florida. What present research are you doing?

Mr. FINNEGAN. Mr. Rosenbaum can answer that.

Mr. ROSENBAUM. The work that we propose would be to expand the design mining systems.

Mr. ROGERS of Florida. What are you doing now?

Mr. ROSENBAUM. Our present program consists of devising mining systems which I explained to the chairman with the hope to devise and improve the mining systems, so that most of the waste or much of the waste can be disposed of underground. This would have the advantage not only of ridding the surface of unwanted waste materials, but it would, also, support the ground and prevent subsequent subsidence of the ground.

Mr. ROGERS of Florida. Is there any research being done by contract?

Mr. ROSENBAUM. Within the Bureau of the Mines at the present time all of our work is done in intermural laboratories of the Bureau of Mines.

Mr. ROGERS of Florida. How long have you been working on this?

Mr. ROSENBAUM. The Bureau of Mining Research program started about 6 years ago.

Mr. ROGERS of Florida. Have you had any specific results yet?

Mr. ROSENBAUM. I think we have had several specific results, yes; that will make some real contributions. As an illustration we have done very much toward the recovery of rock from mines of low cost. We are doing much work on the development techniques as to waste materials on the surface and compacting these underground, finding a means by which they can be compacted so that it will reduce the amount of the waste.

Mr. ROGERS of Florida. You do not do any research under contract?

Mr. ROSENBAUM. This is all in the Bureau of Mines. We do not have any contract research up to this point.

Mr. ROGERS of Florida. Do you plan to continue this work intermurally or do you plan to have contract work?

Mr. ROSENBAUM. This legislation which would give the Bureau of Mines the authority to enter into contracts for research; would give it a wonderful opportunity to supplement our in-house work by going to the outside to get the kind of skills that we are not justified in building up and this will give us a better opportunity to accelerate the rate of progress that we are making so far.

Mr. ROGERS of Florida. How many people do you have on your research work in the Bureau of Mines now?

Mr. ROSENBAUM. You are talking now about the entire research statement of the Bureau of Mines or just the section addressed to this particular area here?

Mr. ROGERS of Florida. I am particularly interested in the research, and disposal of solid wastes.

Mr. ROSENBAUM. I would estimate that in this particular area on the disposal of the solid wastes, we have, probably, 270 involved in various aspects of this. This includes more than just mining research. This includes all of the difficulties with red muck, which the chairman was talking about, and everything else, waste from ores, et cetera.

Mr. ROGERS of Florida. What emphasis do you plan to place on research?

Mr. ROSENBAUM. We would substantially double the area in which we are attempting to devise mining systems for the disposal of the waste in underground openings. We, also, will expand our operations on the recovery of metals, useful materials in the waste. We, also, would expand the program that we have started on the processing of junk automobiles to make these economically attractive to the steel consuming industry. And, further, we would like to get into a contract program and, also, ultimately, a demonstration program to take care of the overall problem of urban communities in providing the necessary construction materials, sand, gravel, the aggregates which become an increasing problem in urban areas, because of the waste heaps, and the unsightly mess of these operations which make them increasingly undesirable. And at the same time we hope to get an integrated program on this by which the space or the quarries or the holes made in extracting the construction materials, could then be used as a disposal site for sanitary fill or ash from incinerators.

Mr. ROGERS of Florida. What is presently being done or what has been done in the last 2 or 3 years on the disposal of automobiles?

Mr. ROSENBAUM. It started in a very small way, our disposal of automobiles. The Minneapolis Research Center has a program which

started with demonstrating that we can use the scrap metal for the preparation of very high grade iron ores in which it becomes the raw material, instead of being used in the process. Starting this June we have an expanded program which has already been started and in which we hope to show how the scrap automobiles can be more attractively put into the steel consuming community.

Mr. ROGERS of Florida. Do you feel that this is a very practical approach then?

Mr. ROSENBAUM. We feel that it is a practical and a necessary approach; yes.

Mr. ROGERS of Florida. What has been the response of the industry in using these old cars?

Mr. ROSENBAUM. The response, nationwide, so far as that is concerned, is such that we have been flooded with endorsements of this from people all over the country. The indication was that the Department of the Interior was going to handle this problem. Folks have been agitated by the junk heaps that clutter up the landscape. They have offered suggestions and ideas as to how we might proceed.

Mr. ROGERS of Florida. You have already had research, so that you feel that the stuff from the automobiles can be used to make high grade iron ore, did you say?

Mr. ROSENBAUM. We already have a program on it. We have demonstrated this in a small laboratory, on a small laboratory scale. And in next year's program we hope to have a better opportunity to determine the economics of this problem.

Mr. ROGERS of Florida. Is there any indication—is the industry cooperating with you in carrying out this research or is it again just the Bureau?

Mr. ROSENBAUM. Up to this point it has been in the Department of Interior—it has strictly been in the Bureau.

Mr. ROGERS of Florida. What has been the cost?

Mr. ROSENBAUM. Our cost in this particular area?

Mr. ROGERS of Florida. In other words, if you take the automobiles, what is the cost factor in converting those into usable material?

Mr. ROSENBAUM. This is what we hope to salvage, the economic feasibility in the work that we are carrying on and that will be carried on this year on a much larger scale. The small-scale operation has presented evidence to justify our proceeding.

Mr. ROGERS of Florida. What has it shown—what do you say that your cost factor is?

Mr. ROSENBAUM. At this particular point, using the automobiles processed for us, we show an automobile cost that might be worth $20—presuming that there was $20 in the original that we could use this iron to treat ore and to produce, perhaps, $100 worth of iron ore, that the automobile hulk itself would become artificial ore—artificial high grade ore—that in itself would, perhaps, be worth $25 or $26.

Mr. ROGERS of Florida. And how much would it cost to convert this—would there be a very large cost in converting the old automobile?

Mr. ROSENBAUM. The actual cost here would have to depend upon the cost analysis, based upon better information that we hope to get next year.

Mr. ROGERS of Florida. Do you have any idea now?

Mr. ROSENBAUM. Offhand, from the top of my head, as an estimate, it looks sufficiently attractive that it will justify the further pursuit of this research.

Mr. ROGERS of Florida. In other words, $20 worth of scrap material from an automobile could, probably, turn out to produce $100?

Mr. ROSENBAUM. Yes. When I say to convert the iron ore—this iron ore can, possibly, be converted to higher grade material by using other types of reduction. In our particularly instance we have devised a process in which we want to use the scrap iron to dispose of it. We hope this will be economically attractive, because if we make it attractive it will more likely be adopted by the industry. That is one of our considerations. Instead of using iron as a reduction to process these low-grade ores it is possible to do otherwise. And our selection of iron, in that we believe we may use it more economically and attractive than any other reduction.

Mr. ROGERS of Florida. It has been encouraging to hear this. I would hope that you would put every effort behind it, because I think that everyone is concerned with this. If you can make it economically feasible, I think that this would be worth while, to take all of the old automobiles away from our highways and our neighborhoods and put them to useful uses.

Mr. ROSENBAUM. This is only one phase of our proposed program. This is only one part of it. Other parts of the program would be to actually use the scrap metal in steelmaking to determine to what extent we are able to make improved procedures to get rid of the nonferrous and other impurities in the material. We propose to determine whether or not we can find other beneficial uses for this scrap metal. Large amounts of iron could be used to recover metallic copper from the solution. We want to determine to what extent the scrap automobiles can help in this.

Mr. ROGERS of Florida. But the scrap automobile program in this research now looks promising and it looks like it will be economically feasible to approach it in this manner in getting rid of these piles of automobiles, by converting them to other materials?

Mr. ROSENBAUM. Many programs would be needed, depending upon the location of the country, how far you were away to taking the iron ores. It might be that in an area within a reasonable shipping distance that the iron might be available and applicable, but in other areas it might not be applicable.

Mr. ROGERS of Florida. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Mr. Edwards and gentlemen for your presence here today and the information which you have imparted to the committee.

Mr. EDWARDS. Thank you.

The CHAIRMAN. You will provide the additional information. We may want to get you in here later after that is completed.

Mr. EDWARDS. I understand that the information will be made available.

The CHAIRMAN. The next witnesses are Mr. Joseph W. Mullan and Mr. James R. Garvey of the National Coal Association.

STATEMENT OF JOSEPH W. MULLAN, ASSISTANT DIRECTOR, TECHNICAL SERVICES DEPARTMENT; ACCOMPANIED BY GLYNN L. CORYELL, DIRECTOR, TECHNICAL SERVICES DEPARTMENT, NATIONAL COAL ASSOCIATION

Mr. MULLAN. My name is Joseph W. Mullan, assistant director of the Technical Services Department of the National Coal Association, and I am accompanied by Mr. Glynn L. Coryell, who is the director of the Technical Services Department of the National Coal Association.

The CHAIRMAN. You may proceed as you desire. We are glad to have both of you here.

Mr. MULLAN. I would request that our statements be placed in the record and the statement of Mr. Garvey as well.

The CHAIRMAN. Very well. We have both statements and they will be included in the record at the conclusion of your remarks.

Mr. MULLAN. Mr. Chairman and members of the committee, we want to thank you and your committee for the opportunity to present the views of the National Coal Association on the various air pollution bills presently being reviewed by your committee.

The National Coal Association is a national trade association whose member companies account for the major portion of the bituminous coal produced and marketed in the United States.

Over the years, our industry has recognized the need for air pollution control and has cooperated with responsible segments of communities faced with air pollution problems. We have assisted in the drafting of local and State air pollution regulations; have voluntarily supplied factual information on emissions; and have helped develop practical means to control such emissions.

The coal industry through its research agency, Bituminous Coal Research, Inc., is presently developing new methods to improve air pollution control further. These projects are in some cases on a matching dollar basis with industries which utilize bituminous coal. One example is a joint project with the Edison Electric Institute and the Association of Edison Illuminating Cos. to develop and evaluate methods to control sulfur emissions.

The National Coal Association has maintained for several years an air pollution control division, with a staff of engineers who regularly help control agencies correct existing problems and evaluate installation of new equipment.

We mention these facts to point out that we speak from long and diverse experience in air pollution control but we must note that we do not feel qualified to comment on the several bills that are not concerned with the coal industry.

In several bills provision is made for a technical committee to encourage the development of low-cost techniques designed to reduce emissions of oxides of sulfur produced by the combustion of sulfur-containing fuels. We feel the need for such a coordinating activity to develop a better understanding of the gap between technical feasibility and economic practicality. Such coordination and understanding will perhaps make it possible to close that gap in the near future.

Accordingly, we support the measures calling for the establishment of a technical committee, with membership representing the Department of Health, Education, and Welfare, the Bureau of Mines of the Department of the Interior, and the coal, petroleum, and electric power industries. We have omitted the Federal Power Commission because it is closely confined to strictly regulatory powers established by statute and probably should not be expected to expand its activities into air pollution problems. We also omit the Atomic Energy Commission, the atomic power and natural gas industries, as they would have little to add to the work of the committee.

While favoring this technical committee, we must note that we cannot subscribe to any legislation which would arbitrarily increase the use of natural gas or atomic power as a source of fuel and energy. We would refer you to the comments of the Secretary of the Interior, the Honorable Stewart Udall, earlier in these hearings:

> Fuel and energy sources are complexly related to the conservation of natural resources and efforts to increase the use of one fuel in preference to another must be considered from more than an air pollution standpoint.

We testified earlier this year before a Senate subcommittee that we recognize the need to control air pollution from Federal facilities. Our engineers have helped many Federal agencies meet the control standards set by local authorities; we have uniformly found Federal agencies eager to meet such standards, even though they are exempt from local regulations. At the moment, we are assisting the Public Health Service and other Federal agencies in a program to train personnel in proper operation and maintenance of air pollution control devices.

We feel the basic concept of controlling air pollution from Federal facilities is sound and realize the desire to have such facilities and buildings set an example with respect to emissions. This desire, however, should be tempered by scentific evaluation of the known needs for protection of health versus the available practical and economic means of meeting these desires. In the main, these facilities and installations (existing or future) should abide strictly by all local and State air pollution regulations applicable to their particular sites. If no local or State regulations are in effect covering the proposed site of a new Government installation, it is recommended that the Public Health Service encourage and assist in the formation of the regulations by the appropriate body, if such are needed, on the various bills before your committee.

We are willing to answer any questions you may have.

The CHAIRMAN. Thank you very much. Do you wish to add anything further?

Mr. CORYELL. Mr. Chairman, I do not have any statement. I hope that there may be some questions. There is a comment I would like to make with reference to Dr. Carter's question in regard to the question that he posed to an earlier witness. I am fellow Kentuckian. I might say that the restriction with respect to construction is—the construction of Government buildings—would eliminate all of western Kentucky, that I happen to be farming, and a large part of eastern Kentucky, too.

(The prepared statement of James R. Garvey, president and director of research, Bituminous Research, Inc., follows:)

STATEMENT OF JAMES R. GARVEY, PRESIDENT AND DIRECTOR OF RESEARCH, BITUMINOUS COAL RESEARCH, INC.

Mr. Chairman and gentlemen of the committee, my name is James R. Garvey. I am president and director of research of Bituminous Coal Research, Inc., with offices and laboratory at Monroeville, Pa. BCR is an affiliate of the National Coal Association, which has offices here in Washington, D.C., and through this affiliation serves as the research agency for the bituminous coal industry.

My purpose in being here is to discuss the current status of methods for control of emission of oxides of sulfur from coal-burning powerplants. We welcome this opportunity because we feel that through such discussions a better understanding of the complexity of sulfur dioxide control measures will result.

Our organiaztion, representing the bituminous coal industry, and with financial assistance and technical guidance of the electric utility industry, through the Edison Electric Institute and the Association of Edison Illuminating Companies, has been engaged in research on sulfur dioxide control for the past 8 years. We believe substantial progress has been made, as it has by other groups, including the Bureau of Mines and the Department of Health, Education, and Welfare, both of which have worked extensively on this subject. However, while several technically possible solutions have been developed, none is currently available which can be considered economically practical.

We feel that the time for coordination of the activity of all groups concerned has arrived, and that through such coordination we will be able to develop a better understanding of this gap between technical feasibility and economic practicality, and perhaps such coordination will enable closing the gap in the near future. Accordingly, we support the idea proposed in S. 306, calling for the establishment of a technical committee, with membership representing the Department of Health, Education, and Welfare, the Bureau of Mines of the Department of the Interior, and the coal, petroleum, and electric power industries. We have omitted the Federal Power Commission because it is closely confined to strictly regulatory powers established by statute and probably should not be expected to expand its field of activity into problems of this nature.

As I stated, some research progress has been made toward a solution of control of sulfur dioxide emissions from coal-burning powerplants. With the permission of the committee, I would like to review briefly the state of the art and outline some of the work which is currently underway.

To appreciate fully the approaches to a solution which are currently being tried, one must have in mind the process by which the energy of coal is converted to electricity in the conventional powerplant. In such a plant, coal, usually of the order of 2 inch x 0 in size, a size which is suitable for rail shipment, is delivered to the powerplant. Such a coal might contain 3.4 percent sulfur.

At the plant the coal passes to a mill where it is crushed to a fineness about equivalent of talcum powder. The fine coal is mixed with air and burned in a boiler. Most of the heat of the gases at temperatures of 2,500° is transferred to water to make steam which then goes to the turbines for production of electricity. The gases from combustion, still at about 880°, pass through an air heater where more heat is extracted by incoming cold combustion air. The gases, then at 325°, go to a very efficient ash collector where upwards of 99 percent of the ash is removed. On the average, this ash removed takes out with it about 10 percent of the original sulfur. The essentially fly-ash-free gases then pass to the stack and, if we used 3.4-percent sulfur coal, there will be emitted to the atmosphere approximately 3,000 parts per million sulfur dioxide and 30 parts per million sulfur trioxide.

These concentrations are diluted after they leave the top of the stack (stacks of several hundred feet in height) and mix with the air of the outside atmosphere. By the time the ground level is reached several miles away, the concentrations are with rare exception of the order of 0.1 parts per million.

While concentrations of sulfur dioxide of this low level are well below the limits accepted for continuous 8-hour exposure for persons working in industries where such gases are part of their everyday environment, it has nevertheless been arbitrarily decided that the stack emission concentrations shall not exceed 2,000 parts per million SO_2. To achieve such a concentration in the conventional

powerplant will require the combustion of a coal having about 2.2 percent sulfur if we assume that 10 percent of it will be retained in the ash. Because coal for steam purposes containing sulfur contents of this level, and at reasonable prices, is not available in many areas, the research has been directed at determining a method for utilizing the higher sulfur coal and still achieving the stack emission concentrations which have been indicated to be satisfactory.

What is available now and what is conceivable for the future to enable achievement of this goal? Control of sulfur oxide emissions from a powerplant can be achieved in three areas; namely: (1) reduction of the sulfur content of the fuel prior to firing, (2) the development of a new concept of conversion of the heat energy of coal to electricity, and (3) the recovery of sulfur oxides after combustion but prior to passage of the gases to the stack. Let us look at each of these and review its status. Because we have some cost data available, let us start with the processes for recovering sulfur dioxide and sulfur trioxide from the flue gases.

Since they produce a recoverable and potentially salable byproduct, the three processes listed in table 1 show the most promise for application in electric utility plants.

TABLE 1.—*Most promising SO_2 recovery processes*

Process:	*Developed by*
1. Catalytic gas phase oxidation	BCR and Pennsylvania Electric Co. group.
2. Alkalized alumina absorption	U.S. Bureau of Mines.
3. Reinluft char absorption	Germany.

The work on all of these processes has passed the laboratory bench-scale stage and is now entering the pilot stage. While some additional technical problems must be solved before technical feasibility can be assured, it is possible at this time to determine the approximate cost of such recovery processes. The range of costs, including credits for sale of the byproduct and also possible costs for disposal of the byproduct, are shown in table 2.

TABLE 2.—*Approximate costs in cents per million B.t.u. of SO_2 recovery systems—with credits*

	No credit cost	Product	Possible credit	Possible disposal	Net range
Catalytic gas phase	8.3	Acid	3.9	1.9	4.4 to 10.2.
Reinluft	10.2	Acid	3.9	1.9	6.3 to 12.1.
USBM	7.8	S	2.8	1.0	5.0 to 8.8.

The most optimistic cost at the present time is 4.4 cents per million B.t.u., the equivalent of $1.14 per ton of coal, and could run as high as 12.1 cents per million B.t.u., the equivalent of $3.15 per ton of coal. Since the average cost of coal delivered to utility plants last year was approximately 25 cents per million B.t.u. of $6.50 per ton, it can be seen that the incorporation of processes of this type at their present state of development will substantially increase fuel costs.

The second approach to better control of sulfur oxide emissions is through pretreatment of the coal prior to combustion so as to reduce the sulfur content of the fuel entering the boiler. Sulfur occurs in coal in two primary forms, organic and as a mineral called pyrite. The organic sulfur is chemically combined with the coal and cannot be removed except by chemical processing. Pyrite can be removed mechanically, but because of the extremely small size of the pyrite particles in many bituminous coals, not all of them are amenable to cleaning to the low level required. Some of the work which our organization has done, however, indicates that it might be possible to reduce the pyritic sulfur content with special coal-cleaning equipment installed at the powerplant where coal pulverization to the fine size needed to release the small pyrite particles is already done as a part of the crushing step prior to burning the coal.

Reduction in the organic sulfur content of the coals will require a chemical pretreatment such as dissolving the coal and filtering out the ash and other undesirable materials prior to combustion. Some work along this line is being sponsored by the Office of Coal Research of the Department of the Interior.

The idea of converting the coal to a gas before combustion takes place is also being investigated. The advantage of this approach is that the gas can be more economically desulfurized prior to combustion because the volume of gases to be handled will be substantially less than the amount which is present after combustion.

The final approach for control of sulfur dioxide emissions from coal-burning plants lies in the development of new concepts for generation of electricity from coal. While these will not in themselves produce a sulfur-dioxide-free gas, they could so increase the efficiency of power generation that the fuel savings resulting would close the gap between technical feasibility and economic practicality of gas-cleaning processes. The ideas are being investigated by many organizations and they include magnetohydrodynamics, fuel cells, the use of gas turbines, and supercharged boilers.

As I pointed out, research is underway in all three areas of control of sulfur oxide emissions in powerplants, work both in the United States and abroad. Research on some of the more promising methods has reached the pilot stage which, in all research, becomes the point where research expenditures begin to mount rapidly. The piloting of any one of the several approaches I have mentioned will cost several million dollars—more dollars than are available from the low profits of the coal industry. We therefore urge that the committee appointed under S. 306 also study the means by which the research on potentially feasible sulfur oxide control processes is to be financed.

The CHAIRMAN. Mr. Rogers, any questions?

Mr. ROGERS of Florida. I would like to ask just a question or two.

I noticed two things. You have been doing research for 8 years, I believe, on this problem of getting control over the sulfur dioxide?

Mr. MULLAN. That is right.

Mr. ROGERS of Florida. And you say that progress has been made; however, none are currently available which could be considered economically practical. What are the results that you have been able to obtain from your research that would help to get rid of this problem?

Mr. MULLAN. This is a review, to a degree, of Mr. Garvey's statement. I will give you some of it.

Mr. ROGERS of Florida. Is this putting a stack higher, or what?

Mr. MULLAN. Our particular research has not been along those lines. Our research has been to cover the removal of the resultants from the coal itself and removing it from the flue gases themselves. At the moment I would say that there are three processes which seem to merit further work on the removal from the stack gases, they being the catalytic gas phase oxidation, the alkalized alumina absorption, and the Reinlift Char absorption methods. The latter was developed in Germany. The alkalized alumina absorption method is the Bureau of Mine's method in cooperation with the Public Health Service. And the catalytic gas phase oxidation process is one that has been worked on in our own laboratory and, also, by the Pennsylvania Electric Co. Each of these three processes, though, are well removed from the bench—they are in a pilot stage. You can imagine the problems of taking any of these from a bench scale to a full scale size in a powerplant, which would be tremendous. I will say that there is a problem. You can imagine when we are talking of running a test in an area which would be, say, 2½ to 3 inches in diameter, being able to extract the gases from that, and then taking this out to, say, the local station of Pepco where the stack is 30 or 40 feet in diameter, and scaling it up would be difficult.

At the present time the Public Health Service, as well as our own agency, is planning expansions of this activity. They have testified—

I am not sure whether before your committee or some other committee—that they are planning a major project to evaluate these three methods.

Mr. ROGERS of Florida. Who is going to do that?

Mr. MULLAN. This will be the Public Health Service in cooperation with the Tennessee Valley Authority. Our own laboratory is considering continuing its research on both phases, the removal of the sulfur from the bulk, and the removal of the sulfur dioxide from the stack.

Mr. ROGERS of Florida. I notice that you have made some progress in reducing some of this.

Mr. MULLAN. Some progress has been made. The big problem that we have now is getting it into a practical device that can be applied to the facility.

Mr. ROGERS of Florida. Where it would be within economic feasibility?

Mr. MULLAN. Certainly, this is necessary.

Mr. ROGERS of Florida. Is it possible to bring out filters in these stacks at all?

Mr. MULLAN. There has been some work—you are speaking specifically of sulfur dioxide?

Mr. ROGERS of Florida. Yes.

Mr. MULLAN. There has been some work done on filters. And by adding a dolomitic lime to the fuel as it is burned. The conversion is then extracted. At the moment this has been done only on a small scale.

Mr. ROGERS of Florida. Has it proved feasible so far?

Mr. MULLAN. I would say technically feasible.

Mr. ROGERS of Florida. To use a filter and, also, to add water to the fuel?

Mr. MULLAN. In one case I am familiar with they were using dolomitic lime.

Mr. ROGERS of Florida. Could you present the committee with a little memorandum on what this has shown?

Mr. MULLAN. In fact, we could, probably. I am sure that we could get information on all of the processes.

Mr. ROGERS of Florida. I think that it would be helpful.

Mr. MULLAN. Unfortunately, Mr. Garvey was most familiar with the particular research. He is not here today.

(See testimony of James R. Garvey, p. 330.)

Mr. ROGERS of Florida. That is why I wanted to pursue it further. If you will furnish it for the committee it would be helpful. I know that in my area we are very much concerned about a plant where you see the smoke rolling out of the smokestack.

Mr. MULLAN. I might make the point that there are various contaminants.

Mr. ROGERS of Florida. I realize that. Thank you.

The CHAIRMAN. Dr. Carter.

Mr. CARTER. I believe that we can say that the industry wants to do everything that is possible. Certainly, we realize there is a great problem here and it affects the use of millions of tons of coal coming out of the States of Illinois, Indiana, and the like.

Thank you.

The CHAIRMAN. Mr. Satterfield?
Mr. SATTERFIELD. No questions.
The CHAIRMAN. Mr. Mackay?
Mr. MACKAY. No questions.
The CHAIRMAN. Mr. Gilligan?
Mr. GILLIGAN. Just one question. In your statement submitted to this Subcommittee on Public Health, at the conclusion of the statement it mentions that research is underway in all three areas of control of sulfur oxide emissions in powerplants, both in the United States and abroad. Research in some of the most promising methods has reached the pilot stage which, in all research, becomes the point where research expenditures begin to mount rapidly.

The piloting of any one of the several approaches I have mentioned will cost several million dollars—more dollars than are available from the low profits of the coal industry. We therefore urge that the committee appointed under S. 306 also study the means by which the research on potentially feasible sulfur oxide control processes is to be financed.

Have you any suggestions as to how such research should be handled?

Mr. MULLAN. You realize that there has been a time lag between Mr. Garvey's presentation before the Senate committee and this particular period here. I believe that the Public Health Service has made statements that they are contemplating that it will cost about $7 million for the three pilot studies. And in line with this a coinstitute is expanding is own research abilities.

Mr. GILLIGAN. Thank you.

The CHAIRMAN. Do you support Senate bill 306 insofar as it would provide for a technical committee to pursue research in this field?

Mr. MULLAN. Yes, we do. We feel that the formation of such a committee would give direction from your own committee that such activities would take place. Certainly, there is a speaking acquaintance between the various agencies concerned, but we believe that it would be better to tie all of these people together.

The CHAIRMAN. Do you support the position for grants to be made in connection with the research provided for in S. 306?

Mr. MULLAN. I believe that the grants are made relative to the automobiles.

The CHAIRMAN. Yes.

Mr. MULLAN. I made an earlier statement that we had no expertise relative to that phase of the legislation.

The CHAIRMAN. Do you not think that this committee should have such information? If you are not in a position to comment on this I suppose then that the committee should, also, consider the emission of fumes from automobiles?

Mr. MULLAN. My comments, sir, were specifically toward the problem of sulfur dioxide. I think that if you take and inject several other items into a specific program you tend to confuse the overall issue and get nothing out of a committee. If your committee would feel that it is necessary that there be a committee to study automobile exhaust fumes, I think that this committee should be made up of people with expertise in the subject. Certainly, the coal industry, to my knowledge, does not have that expertise.

The CHAIRMAN. Thank you very much. We want to thank you for your testimony.

Mr. MULLAN. Thank you.

The CHAIRMAN. Our next witness is Mr. Joseph E. Moody, president of the National Coal Policy Conference, Inc. We shall be glad to hear from you now, Mr. Moody.

STATEMENT OF JOSEPH E. MOODY, PRESIDENT, NATIONAL COAL POLICY CONFERENCE, INC.

Mr. MOODY. Mr. Chairman and members of the committee, my name is Joseph E. Moody. I am president of the National Coal Policy Conference, Inc., which embraces within its membership all segments of the industrial federation built around bituminous coal—coal-producing companies, the United Mine Workers of America, the coal-carrying railroads, manufacturers of coal-mining machines and equipment and coal-consuming electric utilities.

I appreciate the opportunity to appear today to express the interest of all of these industrial groups in working out a national policy on air pollution which will serve the public interest. At the same time, we are concerned that the desire on the part of the Government—I use the word "Government" as a rather vague term, because in the last several weeks we have appeared before the Bureau of the Budget, the President's Committee, the Department of Health, Education, and Welfare Committee, before Mr. Celebrezze, and last Friday before Dr. Buckley of the Science Committee, but with representatives of the Department of the Interior and the Department of Health, Education, and Welfare and a few others, so I think that in this particular instance we use the word "Government" because we are here today before the Congress, and your earlier questions concerning a committee that might have a part in this field, Mr. Chairman, certainly has been advanced. And to protect the air we all breathe against pollution should not lead to action which will not only not achieve the ends we all are seeking, but will also impose intolerable burdens upon the fuel producing and energy consuming segments of the national economy.

Our primary interest in these hearings is directed toward section 2 of H.R. 7429.

This section would authorize the appropriation of sufficient funds necessary for the installation, maintenance, and operation in Federal buildings, installations, and other property of such devices as are certified by the Secretary to be adequate for the purposes of section 7 of the Clean Air Act which, as you gentlemen know, gives the Secretary of Health, Education, and Welfare broad power in this field as it concerns Federal agencies.

Our primary concern is that legislation such as this inevitably would be regarded as a mandate to extend, to cover existing Federal buildings and installations, the type of regulations which the Health, Education, and Welfare Department recently proposed for all new Federal buildings and installations in urban areas.

In a speech made by Admiral MacKenzie in Chicago he said that if there is any doubt that they, certainly, intended to go forward—he

says that this is one small step and that they will go the rest of the way. I might suggest that when you read his text you will be interested in that.

These regulations, if they should be adopted by the Bureau of the Budget as a mandatory guide for all Departments and agencies, would have the effect of prohibiting the use of coal with a sulfur content of more than seven-tenths of 1 percent and of residual fuel oil with a sulfur content of more than nine-tenths of 1 percent.

We find ourselves in long-time concurrence with the oil industry.

Should regulations of this type be adopted by the Federal Government as the standard for air pollution in all of its buildings and installations in urban areas, those existing at the present time and those to be built in the future, there would be an irresistible drive on the part of States and municipalities to adopt such air safety regulations in their areas.

Mr. Fitzpatrick at Chicago made that as a part of his presentation.

Within a matter of a few years such limits on the sulfur content of fuel which could be burned would become nationwide in application. The leadership in the air pollution field rests with the Federal Government. Recent legislation adopted by the Congress makes this abundantly clear. What the Federal Government does will guide and materially influence the action of State and local government. Therefore, to a great degree, what the Government does in adoption of air pollution standards for its many installations, located in all areas of the Nation, will be the determining factor in what State and local governments do.

Thus, we believe this is the right time and right forum to raise a caution flag.

Coal is the principal fuel used for the generation of electric power. About 65 percent of all steampower is produced in coal-fired plants.

If an unrealistically low permissible level is set on the sulfur content of coal which can be used, the largest single market for coal, and by far its largest growth market, will be destroyed.

According to the national power survey of the Federal Power Commission, which was published late last year, the Nation must continue to rely upon coal as the major source of electric power generation for many years to come. By 1980, the FPC report estimates that coal requirements for electric power generation will be in excess of 500 million tons annually, despite the fact that it estimates 70 million kilowatts of power will, by that time, come from nuclear plants.

Unrealistic standards affecting coal use in the generation of electric power would create serious problems for the entire Nation, not just for the coal industry.

If unrealistic standards make coal unavailable for use in the generation of electric power, where are we going to get an alternate fuel in sufficient quantity to take its place? This is a real problem and one which seriously concerns many electric utility executives with whom I have spoken.

I might say that Secretary Udall yesterday issued a statement saying not to look to natural gas because it was not there in that kind of volume to take up the slack that would be caused by an effective program on the seven-tenths and the nine-tenths business.

I have seen some suggestions to the effect that the Nation should look toward nuclear power as the major source of its electric power, thereby avoiding the air pollution problem completely. Such a suggestion is wholly unrealistic, even though it might have been made by the chairman of that committee.

It completely ignores the fact that nuclear power is not yet ready, nor will it be for many, many years, to assume the total burden for the Nation's electric power supply. Even if nuclear capacity reaches the 80 million kilowatts which the Atomic Energy Commission has projected by 1980—10 million kilowatts higher than the FPC projection—this will leave us with the need for something on the order of 800 million tons of coal equivalent for power generation to be provided by fossil fuels. Natural gas and oil could not pick up this slack. This leaves coal and only coal with the capacity and reserves to provide the 500 million tons of fuel annually to meet the Nation's requirements for electric power.

What is an acceptable limit of sulfur dioxide emission consistent with the Nation's well-being and health and the national economy? How can this level be best achieved? As far as I can determine, this has never been determined.

And under questioning, Admiral MacKenzie admitted without any question that fact.

In discussing this problem, Senator Edward S. Muskie of Maine (I hope you will pardon me for quoting a Member of the other House) during hearings earlier this year on S. 306, expressed his philosophic approach toward this problem to which the coal industry fully subscribes. Then Senator Muskie declared, as reported in the hearings, and I quote, "Our first effort must always be to identify the problem and establish that it is a problem, and then we must develop solutions that are economical and related in a reasonable way to the dimensions of the problem itself."

You probably have had testimony here about this seven-tenths and nine-tenths per million and so forth. It is my understanding that the human being is not conscious of sulfur dioxide up to two points per million. Why this 1,000 percent difference is amazing.

This is a sound and sensible approach. We can all agree, I am sure, that it would not be in the public interest to drain off into the effort for cleaner air a major portion of the Nation's economic resources, if, in fact, it develops that such action would not be beneficial toward a solution of the problem.

As an industry, we favor and urge an intensive research program to determine the effect of sulfur compounds upon human health so we can, to use Senator Muskie's words, "identify the problem" before a decision is reached as to what standards are required.

We favor legislation calling for the establishment of a technical committee, composed of Government and industry experts, to effect a program of improved, low-cost techniques for removing sulfur from fuel before it is burned. We have been told to stop yelling about coal. I want to assure you that if there is any way of getting organic sulfur out of coal or even the pyrite sulfur out, we would, it is certainly much finer and much more valuable as a fuel if we could accomplish it. We so far have not any way of doing this. And Mr. Gartrell, who has

a wonderful presentation on this subject and probably knows as much about it as anybody in the industry, indicates different things that you can do, but in grinding it down to a 60-mesh you then have a talcum powder of coal and it is only limited in its reduction in sulfur then but you have lost anywhere from 40 to 58 percent of your coal in the process that you have to throw away or use for some other purpose. And then we are talking about an increase for coal that is probably worth $2 or $3 or $5, or even $10 at the mine, an increase of $3.25 a ton onto this. We are just a long way from home here.

We were sorry that this provision, which was recommended by the Senate committee, was omitted from S. 306 as passed. This is a positive approach and we urge its adoption by the Congress.

Let me assure you that coal is not indifferent to, or not uninterested in, the very serious air pollution problem facing the Nation. Our industry has been at work for years, as Mr. Coryell and Mr. Mullan stated, in trying to develop economic methods of removing sulfur gases from the stack of coal-burning plants and removing the sulfur from coal before it is burned. In most cases we find a partial solution and when we do we get another problem that goes with it. I think that in Florida if you could put screens in a stack—if you have an 800-foot stack, the reason that you have it is to get a very fast draft. But as soon as you put filters in, you cut your draft, and you get a falloff, which is worse than if you let it go up, whoof, and then this dispersed it over a 25-mile area, where there are no people up there—well, there are astronauts, probably, but not ordinary persons.

The Clean Air Act recognized that control of air pollution involves many problems for affected industries. The development of processes that will achieve the desirable result of removing sulfur dioxide from the discharge of coal-burning plants is the type of problem which those who wrote the Clean Air Act clearly had in mind. Nothing would please us more than to achieve, through efforts of this industry, a method for removing sulfur so that the discharge from a coal-burning plant would not add one particle to the pollutants in the air.

In consideration of the very real problem of air pollution, we believe it is vitally important that before any action is taken by the Federal Government—action that will set the course of the Nation for the foreseeable future—that we understand clearly just what the problem is.

We favor stepped-up research directed toward the removal of sulfur oxides from fuel gases.

We believe there is a legitimate role for the Federal Government to play in these fields. Untold millions of dollars have been spent and will be spent by the Atomic Energy Commission in developing processes to try to prevent radioactive emissions from escaping from nuclear powerplants into the atmosphere except under controlled conditions. Is it not reasonable to expect that a similar priority be attached to solving the problem of sulfur oxide emission? After all, this is not strictly a coal industry or oil industry problem, no more than emission of radioactive waste is solely a nuclear industry problem. It is a truly national problem.

We need economic solutions to the problem of air pollution control, Mr. Chairman.

The Government could establish standards limiting the sulfur content of fuel to some arbitrarily low level, or it could require that processes be installed to remove all sulfur gases from the stack or remove the sulfur from the fuel before it is burned.

But can this be considered an economic solution, when such action would seriously impair the Nation's industrial economy, cause economic hardship for millions of wage earners and increase significantly the cost of electric power? And the competition of power in the world today is something to be considered.

I am sure that this committee, or any other committee of the Congress, or any executive agency would not for 1 minute seriously consider any program which would impose unnecessary and perhaps fatal hardships upon coal or any other industry and seriously impair the industrial economy of the Nation.

But I want to caution that the establishment of unrealistic standards governing the use of fuel could have this effect.

The standards which have been proposed to the Bureau of the Budget for all new Federal buildings and installations are totally unrealistic. The Bureau of Mines, which has primary responsibility for orderly development of the Nation's mineral resources has so characterized them.

I just want to note that what I just said there you questioned Mr. Edwards about this morning.

We urge that the Congress and the executive department proceed cautiously and with due deliberation before taking any action which could and probably would, be interpreted as a mandate to extend such unrealistic standards throughout the entire Nation.

Thank you, Mr. Chairman and members of the committee.

The CHAIRMAN. Mr. Moody, we are very glad to have your views on this subject. We, of course, recognize the fact that your industry has done a lot of research in the field and you have no doubt an abundance of experience in this field. I must say that with regard, of course, to your position and that of everyone who has thus far testified on the subject, the position of the Department of Health, Education, and Welfare, which was presented here, minimized the effect. Your testimony indicates that there should not be such legislation, and the information which you have just given, along with that which the Department of the Interior has given, leavse us in a rather confused state. I am not sure that the original information we have received is altogether correct when compared with your testimony and that of the Department of the Interior heard today. It seems to me that we are going to have to ask the Department of Health, Education, and Welfare to review their position and to come back and see if they do not have further facts on this subject. As I indicated earlier, I cannot understand why this step was taken. It is just beyond me how the Government, including the Bureau of the Budget, could be so far off on this information. If they are right I am simply confused—you and others do not know what they are talking about. And somebody is wrong.

Mr. MOODY. There is no question about that, Mr. Chairman. As I say, we have more or less precipitated this series of meetings and the coal industry, however, was alerted to this by the oil industry.

Do we have a minute?

The CHAIRMAN. Yes.

Mr. MOODY. I do not want to take up your time in just narrating steps, and so forth, but maybe to cast some light on this subject.

The CHAIRMAN. If you have any information that you can give us, we will be glad to have it.

Mr. MOODY. The information as I have it is that the Bureau of the Budget, knowing that this Clean Air Act—and if you read it, there is no question that it is very clear cut as an instruction and authority for the Department of Health, Education, and Welfare to take some steps on air pollution and the one that they took is a very drastic one. in fact, I have used the word "fantastic" to describe it—we have this call and the message came from General Services Administration, where some of the men wondered what had happened, because you could not buy fuel under those circumstances, whether it was oil or coal. It did not make any difference—there was not any such thing. Mr. Garvey of the National Coal Association, and his associates who are technicians in this industry—and I am not—Mr. Garvey points out that 95 percent of the coal in the United States would be outlawed with this interpretation, this instruction. And I think it is about the same for oil.

It disturbed us, because we do know that over the years we have had the problem of smoke abatement in various cities. We know that New York has established certain standards. We know that Chicago is very anxious on this. Our understanding is that they issued this instruction in order to start to make the Federal Government in its installations do what they were going to ask industry to do, so that they picked on the new installations and the urban centers, and with the restrictions that they have promulgated, this instruction. And, of course, the request of the budget committee that if they were going to spend money for this sort of thing, they wanted to know what it was and that it should be included in the budget. That is how the Budget department got mixed up in it, that is, the Bureau of the Budget. That was at the stage where we became very much disturbed by it. And the more we inquired the less information we got. And we did have this series of meetings, and I think that it is fair to say that there is no information on how to take sulfur out of coal or anything else within the possibility of then using the fossil fuels.

The CHAIRMAN. What percentage of the total coal production has a sulfur content?

Mr. MOODY. In excess of one-tenth of 1 percent?

The CHAIRMAN. Yes.

Mr. MOODY. About 95 percent. About 95 percent of all of the coal.

Mr. Springer was interested in Illinois coal. I can tell him that he has a little bit, a little piece down there that could qualify—and that is all.

The CHAIRMAN. You say 95 percent of the coal production in the country has a greater content than seven-tenths of 1 percent?

Mr. MOODY. That is right. In fact, most of it has a bigger percentage—it is in the order of 3 or 4 percent—4½ percent. It runs up to 8 percent.

The CHAIRMAN. Where did they get the coal to operate TVA?

Mr. MOODY. The TVA—the TVA is part of your best source of information on this subject.

The CHAIRMAN. They were exempting the TVA?

Mr. MOODY. Yes. After all, for a very good reason. Mr. Gartrell in his statement yesterday—I am on very friendly terms with them—said that he would have to get up around 4 percent—and not seven-tenths of 1 percent.

The CHAIRMAN. You mean that the sulfur content in the coal used in the TVA operation would be as high as 4 percent?

Mr. MOODY. Yes, sir—probably 4½ percent. They have a real problem there. They have done probably more and know more about this than anybody else. And when we had this meeting on last Friday I took it personally upon myself to invite Mr. Gartrell to the meeting and through Dr. Buckley he was invited and he was there.

The CHAIRMAN. Maybe we had better get to something about the pollution of the air by the TVA in that very fresh air country down in the Tennessee Valley and not put all of our efforts toward other areas of the country where it is not as great.

Mr. MOODY. No; I would be opposed to that. [Laughter.]

They only use about 25 million tons of our coal a year. The largest single customer for coal in the world. Please, Mr. Chairman, do not do that. [Laughter.]

The CHAIRMAN. The committee will be very glad to consider the recommendation.

Mr. Rogers, any questions?

Mr. ROGERS of Florida. Mr. Moody, of course you have done a great amount of research trying to do something about the problem, recognizing that it is a problem.

Mr. MOODY. That is right. It is a problem.

Mr. RODGERS of Florida. Your feeling is that there is not yet a known level that has been determined that is really harmful?

Mr. MOODY. That is my understanding. I have to admit that I am not a technician. I notice behind me a couple of doctors of the petroleum industry, our partners in this effort who probably know a lot more about that than I do, but the information that I have in looking over the findings of something like 900—I do not have the exact number—that there is not any finding of that kind in that.

Mr. ROGERS of Florida. Has your industry made any determination, the people that you represent?

Mr. MOODY. We have not.

Mr. ROGERS of Florida. Has any attempt been made?

Mr. MOODY. They just do not know. I always think of sulfur as something that my mother gave me as a kid. And there is no indication of it. For that reason it is quite possible—I know that in one study that I read over, which was very interesting to me, they said that the major finding of their study in exposing human beings to sulfur, those who were exposed to sulfur did not have colds, and those that were not exposed to sulfur did have colds. I am not trying to evaluate that.

The CHAIRMAN. If you will permit me, the sulfur my mother used on me was on the outside. [Laughter.]

Mr. ROGERS of Florida. You are not recommending this as a cure for colds?

Mr. MOODY. No. I just say that these doctors happen to fall into this. It may have some use. I am trying to find some way of having a plus on this.

Mr. ROGERS of Florida. I would be concerned with this. It is quite a problem in the Nation. I do not share your feeling that something cannot be done on these stacks, even with a filter, to filter it before it gets into the stack or something like that. This can be done, I am very sure. And the fact that you have simply extended it or not extended it is another question: that is, the fact that the industry has extended the height of the stack to disburse it into a larger area so that it will not be so concentrated, shows that it is a problem.

Mr. MOODY. You can use the electrostatic precipitators and the balance of control is a very difficult one. There is also a method by which it can be eliminated before it gets into the stack from the boiler and the heater; which is very expensive. In fact, the building would be bigger than the generator plant in order to take it out. I mean there are all of those problems. We are very hopeful. We really mean it—money, brains, manpower, anything that we have is going to go into this thing. We are not in any way underestimating what we are up against here.

And we do not want in any way to impose on the public mind an image that it is not there. We really do not need that.

Mr. ROGERS of Florida. Thank you very much.

The CHAIRMAN. Dr. Carter?

Mr. CARTER. No questions.

The CHAIRMAN. Mr. Satterfield?

Mr. SATTERFIELD. No questions.

The CHAIRMAN. Mr. Mackay?

Mr. MACKAY. No questions.

The CHAIRMAN. Mr. Gilligan.

Mr. GILLIGAN. You made repeated reference to the unrealistic standards on sulfur content employed in these regulations or these proposed regulations. Have you any idea as to how they arrived at these standards?

Mr. MOODY. No, sir, I do not. And in a series of meetings we have had I have so far been unable to elicit any information concerning how they happened to come to these particular figures.

Mr. GILLIGAN. The seven-tenths of 1 percent—even if they said 1 percent, the chance is it might be an arbitrary figure, but seven-tenths, would be shaving it a point or two to arrive at some such figure.

Mr. MOODY. Those of us who deal in figures think that it is much more impressive that you never come out with a round figure if you can help it. [Laughter.]

Mr. GILLIGAN. Evidently then, perhaps, the question should be addressed to the Department of Health, Education, and Welfare, because they arrived at some basis that seven-tenths of 1 percent is a tolerable level, beyond which we feel that sulfur content fuel should go. You have no idea how they arrived at that figure? You reject the seven-tenths of 1 percent as being unrealistic?

Mr. MOODY. It has no relationship to anything we know. Admiral MacKenzie was asked yesterday in Chicago at the National Coal Association meeting whether there had been any measurable difference in the oxygen content of the air anywhere in the United States at any time and he answered, "No." In other words, you wonder on what basis we are talking about this.

Mr. GILLIGAN. Thank you. No more questions.

The CHAIRMAN. Thank you very much, Mr. Moody. We are glad to have your presentation.

Mr. MOODY. It has been a pleasure to be with you as it has been at all times and if there is any way in which we might be helpful, we will be glad to be.

The CHAIRMAN. Thank you very much.

(A letter from Mr. Moody further stating the position of the National Coal Policy Conference follows:)

NATIONAL COAL POLICY CONFERENCE, INC.,
Washington, D.C., June 21, 1965.

HON. OREN HARRIS,
The House of Representatives,
Washington, D.C.

DEAR CONGRESSMAN HARRIS: During the course of my testimony on June 16 on proposed amendments to the Clean Air Act of 1963 you indicated an interest in the background, from the standpoint of the coal industry, of the proposed instructions governing the emission of air pollutants for new Government installations. I hope the information in this letter will make it clear to you why all segments of the industry—coal producers, the United Mine Workers of America, the major coal-carrying railroads, coal-consuming electric utilities and manufacturers of mining machinery and equipment—and, also, the entire petroleum industry, are so concerned over this set of proposed regulations.

In the first place, we believe it will be only a matter of a relatively short time until any air pollution regulations which are prepared for new Federal installations will be extended to all existing installations and then, because of the persuasive influence of the Federal Government, in this field, will be broadened even further by their acceptance by State and local regulatory agencies. Our fears on this score were not allayed by statements during conferences we have had with appropriate officials on this proposal to the effect that only a minute part of the coal market would be affected and, therefore, we have nothing to worry about.

In a speech which Mr. Vernon G. MacKenzie, Chief of the Public Health Service's Division of Air Pollution, made on June 13 at the annual convention of the National Coal Association in Chicago, he made it clear that issuance of the regulations for new Federal installations is only the first step. He stated: "However, it can be anticipated that further standards will be developed for existing Federal facilities. Moreover, it can be expected that standards will be developed by non-Federal regulatory agencies affecting sulfur oxides pollution from public and private fuel users. For the future, then, the proposed Public Health Service instruction constitutes one step in keeping with the steadily increasing trend toward more stringent air pollution control."

There can be no doubt that it is the intent of this agency to have uniform nationwide air pollution regulations within a relatively short time.

To state the facts in their bluntest terms, the coal industry cannot survive in the face of nationwide regulations tailored after the proposed Federal regulations. Almost 95 percent of the coal burned by electric utilities in 1963 would be eliminated by these regulations. The only coals which could qualify would be high grade, expensive metallurgic coal essential for steelmaking.

In a paper delivered recently to the National Power Conference in Chicago, Mr. Harry Perry, director, coal research, for the Bureau of Mines, delivered a paper which points up the magnitude of the sulfur oxide problem for the electric utility industry from burning coal, in the context of the proposed regulations. He reported that, on the basis of a study made of coal consumption patterns by the utility industry, the weighted average sulfur content of coal is 2.28 percent, compiled by combining a knowledge of the sulfur content of coal seams being mind in the various States and the distribution from these States to electric utilities throughout the Nation. The figure of 2.28 percent is an average and a large part of the coal contains sulfur of 3 percent with some having a sulfur content of as much as 4.6 percent.

Mr. Perry cited another report made by the Public Health Service of 110 utilities burning 201 out of the 209 million tons consumed by that industry in 1963. This study showed the average sulfur content of the coal at 2.53 percent.

Coal used by TVA, for example, ranges from 2.4 to 4.8 percent. This study also showed that only 4.9 percent, or a little less than 10 million tons out of a total consumption of more than 200 million tons, had a sulfur content of seven-tenths of 1 percent or less, which would meet the proposed PHS standards.

It is misleading to say, as some Government sources have, that the Nation produces about 160 million tons of low sulfur coal each year and, therefore, any Government regulation which limits the sulfur content of coal would not create any problems. As pointed out above, this low sulfur coal is premium metallurgical coal and most of it is produced in mines operated by the steel mills for their own consumption, or is dedicated by long-term contracts, leaving very little for sale in the open market. To divert, by Government edict, this premium coal to steam boiler use would be a flagrant waste of a valuable natural resource.

Not only is low sulfur coal in short supply for utility and steam boiler use, but the present technology for removing sulfur from the coal before it is burned or removing the sulfur gases from the stack of a coal-burning plant has not reached a point where they are economically feasible.

Mr. James R. Garvey, of Bituminous Coal Research, recently stated that "current technology, despite diligent research by many organizations, does not indicate means by which the higher sulfur levels in most coals can be reduced to the less than 1 percent level."

Also, the removal of sulfur gases from the stack presents serious technical and economic problems. Mr. T. T. Frankenberg, of the American Electric Power Service Corp. of New York, has estimated that with the present state of technology it would add $30 to $50 per installed kilowatt to the cost of a coal-fired station to add sulfur gas removal devices to powerplants. Also, it is pertinent to point out that known processes for removing sulfur oxides from flue gases could, in the most efficient plants, add anywhere from $1.78 to $2.60 per ton to the cost of fuel, assuming that salable sulfuric acid can be recovered, arcording to Bituminous Coal Research, Inc.

These facts point up the dilemma the coal industry faces. The Federal Government is actively promoting a move to establish standards which the coal industry cannot meet on the basis of current technology and economics.

This organization, which represents the five segments of the industrial federation based on bituminous coal, first heard of these proposed regulations by accident. We were appalled that any proposed step, as far reaching in its implications as this, should be taken without at least giving industrial groups concerned an opportunity to be heard. It is my understanding that the American Petroleum Institute also was not advised of this proposed action, despite the obvious interest of the petroleum industry in this matter.

We sincerely believe that if the Government intends to persist in its efforts to impose standards of sulfur content upon the Nation it should, at the very least, start a crash research program aimed at (1) establishing a safe level for sulfuric oxides; and (2) then developing economic means of either removing the sulfur from coal and oil before it is burned or developing more effective economic means of removing sulfur oxides from flue gases. This, before standards are imposed. The alternative will be utter chaos for the domestic coal and oil industries.

The organization I represent believes that coal is important to this Nation. It constitutes, by far, our largest present fuel resource. Perhaps those persons in Government concerned only with air pollution have decided that this great storehouse of energy is expendable. But, if so, this is a very irresponsible decision; particularly, since we have no precise knowledge as to exactly what amount of sulfur in the atmosphere is a serious health hazard—if, indeed, any reasonable amount is.

We think that any decision on regulations carrying with them such immense implications for the national economy and the Nation's future supply of fuel and electric energy, should be taken by the Congress, itself, after carefully reviewing all of the facts and implications, rather than by a segment of the executive branch whose field of responsibility is limited and narrow in scope.

Our great fear is that adoption of section 2 of H.R. 7429 will be looked upon as a mandate to proceed with all possible haste for the extension of the regulations, which have now been drafted to cover only new installations, to all Federal facilities and, subsequently, non-Federal fuel-burning plants. The coal industry simply could not cope with the problem this would create; its effect would be disastrous.

It is our hope that you and your committee will make sure that the HEW people, in their commendable zeal to achieve clean air, will not ignore this real threat to this large segment of our industrial economy. We hope that, either in language in the bill or in your report, first attention will be given to means to determine a desirable, safe level for sulfur oxides and to eliminate the sulfur contaminates from fuel. In this way, the public interests can be protected and coal can continue to be sold in its major markets.

Sincerely,

JOSEPH E. MOODY, *President.*

This will conclude the hearing this morning. We have several other witnesses that we have not been able to get to this morning. However, the House has gone into session and we must adjourn.

We have three gentlemen from out of the city as witnesses. We do not like to inconvenience you.

I note that Mr. Michaels is here representing the city of Philadelphia. Could you be here at some meeting in the future that we could arrange?

We did get to Mr. Tate, your mayor, last week. He was not able to be here at the time that he was called, and for that reason we had to reschedule him. We did have the testimony of one of your very able Congressmen.

Mr. MICHAELS. That will be all right.

The CHAIRMAN. We have from New Haven Mr. Millet, representing the Automobile Importers Association. Is he present? Perhaps he did not get here this morning.

We have Mr. Scott.

I am sorry that we did not get to you. We will arrange another date as soon as the schedule will permit and we will advise you. We will try to cordinate with your schedule so that we will not have any conflict.

Mr. SCOTT. Very well.

The CHAIRMAN. We thank you all very much.

The committee will stand adjourned subject to the call of the Chair.

(Whereupon, at 12:15 p.m., the committee adjourned subject to the call of the Chair.)

CLEAN AIR ACT AMENDMENTS

TUESDAY, JUNE 29, 1965

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON PUBLIC HEALTH AND WELFARE OF THE
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met, pursuant to recess, at 10 a.m., in room 2218, Rayburn House Office Building, Hon. Oren Harris (chairman of the full committee) presiding.

The CHAIRMAN. The committee will come to order.

When the committee adjourned the hearings a few days ago, on the various proposals having to do with so-called clean air and other related matters in this field, I was under the impression that there were several witnesses to be heard; particularly the mayor's representative from Philadelphia was to come down. For some reason, apparently he has not been able to come at this time. If he does not come to Washington, I will give him the privilege of filing a statement to be included in the record.

There were several other witnesses to be present, but apparently, they felt that their appearance would not be necessary. So they are not here.

The witness that we do have left is a very important witness, Mr. John Scott, who is the general counsel for the Socony Mobil Oil Co., of New York.

Mr. Scott, I know personally that you have gone to a lot of trouble and some inconvenience to be here today. But we do thank you for arranging you schedule to come, because I want to conclude these hearings this week and not let them go over until after the holidays when we already have other matters scheduled. It takes some time to get these records completed and printed. If we do not move on, we will get into a logjam.

So we are glad to have you this morning and to have your testimony. The field is yours.

STATEMENT OF JOHN SCOTT, GENERAL COUNSEL, SOCONY MOBIL OIL CO., NEW YORK, N.Y., REPRESENTING THE AMERICAN PETROLEUM INSTITUTE; ACCOMPANIED BY G. H. COLLINGS, JR., MEDICAL DIRECTOR OF THE STANDARD OIL CO. OF INDIANA; AND PAUL F. PETRUS, MANAGER OF FUELS, PRODUCTS DEPARTMENT, MOBIL OIL CO.

Mr. SCOTT. If I may have your permission, Mr. Chairman, I have a couple of experts with me. May they come up with me?

The CHAIRMAN. Yes, indeed, you may have your other experts to join you. And you may identify them for the record.

Mr. SCOTT. They probably will deny the term that I have used, but at least they will try to contribute where my knowledge fails.

The CHAIRMAN. Just so we do not put the definition of an expert in the record at this point.

Mr. SCOTT. I might add also, Mr. Chairman, that we are here to cooperate and help. And if you want us back again, we will come back any time. We are happy to do this.

The CHAIRMAN. Thank you very much.

You may proceed just as you desire with your statement.

Mr. SCOTT. Thank you, sir.

I am John J. Scott, chairman of the American Petroleum Institute's Coordinating Committee on Air and Water Conservation and general counsel for the Socony Mobil Oil Co. With me are Dr. G. H. Collings, Jr., medical director of the Standard Oil Co. of Indiana, and Paul F. Petrus, manager of fuels in the products department of my company.

I appreciate the opportunity to be here today and to present the thoughts of the petroleum industry on the legislation you are currently considering in the field of air conservation.

The petroleum industry has long been aware of the fact that the Nation's rapidly growing population and subsequent fuel demand has carried with it an increased responsibility for avoidance of atmospheric pollution. For many years, the petroleum industry has squarely faced this problem and, through the efforts of individual companies as well as its various trade associations, has endeavored to earn good marks in corporate citizenship.

The organization we represent here today—the American Petroleum Institute—has been the main channel through which oil companies have carried on an organized effort against pollution in its various forms for almost four decades. API's abatement research programs to date have covered an extremely wide range, including projects dealing with aquatic life, oil-and-water separators, ships and barges, smog compounds, and automobile exhausts. This research program—at a cost of millions of dollars—has also included projects directly concerned with health that have been conducted at Harvard University, the Chicago Medical School, the University of Texas, and many other institutions and laboratories.

The API Committee on Disposal of Refinery Wastes dates back to 1929 and has been active in the fields of both air and water pollution abatement. One of this committee's major contributions has been the preparation of a manual on "Disposal of Refinery Wastes" which currently runs to six volumes. Some of these volumes are in their seventh edition. This manual has been a standard reference source not only for the petroleum industry, but also for other industries.

In the late 1940's, west coast oil companies, individually and through the Western Oil & Gas Association, began a sizable research program to determine what was causing smog in Los Angeles' air, and what might be done to correct the situation. In 1953 when it became apparent that air pollution was not confined to Los Angeles, the API through the air and water conservation committee assumed sponsorship of a nationwide research program. The program, to date, has cost in ex-

cess of $2 million. This figure does not include expenditures by individual companies in this field.

In the light of this broad background of experience, we come here in the hope of making a constructive contribution to the discussion. We believe it is imperative to maintain forward motion toward the objective of cleaning the air, and to avoid false starts, backward steps, and wrong turns. Such mistakes are easy to make when the subject with which we are concerned involves so many unanswered questions, so many unsettled differences of opinion among recognized experts, so many doubts and uncertainties.

Let me illustrate with a case history of such a mistake. At one point in Los Angeles' search for a solution to its smog problem, the city fathers concluded that the oil refineries in the area might be to blame. Refineries were summarily required to install very stringent controls. But after special refinery emission control devices were installed, the city's smog problem remained as bad as ever. Only through later adequate research work was it found that the cause lay elsewhere. A considerable part of this research was sponsored by API. The API work, at the Franklin Institute, established the validity of Prof. A. J. Haagen-Smit's theory that sunlight acting upon a mixture of hydrocarbons and nitrogen oxides produces smog-forming ozone.

The cost of the false start in Los Angeles was high. To the petroleum industry—and ultimately, of course, its customers—the cost was $50 million. The cost to the community was intolerable delay. Time was wasted while the community waited to see if the devices would work—time that could have been better spent trying to find the real cause of the pollution problem.

An air pollution problem is always complex. It cannot be solved by the simple writing of a rule that will act like a magic formula.

The recently promulgated HEW regulations on heating installations in new Federal facilities offer an excellent case in point.

As you know, the Department has issued a set of proposed instructions that would, if adopted, force Government agencies to use in these buildings fuels with a sulfur content of less than 1 percent. The regulations state that the "emission should not exceed 1 pound of total sulfur oxides per million B.t.u. heat input for installations below 10 million B.t.u. per hour heat input in any community, and for all installations in standard metropolitan statistical areas or standard consolidated areas whose central city has a population greater than 2 million and a population density greater than 15,000 per square mile."

It is the petroleum industry's feeling that the application of these rules to new buildings is merely the opening phase. Soon the older Government-owned buildings will have to comply with similar regulations. The cost to the taxpayer, who will have to pay for the necessary conversion, is anybody's guess.

This would be a problem even if it stopped with Federal buildings, but we know that is not to be the case. These regulations will set a pattern for all local, State, and regional pollution agencies. Indeed, rules of the Department are meant to be examples, as was made clear in the statement of James M. Quigley, Assistant Secretary

of Health, Education, and Welfare, when he testified before this committee on June 10, and I quote:

> If we are successful in bringing Federal air pollution sources under the highest practicable degree of control * * * we will demonstrate for all to see that the control of air pollution sources can be accomplished promptly and economically.

Of course, Federal buildings should set the example. But we believe it should be a practical example, and one in keeping with the real needs of an effective air pollution control program. And we think that is exactly where these recommendations on sulfur oxide emissions fall short.

Let us look at the economic and technical feasibility of attempting to comply with rigid standards such as the HEW instructions propose.

The HEW instruction would mean for residual fuel oil a sulfur content restriction to about nine-tenths of 1 percent. For coal it would be even more restrictive.

By, in effect, setting the sulfur limit at nine-tenths of 1 percent, this rule would exclude more than 95 percent of available residual fuel oil. The coal industry has made about the same point in regard to the application of this rule to their product.

The point has been made, however, that this rule, as written, involves only new Federal installations, and a relatively small amount of low-sulfur fuel would fill the requirement. In this connection it is important that you know that low-sulfur residual fuel oil is essential to the manufacturing processes of certain metallurgical and ceramic industries, and most of the available supply—provided at substantially higher cost—is now being consumed by them.

Further, to segregate any minute amounts of low-sulfur residual fuel oil that might happen to remain and to distribute it in small quantities to thousands of Government installations around the country would require separate facilities for storage, bulk transportation, and delivery. It would be completely impracticable for any company to provide this kind of special service. It is a certainty that most Government facilities would be unable to get low-sulfur residual fuel oil to meet the HEW instructions.

We sincerely wish it were possible to make low-sulfur residual fuel oil available to any customer who might want it. But stringent restriction on sulfur content of the kind proposed will create economic and technical problems that the petroleum industry is not now able to meet. We are diligently pursuring research but at this moment those problems are not solved, and we are, therefore, in no position to comply with such standards.

The American Petroleum Institute recently surveyed the principal suppliers of heavy fuel oil to obtain the latest information on development of processes for residual oil desulfurization and cost of their application.

The survey showed this information: Assuming continuation of the present principal sources of heavy fuel oil supply, some companies believe it is possible to reduce the sulfur content of average heavy fuel oil to 2 percent, but only at a cost to the consumer of 40 cents per barrel. This would be a great cost increase for a product that now

sells for $2.25 a barrel; and even then we would be far short of the standard of less than 1-percent sulfur content that, in effect, is now being proposed by HEW.

The companies covered by the survey I just mentioned, reported that no process has yet demonstrated commercial capability which will achieve a greater percentage of sulfur reduction. The only remaining alternative is blending heavy fuel oil with the higher-priced No. 2 home heating fuel. Such a blending procedure, however, could actually increase the cost beyond a figure of around $1 per barrel quoted not long ago by the Bureau of Mines. The effect would be to make this heavy oil so expensive that it would no longer be a marketable commodity for most purposes. Present consumers of this fuel would find it priced out of their reach. If this were only the Federal Government doing this to itself, and, in effect, to the taxpayers who foot the bills, that would be serious enough. But let me repeat, it is not intended that the idea should stop here. The HEW instruction is clearly meant as a rule to be copied by every community in this country.

We know that this is a rule that cannot economically be followed.

Not even natural gas offers a suitable alternative to residual oil and coal. Secretary of the Interior Stewart Udall, in a letter to the chairman of this committee, pointed to the factor of conservation of that natural resource, and said that:

> Efforts to increase the use of one fuel in preference to another must be considered from more than an air pollution standpoint.

Even the current president of the American Gas Association, Mr. Guy Wadsworth, has warned members of his industry—the distributors of natural gas—that severe dislocation of that industry would be threatened. "Any sharp change-about," he said, "one that would cause large volume industrial demand (for natural gas) to skyrocket wherever smog becomes a problem could rapidly siphon off huge portions of existing reserves and turn the economics of serving gas topsy-turvy."

We submit that there are practical alternatives, workable alternatives, to the approach now being advocated by HEW. In fact it is the conviction of the petroleum industry's technologists—and we have a great many of them—that a system which, in effect, limits the sulfur content of fuels is least suitable as a control method.

With sulfur content limitation, the consumer is forced to pay a higher price for every barrel of fuel and is simultaneously denied the opportunity to consider pollution abatement by whatever method is the most economical in his circumstances.

Petroleum industry experts hold that the most desirable control approach is through monitoring of ambient air. Such a method applies measurement and control directly to the specific problem requiring a solution. It also gives the fuel consumer the advantage of maximum flexibility in choosing the most economic solution to his particular problem.

It should be kept in mind that air pollution episodes—the acute probems—are not chronic. They are temporary situations that can come about only in some areas—and only under certain, and very infrequent, adverse weather conditions. As one of these rare situations develops, an ambient air monitoring system can give the alarm, and

appropriate, prearranged measures can be taken promptly. Such measures might include a temporary shift to a lower-sulfur fuel, or even—in an extremely rare case—more drastic action such as the suspension of some plant operations.

Even recognizing the present shortcomings and gaps in present knowledge, we in the oil industry believe there is sufficient information now available to permit development of a workable control procedure based on ambient air monitoring. Such a system can be effective—and it is attainable right now.

A simple weighing of facts shows that such a system at this time is far more practical and economic than the sulfur oxides abatement course proposed by HEW. If such a procedure as that in the HEW instruction were generally adopted by a city such as New York, the high price of stringent control would be borne by fuel consumers 365 days a year—and that price would come to tens of millions of dollars. Yet the prime problem occurs, at most, on but a few days a year when abnormal atmospheric conditions prevail. The cost to control peak concentrations of sulfur oxides that may occur on such days is but a fraction of the cost that would be entailed in stringently limiting the sulfur content of fuels consumed all year long.

We want to clean up the air generally; that is our goal, the public's goal, the Government's goal, the goal of petroleum and of all other industries that I know about. But most urgent of all is the need to avert those combinations of conditions that could lead to serious consequences. That is why we believe the whole question must be approached from a realistic standpoint rather than by the adoption of standards that are so far from attainable as to discourage further efforts.

From this same practical viewpoint we believe that H.R. 7429 could be improved and strengthened by bringing to bear more technical knowledge and the views of other Government agencies in carrying out its objectives. As presently drafted, this bill appears to give the Secretary of the Department of Health, Education, and Welfare the right to set standards for Federal installations without consulting any technical committee, other agencies of Government or the industries that may be affected.

We do not, for a moment, question the technical ability, sincerity, or dedication of HEW. Nevertheless, in a matter as complex and as filled with uncertainties as this one is, the responsibility for such decisions should be shared.

For this reason we suggest that the measure be amended to provide that, before the Secretary of Health, Education, and Welfare takes action in setting standards for Federal installations, the Bureau of the Budget would have to give its approval based on findings made after a public hearing held under the supervision of the Bureau. Such a hearing would permit full consideration by other Government agencies of the technical justifications for the proposed standards, the economic consequences to industrial and private consumers, and the impact on other governmental programs and policies—conservation of our natural resources, for example.

Since we believe that Federal regulations should also be flexible enough to reflect differences in local conditions, provision should be

made for consultation on specific standards between HEW and the officials of the areas to be affected.

We also favor the establishment of an advisory committee composed of representatives of industry and interested Government agencies to assist and counsel the Secretary of HEW in dealing with the problem of sulfur oxides in the atmosphere.

With the present great gaps in scientific knowledge on this subject, with the present inexact and groping nature of all efforts to cope with this problem, such a provision would seem to recommend itself as a safeguard for both the Department of Health, Education, and Welfare and the public at large.

Such an advisory committee, in our view, should include representatives of the Department of Health, Education, and Welfare, the Department of the Interior, the Department of Commerce, the Department of Defense, the Federal Power Commission, and perhaps other Government agencies, along with representatives of the fuels and power industries. Such a combination of agency and industry representation will assure the balancing of pollution abatement, resource conservation, defense, and economic needs.

This advisory committee, cooperating with the Secretary of HEW and turning to such outside technical and medical experts as might be required, could make a much-needed contribution in two vital areas: first, practical techniques for the removal of sulfur from residual oil and coal could be pursued; second, sound and reliable standards with respect to human tolerance of sulfur emissions could be determined.

For the petroleum industry's part, I can assure you of our desire to assist in all ways that we can to further the cause of cleaning the Nation's air. This includes our willingness to cooperate in the selection and adoption of monitoring techniques and control measures that will insure minimum sulfur oxide and other concentrations of pollutants. We believe there is much work to be done in this field—in achieving uniformity of techniques and terminology and in developing greater knowledge of the effects of specific contaminant levels. With respect to ambient air monitoring there is a decided need for understanding and agreement on the proper location and number of measuring stations within a particular community.

Since 1953, knowledge has advanced to a point that allows control engineers to knock the peaks off potentially dangerous situations that can occur when pollutants climb sharply during periods of atmospheric inversion and similar abnormal conditions. They may not yet know how to return air to pristine purity but they are competent to hold sulfur, for instance, below the levels generally considered harmful.

This is the reason why American Petroleum Institute representatives, at a meeting on June 11, ended with these words a statement to a group of Government agency representatives considering the limitation of sulfur content of fuels—

> * * * as a beginning, we believe that our collective objective should be reduction of high sulfur oxide concentrations that may occur during abnormal atmospheric conditions. We believe that controls aimed primarily at reducing sulfur oxide concentrations during those times in which normal atmospheric conditions prevail will cause an unwarranted disruption of the economy and will accomplish little toward reduction of peak concentrations that may occur under adverse weather conditions. Any levels established can be modified to a greater

or lesser degree to take into account local conditions and, subsequently, to take into account the experience and data developed in implementing the initial control levels.

We believe that we are suggesting a practical, logical, and realistic control approach which, if followed, can make a genuine and lasting contribution toward giving the people of this country the air quality they want and deserve for their health, comfort, and safety.

In conclusion, we would like to call to your attention a resolution on air and water conservation unanimously adopted last week by the Interstate Oil Compact Commission. The compact, dedicated to the cause of oil and gas conservation, brings together the governments of 33 States. Their resolution supported President Johnson's pledge in his state of the Union message "to learn much more about the control of pollution;" endorsed careful research that "alone can produce sufficient accurate data on which to base effective corrective action;" and recognized the value of "cooperative conservation efforts by citizen groups, both corporate and private."

When the guidance of government becomes necessary,

the resolution went on to state,

such guidance should come from the level of government at which officials are most familiar with the problem and therefore best able to arrive at an effective solution * * *. Action should correspond closely to local conditions and local needs, since they differ, sometimes widely.

Further, the Interstate Oil Compact cited the statement of Secretary Udall—referred to earlier—and resolved to—

recommend as highly desirable that those communities and areas contemplating the substitution of one fuel for another as a form of pollution control also include in their deliberations the most serious consideration of the impact that such action can ultimately have on the Nation's program for conserving its natural resources.

If you would wish to have it, I can make available to you a copy of this resolution for the record. (See p. 371.)

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Mr. Scott, for a very comprehensive discussion of this highly important subject.

Obviously, your industry has recognized for a long time that there is a problem.

Mr. SCOTT. Yes, sir.

The CHAIRMAN. Apparently, efforts have been made since, as you indicated, 1929.

Mr. SCOTT. That is correct, sir.

The CHAIRMAN. At the moment, you admit that there has been no successful research that has provided an effective solution?

Mr. SCOTT. The 1929 was mostly on waste disposal. I would say that the industry effort as far as air pollution is concerned probably started in the 1940's, and really got underway nationally about 1952. And the answer is that we have not found effective ways of reducing sulfur content down to levels which the HEW has attempted to prescribe.

The CHAIRMAN. Let's get away from what the HEW has attempted to prescribe and talk about what can be done effectively to meet the problem.

There are several things in your statement I want to get some clarifications on.

First, I want to compliment you on offering a solution from your experience and research in the industry.

It is interesting that your refineries in California did not contribute to air pollution.

Mr. SCOTT. That is right.

The CHAIRMAN. What is the difference in the sulphide content that comes from an automobile exhaust and that that might come from a refinery?

Mr. SCOTT. I think the answer, sir, in California was that the sulfur content in the air was found to be low, and that the material being emitted from the exhaust, which was not a sulphide content but a mixture of nitrogen——

Mr. PETRUS. Nitrous oxides and hydrocarbons.

Mr. SCOTT (continuing). Rather than sulfur.

The CHAIRMAN. Nitrogen oxides?

Mr. PETRUS. Nitrogen oxide and hydrocarbons which were the contributors to smog in Los Angeles.

Los Angeles has one of the lowest sulfur concentrations in the air in the country.

The CHAIRMAN. And refineries do not produce nitrogen oxide and carbon dioxide?

Mr. PETRUS. Their contribution is very low in the ambient atmospheres compared to the automobile exhaust.

The CHAIRMAN. What do you mean by the ambient atmosphere?

Mr. PETRUS. The surrounding air that humans breathe.

Mr. SCOTT. Surrounding the community?

Mr. PETRUS. Surrounding the community.

The CHAIRMAN. Let's get this all settled.

I got the impression that the general idea of ambient was clean, pure air that was being circulated, and so forth. Is that right, or is it something else?

Mr. SCOTT. No, I think we just mean the atmosphere that you live in and that surrounds the community and where you are.

The CHAIRMAN. Where you are. But you just cannot live in a community surrounded by clean air, you have got to have some of it where you are.

Mr. SCOTT. I do not think we consider the word "ambient" air to mean pure, clean, or anything, it is descriptive of the atmosphere in which you are living and moving.

The CHAIRMAN. It does not mean that it is here today and over yonder tomorrow?

Mr. SCOTT. That certainly is one of the problems in this thing, that it is here today and gone tomorrow. But other air comes in to take its place, and whatever happens to be in your area is the ambient air atmosphere as we use the term in our statement.

I can enlarge a little, sir, on this question of the Los Angeles problem. I think the findings have been that perhaps 60 to 70 percent of the smog problem was due to these compounds that come out from the automobile exhausts. There are other sources of the same compounds, but the principal factor was the automobile exhausts.

The CHAIRMAN. I think that is generally recognized. The big difficulty is when you get the 99 99/100 percent, then that other one little bit piled on top of it puts it over the hundred mark. And, consequently, I doubt if we could logically proceed on a basis of just eliminate the majority and let the minority go. Being a Democrat, and in this democratic organization, I would not want to suggest that kind of a procedure.

But the purpose in pursuing this is your recognition, No. 1, that there is a problem, and your effort to do something about it.

Now, you say, let us set standards and proceed, but let us have a public hearing where everybody can come in and be heard before the Bureau of the Budget. Well, I am not sure that that would be desirable in our general procedure here. I expect the Bureau of the Budget would have some feeling there. To put them in the position of going out and holding public hearings, I believe, would be setting a precedent that I am not sure that we could bring about, or should. The Bureau of the Budget is recognized as an arm of the President of the United States, and I really would have some question about that procedure.

Also, what bothers me is this: The Bureau of the Budget in its efforts to make decisions does consult with people, just as you had a consultation with them recently. But to require them to go out and set up public hearings as such, like a committee of the Congress, or a department, seems to me deserves most careful scrutiny.

But then you go further and would apparently extend to HEW certain authority, but provide that they should seek the advice of an advisory committee. Now, outside of the public hearing by the Bureau of the Budget, as I see your proposal here, everything else thereafter is under HEW. It does not seem to me a very good approach to say that all of the technical work, the consultations, the advisory committee, and so forth, shall be under the Department, and then at the same time here is another organization that does not necessarily have the benefit of this, but they have got to hold public hearings before they give their approval to it. There is something missing there someway to me. I cannot very well get it.

Mr. SCOTT. I enter this area with some——

The CHAIRMAN. If you are going to put a lot of authority down here before approval is given, then it seems to me that that is where the advisory information should finally be. Because I know the Department is going to use advisory committees, but when the decision of the Department is made they are going to go before this Bureau of the Budget public hearing if you have such, and they are going to make a pitch for what they decided upon.

I am somewhat impressed with the idea of a technical advisory committee all right, but I would want it to be used where it is most effective.

Mr. SCOTT. I think it was our feeling that the technical advisory committee would be one that would advise Health, Education, and Welfare.

The CHAIRMAN. Suppose HEW would pay no attention to the advice.

Mr. SCOTT. I suppose that would not be the first time that has ever happened in Government.

The CHAIRMAN. I doubt that very seriously.

Mr. SCOTT. I am sure that they would certainly consider it, but they might arrive at a different conclusion.

Our feeling about the sequence was there would be an advisory committee which would work with Health, Education, and Welfare, and then before any drastic regulation of a national character was put into effect which might have these economic effects, and affect costs of energy, and the preservation of our natural resources, that this affects so many elements of government that there should be an opportunity for review of these things before they are put into effect. I think our feeling in this connection arose from the fact that suddenly we faced a HEW regulation which was accomplished fact that did have, as we see it, rather drastic significance.

The CHAIRMAN. It seems to me that there is where your public hearings ought to be if you are going to have them.

Mr. SCOTT. I think in making the proposal that we have here this seemed to us to be a pattern which would provide adequate review before drastic regulations were impressed. I am sure there may be other solutions.

The CHAIRMAN. Just a question or two about another suggestion you make here, and that is with reference to some procedure of monitoring the air over a given affected area. In view of the long history and research you and your industry have done, I am quite interested in this proposal. If it would work so that when the air reached a certain degree of pollution, someone would blow the whistle to give a warning, that might warrant some consideration. Are you satisfied that that kind of a mechanism could be developed?

Mr. SCOTT. We have a technical subcommittee right now that is working on this problem. And they are pretty well along in their thinking. We hope that they will be able to propose a system of ambient air monitoring that at least under the techniques that are known today will be an improvement over anything that exists that we know of today. And we intend to submit that to——

Mr. PETRUS. To Dr. Buckley next month.

Mr. SCOTT. To Dr. Buckley, I think, the 17th of July. And I think it is a little early to say——

The CHAIRMAN. Is this a device, is it a computer?

Mr. SCOTT. I can just give you one thing that I have learned. I have not participated in these subcommittee hearings. But we are trying to do something constructive.

Go ahead, Mr. Petrus.

Mr. PETRUS. Essentially, we feel that one of the problems has been that when these ambient air concentrations have been reported for the cities, seldom has the method as to how the figure was attained been reported. And our technical experts tell us that you can achieve differences in the order of 1,000 percent in this measurement, depending on what the technique used was.

So we feel that the proper approach to this problem is first to standardize the technique that you use. And we have one that has been standardized by the ASTM (American Society of Testing Materials) which we think is promising. And then we feel that it is needed to standardize the way the measurement is made, with what frequency and how often, and that type of thing. And only then can you set the

proper concentration that is needed in the air to protect health, based on this system, because some other system would give you a different number. And we have committees, both medical and technical, working this program out, and hopefully we will have recommendations by next month which we are intending to present to Dr. Buckley, but which we could present to this committee, if you wish them.

The CHAIRMAN. Regardless of that technical problem, which I cannot as a layman understand, but I wish you well in it, would you have in mind a procedure that would delegate authority to a given community for this purpose, or do you have in mind that HEW would cooperate with the State and community to bring this about? Or just how would it work? I am a little bit concerned about the voluntary aspect of it.

Mr. SCOTT. As Mr. Petrus has just indicated, we think it is desirable to develop common standards so that you do not get a distorted idea of what is happening in one community versus another. But once that is done as far as the measurement end of it is concerned, we think that the problem of air pollution control is largely a local problem, one which has to be resolved by a measurement of all factors in each individual community. So, therefore, we would feel that the monitoring and then the corrective steps that might be developed, once the monitoring gave a warning as to the need for corrective action, should be determined at that local level because the local authorities are best able to weigh all of the considerations that affect that community. And they vary from community to community tremendously.

The CHAIRMAN. Yes; that is true. But I also fully recognize that where you get many different people and authorities involved, I can understand why on many occasions they just never get around to doing anything about this local type of operation.

Mr. SCOTT. The alternative, of course, is to try to impose national standards which just do not fit community after community, and could involve tremendous economic and unnecessary expense to many communities around the country.

The CHAIRMAN. There could be developed a truly cooperative program, it seems to me, that might have some weight. I do not know.

Mr. SCOTT. I certainly agree with that.

The CHAIRMAN. We have. I have used too much time.

Mr. Nelsen?

Mr. NELSEN. Do you feel that the developing of the national standards should be done under HEW so as to set up standards that should be used as a measuring device nationwide?

Mr. SCOTT. I do think that that is one area, so that you are not comparing apples and oranges when you are talking about the sulfur concentration in one community versus another area, that this is one area where the development of a national standard would be helpful. But when you try to apply national standards for corrective action, there I think you get into great difficulty.

Mr. NELSEN. The testimony of the automobile manufacturers indicated they seem to support a program under which vehicles in localities that had an atmospheric condition that was dangerous to health would be required to install certain devices. In other areas where there was no problem, it would be an unnecessary expense. If this

national standard were adopted, and let us say Los Angeles was determined to be an area of great hazard, then the vehicles would be required to have the devices, and otherwise precautionary methods would be employed by the cities through their own governments based on this national standard. This, as I understand you, seems to be your feeling.

Mr. SCOTT. Yes; but I do not think I meant by national standards that every community in the United States had to install monitoring devices. I live out in the country myself, and it would be really quite a waste of the taxpayers' money if that were done.

Mr. NELSEN. I have no problem with polluted air out on my farm. I understand what you mean.

Thank you. No more questions.

The CHAIRMAN. Mr. Rogers?

Mr. ROGERS of Florida. Thank you, Mr. Chairman.

How much sulfur is there in a barrel of oil?

Mr. PETRUS. In this country, the amount varies considerably. Taken as an average—to go back a little, most of our residual oil is imported, and this tends to be higher sulfur oil than our domestic oil. Generally, it will average about 2.8 percent sulfur. And our domestic residual oil runs somewhat less than that. But I would say that in most of our metropolitan areas the average sulfur level of residual fuel oil will run between 2.5 and 2.8 percent.

Mr. ROGERS of Florida. I see.

Now, do you get this byproduct of hydrocarbons and nitrogen oxide from the burning of, say, a barrel of oil, or is it mostly just this sulfur?

Mr. PETRUS. Generally speaking—for example, if a utility is burning the residual fuel oil, there are very little hydrocarbons that are emitted from the stack. They do it very efficiently. The net contribution to a city's problem with hydrocarbons and nitrogen oxides is almost entirely a function of the automobile population.

Mr. ROGERS of Florida. And this seems to be what is the greatest cause of the smog?

Mr. PETRUS. Only in some areas. Los Angeles has this problem, of course. The problem differs to a very considerable degree around the country.

The CHAIRMAN. Before you get too far away from that, did I understand you to say that most of the crude oil was imported?

Mr. PETRUS. Excuse me. Most of the residual fuel oil that we use in this country. I am sorry.

Mr. SCOTT. I think I could add to that by saying that most of the residual fuel oil which is used along the industrial eastern seaboard, because the imported residual fuel oil is coming into the eastern seaboard.

Mr. PETRUS. The eastern seaboard uses about 70 percent of the residual fuel in this country, and about 80 percent of that is imported residual fuel oil.

The CHAIRMAN. I knew there was a high importation of residual fuel oil on the eastern seaboard. What do we have now in this country in production, between 6 and 7 million barrels of crude oil per day?

Mr. SCOTT. I would say it was higher than that.

The CHAIRMAN. It probably is.

Mr. SCOTT. I would say it is nearly 8 million barrels a day.

Mr. PETRUS. To clarify that, I would like to be sure the record shows that I was talking about residual fuel oil in my answers.

Mr. ROGERS of Florida. Is there much of the residual oil used in Los Angeles?

Mr. PETRUS. Much less than in this area. They, of course, have various rules there, and they have substantially outlawed it as of the present time.

Mr. ROGERS of Florida. You say it varies in different communities. How about the effect of sulfur in the different communities, is there a different effect there too?

Mr. PETRUS. In terms of effect on health?

Mr. ROGERS of Florida. Pollution and, say, smog, or a similar reaction.

Mr. PETRUS. The effect of sulfur as a pollutant depends very much on what other contaminants there are in the atmosphere.

I think Dr. Collings would be in a better position to expand on that.

Dr. COLLINGS. They are totally different problems. The contribution of sulfur oxides to the so-called Los Angeles smog-type situation is virtually nonexistent. The Los Angeles smog-type situation in the first place, is a different environment. It is an oxidizing, sunlit environment. The chemical reactions which go on here and the pollutants which are produced and the health effects which are produced are totally different from the New York or the eastern seaboard type of situation. And the effect of the small amount of sulfur as far as we have any evidence in Los Angeles is nonexistent, you can forget the problem of sulfur in Los Angeles, not only because it is there in small amount, but because the very nature of the atmopshere reactions which go on are the kind which are not amenable to producing its greatest effects.

In New York, in Chicago, in some of the other situations which we have and which are almost as different as one disease from another, the combination of pollutants is really the bad actor, Mr. Rogers. It is not one of these pollutants as best we are able to determine. So far as we have any evidence at the present time nobody has ever been hurt, healthwise by any concentrations which have been produced by any one of these pollutants which we are measuring. The suggestive evidence that we have of health effects is that it has always resulted from a combination of two or more pollutants and/or special circumstances. And by special circumstances, I mean high humidity, and various changes in atmospheric conditions, very cold weather, or something of the sort.

So that when you talk about the effects of the sulfur oxides on health you cannot escape involvement with these other factors.

This is why it is so difficult for somebody in my position to answer questions to you, or for you in your position to understand what these technical people are talking about.

The question then boils down to, what are we trying to prevent, as I see it? And when? We are obviously trying to prevent first off, anybody getting seriously hurt, healthwise.

As far as we know, the only occasion on which this can occur from sulfur is when the sulfur oxides are in combination with something else, a particulate material, droplets of sulfuric acid, high humidity where there may be other acid droplets in the air, fog particles, or some other contaminants. And these conditions, it is our feeling, our technicians and our technologists feel that these are conditions which we can today predict, monitor, set up a warning system on a practical basis.

The chairman was trying to get an answer to this earlier. Is it practical today? Have we got the methods? Can we set up a workable monitoring system which will tell us when these things are getting too high? Yes, I think we can.

So our feeling is that our thrust should be to control those situations which are known to be damaging, or highly suspect of being damaging even.

The vast majority of the communities in this country, the vast periods of time during the year fall outside of the range of what I have been describing. These are unusual in location, they are unusual in point of time.

So that it seems unrealistic to us to establish sufficiently low national standards of air purity which would prevent all of these occasional developments at selected spots. And those being very much in the minority, almost a rarity, why penalize the whole country with stringent standards which would cost them severely economically and otherwise when it is not necessary, why not put our thrust in the local community where the problem exists and monitor this situation so that when we have a risky problem coming up that we can then take the necessary action to do something about it, plan in advance what you are going to do when this comes along?

And this brings us to the conclusion of logic, that since these problems are so different from location to location, that it should be the local authorities who decide what they are going to do about this and how they are going to handle this problem. What Los Angeles does in establishing the level of SO_2, for example, sulfur dioxide, that it can tolerate, mixed up with all of its other contaminants may be totally, and probably would be scentifically, totally different from what New York will decide it can tolerate in terms of the health of its people mixed up with the kind of contaminants that it has and the kind of atmospherics that it has.

Mr. ROGERS of Florida. But you have a machine, you say, that can tell this difference in every community?

Dr. COLLINGS. I do not think we have a machine, but we have the technology, so that monitoring on a practical basis can be done.

Mr. ROGERS of Florida. And you say you will present this in about a month?

Dr. COLLINGS. I think we are getting this thing a little out of context, Mr. Rogers. I was asked by Dr. Buckley in our testimony before them on the instructions of HEW to commit myself personally, and presumably the petroleum industry, to what we considered to be a reasonable standard for air quality for sulfur oxides nationally. There is such a standard. Obviously there is a level above which you do not want to go anywhere in the country. This is not the kind

of standard which they are going to need in New York to protect the people in New York. But I was asked to present them with this standard. And I had been making noises all day that the difficulty in any numbers, for whatever purpose the numbers are presented, is that first you have got to establish the reference points for these numbers, what kind of analytical methods were you using, what kind of sampling techniques, what kind of monitoring locations, are you sampling 1,000 feet up in the air, or are you sampling at ground level, which makes a lot of difference. And so before I would give Dr. Buckley any numbers, I needed to give him the conditions upon which those numbers were based. And he agreed with this. In fact, I have a letter from him which indicates that we are in thorough agreement.

Now, I am, therefore, to present to him recommendations for the definition of the standards which we are going to recommend. It is these things which are brought before our technical committee which is working to decide, based on our present knowledge, what would we select of all the methods available as the most appropriate one for sulfur oxide.

Now, I am sorry, any question you ask me is probably going to bring a long-winded answer, because these are complicated and difficult matters. It is not very easy to give you a short answer.

Mr. ROGERS of Florida. I am sure of that. And we recognize that it is a very difficult problem. And that is why we are asking some questions that may not sound very sophisticated.

Dr. COLLINGS. I just apologize for being so long winded.

Mr. ROGERS of Florida. Let me ask you this: You feel that there are presently in existence techniques which will permit the proper monitoring of air pollution in a community?

Dr. COLLINGS. Yes.

Mr. ROGERS of Florida. No matter how it varies, in whatever community it may be?

Dr. COLLINGS. That is right.

Mr. ROGERS of Florida. So this is no problem?

Dr. COLLINGS. That is a problem, but we have satisfactory answers. And this can be improved.

Mr. ROGERS of Florida. And you feel that these periods of pollution only come at peak times or in particular areas of the year, say?

Dr. COLLINGS. The kind of pollution that we are concerned about does; yes.

Mr. ROGERS of Florida. Is that what would affect us?

Dr. COLLINGS. Yes.

Mr. ROGERS of Florida. That would affect health. So we can determine that through the use of this machine.

Now, if that can be determined, then what do we do? As far as the petroleum and the coal industry is concerned, do we get them to use a certain type of petroleum or coal or gas during these periods; is that the solution?

Dr. COLLINGS. I think the solution, Mr. Rogers, is a local question.

Mr. ROGERS of Florida. I am not asking the local question. I realize that. It is all going to be a local question. But I am talking about

the question of what do we do, no matter where you are, if there is too much sulfur coming out in the air, your monitoring machine has told you that, it blows the whistle; what do we do? Do we require them to stop operating or do we require a hearing of the use of the fuel with sulfur content?

Dr. COLLINGS. My answer was that we, you and I, speaking as we are today nationally, we do not do anything.

Mr. ROGERS of Florida. Well, may we?

Dr. COLLINGS. In my opinion, we do not, for technical reasons.

Mr. ROGERS of Florida. I may differ with you there.

Dr. COLLINGS. Not for social reasons or for legislative reasons or any other, but for technical reasons, we do not. They should do this at the local level because they should be in a position to know what their problem is and how to answer it.

I think Mr. Petrus can probably give you more definitive answers, the kind of answers that might arise under different situations.

Mr. ROGERS of Florida. Let me say this: I do not think I got across what I am trying to get at.

Is there a solution when you get the signal? In other words, is there anything that can be done?

Dr. COLLINGS. There is not a solution; there are solutions. There will be one kind of solution here and another kind here and another kind here. That is the point I want to hammer home to you.

Mr. PETRUS. Essentially, your pollution sources vary a great deal from city to city. In one city, you may have a bunch of factories, and in another city you may have one utility that is primarily responsible for sulfur. And it depends very much on what this complex is as to how you should approach it. And a standby program can be worked out.

For example, supposing, as does happen in some cities, that a utility happens to dominate the situation. Many of these utilities can use gas, they can use oil, and they can use coal. They could switch to gas for 3 days, perhaps. That is one possibility. Now, in another area where they have quite a number of plants some program will have to be worked out with the plants so that at an alert signal, they reduce certain operations which are the primary offenders for a period of a day or two. Usually the situations are a matter of 1, 2 or 3 days.

Mr. ROGERS of Florida. Yes. Here is what I want to know. We are talking about the petroleum industry now, where there is too much sulfur, we say that is the pollutant that we are really concerned with in the petroleum industry. I presume that is so from your testimony.

Mr. SCOTT. The residual oil, as far as the petroleum industry is concerned. There are other industries, of course, that have sulfur problems too.

Mr. ROGERS of Florida. So the sulfur problem is the thing we are getting at, from petroleum.

Mr. SCOTT. Yes.

Mr. ROGERS of Florida. If you have this monitoring system that tells the community—and I do not care where it is—if it says too much sulfur, what is the solution? Is it to cut the sulfur down?

Mr. PETRUS. It says too much sulfur for 1 or 2 or 3 days.

Mr. ROGERS of Florida. I agree, just for your peak day. But the solution is to do something to the industry that is putting the sulfur in for the period that this might exist; is that not correct?

Mr. PETRUS. Yes.

Mr. ROGERS of Florida. This would prevail in any community?

Mr. PETRUS. Yes.

Mr. ROGERS of Florida. That is what I wanted to get at, is that all you would do is simply change the type fuel, if it requires gas, or else reduce it to a 1-percent fuel, if that is necessary, for the time period that the signal is given you that the conditions will exist.

Is that not the solution you are trying to suggest?

Mr. SCOTT. May I interject there?

Mr. ROGERS of Florida. Yes.

Mr. SCOTT. I think what you are trying to find out is how necessary is the local solution as part of the problem.

Mr. ROGERS of Florida. No; I want an overall solution, that any sulfur problem can be solved for the period of time that the conditions indicate it would be hurtful. I realize that that will have to be determined locally, where the conditions would exist. But the solution is to get the sulfur out of the air, and the simple solution, for the time when it would be at its peak would be to simply use gas or oil or what would produce a less sulfur content.

Is that not true?

Mr. SCOTT. I think you would have to take into consideration that in a given community, you may have a pollution problem which is only concentrated in one area of that community, so that it is conceivable that you might have to work out solutions that would affect plants that are causing the trouble in that area.

Mr. ROGERS of Florida. I am talking just about sulfur now.

Mr. SCOTT. I am talking about sulfur too. The easiest one for us to talk about is the powerplant, because they do have this convertible use. Most of them can use either coal or they can use residual oil or they can use gas. And many of them have the ability to keep in reserve low sulfur quantities of residual oil. A community obviously does not want to increase its costs of energy, because this is an important thing in any industrial community.

So with an alert system, they probably would get on this before it became acute. And so they would begin a selective process, what things shall we knock back which will bring this level down. And if they find that by, say, ordering the utilities to switch from coal to oil, if that has not done it, they may then make the switch to gas.

Now, I think you can carry that line of thought out throughout other areas of the community. It is just not the utilities. We just use that as an illustration. There are other areas where switching might be employed, or perhaps even requiring the dilution of residual oil supplies with No. 2 oil.

Mr. ROGERS of Florida. To bring it down so that it would not be but 1-percent sulfur?

Mr. SCOTT. That is right. And these things have a lot of economic aspects to them. But I think that is the type of attention that can be given to this problem. And the solutions are almost legion.

This is not to say that the local people cannot get a lot of help from Health, Education, and Welfare.

Mr. ROGERS of Florida. I think I understand. And the solution is simply to cut down the sulfur intake there.

Mr. SCOTT. To take the steps that are needed. Sometimes it might be much more drastic than other times. It is a cocktail.

Mr. NELSEN. Will the gentleman yield at that point?

Mr. ROGERS of Florida. Yes.

Mr. NELSEN. With reference to the type of sulfur content fuel which you referred to in your testimony that would come under the standard of HEW, isn't it possible also that a manufacturing firm that might be using a low grade of oil which might tend to pollute the air could have a supply of higher quality fuel on hand that they could shift to during this period when the danger signal is on? A dual system would be necessary where you could shift from one to the other.

Mr. SCOTT. Yes, sir.

Dr. COLLINGS. There is another illustration, Mr. Nelsen, in the same way. Take something different, a chemical plant. Let us say that this community's biggest problem or part of its problem is the effluent from a chemical plant which is sulfur dioxide.

Mr. NELSEN. They could shut down.

Dr. COLLINGS. Not only that, but they have a certain flexibility in operation. Perhaps they are emitting sulfur as a waste product which they are unable to control economically on a continuous basis, but they do have a certain amount of flexibility in almost every conceivable process that we are talking about that they could hold this and store it for 3 or 4 days before they emit it, and wait until the atmospheric conditions are different and then bleed it off gradually so that the air can take that amount—there are all kinds of things that can be done here besides just an across-the-board lower fuel content of sulfur.

Maybe this will help to clarify what I meant by lots of different local action which I doubt that we can specify nationally. Maybe we can.

Mr. ROGERS of Florida. You could say that during these periods they would not emit into the air.

Dr. COLLINGS. Obviously. You have got to cut down on your emission.

Mr. ROGERS of Florida. And how they could do it would be determined by the local plant?

Dr. COLLINGS. We are in agreement.

Mr. SCOTT. The monitoring system is just the signal. But backing up any monitoring system you obviously have a plan of just what steps you are going to take to implement them, and there may be gradations as to how far you go.

Mr. ROGERS of Florida. Thank you.

I understand.

Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Satterfield.

Mr. SATTERFIELD. No questions.

The CHAIRMAN. Mr. Mackay?

Mr. MACKAY. No questions.

The CHAIRMAN. Mr. Gilligan?

Mr. GILLIGAN. Thank you, Mr. Chairman.

I have the feeling that in the alternative proposals that you have offered about local control that you have rather oversimplified a com-

plex problem. I spent 11 years in a local city council in the city of Cincinnati. And I think you vastly overestimate the ability of any local community to control the ambient atmosphere, or most anything else.

We have 33 incorporated communities in Hamilton County around Cincinnati. We are immediately across the river from Kentucky, with the Newport Steel Works, for instance, which emits vast quantities of smoke, and so forth, which have a way of drifting across the Ohio River and the State boundary. We are 10 miles from the State line of Indiana. And the prevailing breeze down there, when it blows, is southwest, so there we receive whatever they emit in Indiana.

The local community has really no ability, legal authority or ability to control anybody who is operating 50 feet outside the city limits, and even very limited ability to control what goes on within the city limits.

For instance, chemical plants were just mentioned a moment ago. We have one large chemical plant within the corporate limits of the city. I think any layman riding in the neighborhood in an automobile comes to the immediate determination that this plant has something to do with the fragrance that is drifting on the evening breeze. But we have been unable to pinpoint mechanically, or in any other way, that would hold up in a court of law the fact the this company is responsible for the odors and other emissions in the area.

Now, just so I may get a little clearer grasp of what you gentlemen have been saying, are you, the technical people, the technological people in the petroleum industry, ready to say that they could set today, pure air standards, what is pure air, and what is dangerously impure air?

Mr. Scott. I think I will let the doctor speak to that.

Dr. Collings. No, we cannot.

Mr. Gilligan. I would assume, then, if you cannot set the standards that we would be in some difficulty in saying when we reach, however, it be monitored, a certain level of this or that concentration in the air, that we have obviously reached a point of hazard to the public health in which automatically there is triggered some legal activity to counteract it.

Dr. Collings. There are matters of degree here. You can set a level of air quality which is purposely set so low that its order of magnitude is below any conceivable information that we have about affect on health. This is not a very practical or realistic figure, it is just a theoretical figure that we can set to say that yes, this ought to be safe, and clean and wonderful for everybody.

Mr. Gilligan. But virtually any such standard that would be set would be open to the charge made, for instance, in a court of law that the standards are whimsical, arbitrary, and amount to a gross abuse of discretion on the part of the legislative authority setting it?

Dr. Collings. That is right. On the other side, you can set levels with reasonable certainty which are dangerous.

These two statements need to be taken in context, however, on the low side and the high side, the extreme low and the extreme high, for a given condition. Where we get into difficulty, Mr. Gilligan, is the practical situation where there are combinations of materials. This is where we do not have adequate knowledge. And this is why I know

that we cannot set practical standards which generally hold true all situations in all combinations and all kinds of atmospheric conditions. We have got a tremendous body of knowledge and, it is rapidly expanding. And it is going to expand most rapidly in those conditions and circumstances which are most disagreeable, or potentially the most disagreeable.

So that we will be able to set standards increasingly accurately in the future for selected circumstances as they exist.

In order to set a general standard such as you and I would like to set and say, if we had air this pure, we would not have to worry about health, this would be so low that you and I can not live with it economically or practically. This I can tell you.

Now, there is a level, however, which we can live with, and which will be safe to the vast majority, what we would call the ordinary and typical cities and communities in this country. And then we must deal in my opinion with those special circumstances where we have to go lower than this based on more stringent standards when we begin to get combinations of factors which maybe will produce a health impact.

Mr. GILLIGAN. My feeling is, my conviction is that first we do not as a nation know enough to be able to set practical standards, certainly practical standards that would apply across the board. We do not yet know enough to enact national legislation applying standards across the board. The incident cited by Mr. Scott in California would seem to indicate that.

Secondly, this, in my judgment, cannot be solved at a purely local level, because with your vast technical resources in the petroleum industry; if you have not come up with some answers, I beg you to consider the situation of the small cities in the country where their unlimited budgets, and so forth, trying to mount the kind of laboratory research to enable them to set local standards. It is simply beyond their capacity.

And the third point I would like to make is that I would agree with what I think is the thrust of the statement of Mr. Scott, that if standards are to be set any time in the future regarding pure air and the consumption of certain fuels across the country, they should be set by legislative action rather than by administrative edict.

Is that a correct interpretation of your statement?

Mr. SCOTT. Or at least administrative edict which has had safeguards established, so that all——

Mr. GILLIGAN. What could be safer than to have the Congress review it?

The fourth point I want to make is that I think again, using the case of the utility company which you did say was the easiest example, that this has a tendency to understand the difficulty of the temporary conversion from one fuel to another, or one type of burning equipment to another, that if we consider the investment that homeowners or small industries and so forth in the aggregate in any community have in a given type of burning equipment, and their capacity, financial ability to keep on hand supplies of other fuels for minute-to-minute conversion, and so forth—we are talking about an economic problem which is probably even greater than the one which confronts the petroleum industry in a country to change this standard.

And my feeling about it would be that the proposal you have made to push ahead on research, cooperative research between industry and government is really a matter of first importance. And we still do not know enough.

Mr. SCOTT. I would like to respond—you have made a number of observations which I think are very pertinent to this whole thing. And I do not think we really are in disagreement with anything you have said.

Taking the last, just to eliminate one question. As far as the homeowner is concerned, he uses heating oil and heating oil has a very low sulfur content. So that is not any part of the petroleum problem, it is the residual oil.

So I do not think there will ever be an emergency measure of any real significance that is apt to carry into this area.

Mr. GILLIGAN. But when, for instance, 15 years ago, the use of soft coal for home heating in our area was forbidden in order to clear up a smog problem, this involved a household-by-household conversion to gas which in the aggregate, represented a really monumental investment.

Mr. SCOTT. Yes.

To go back to the beginning of your comments, the local nature of what we are discussing. I do not think that we intend that to be limited to a township or even a city. It is a local condition, really. It could be that within a State it would be necessary for a State to pass some legislation which would permit, not one action across the whole State, but some corrective action within affected localities of the State. Just as we have now, as I understand it, under the existing law, the ability to deal with some of these problems interstate through an interstate compact. And it is conceivable that in a concentrated industrial area which crosses State lines that our idea of local solutions to these problems might even involve an interstate compact to cover a particular area. We just feel that wherever the need is, the corrective action should be taken, and it should be determined by those that are affected by the need.

Now, on the question—you raised a question of really the legality of measures that might be said to be arbitrary.

I think that we have in mind that we are going to try and come up with some sort of a view later with respect to a sulfur level, which we feel generally speaking will not be detrimental to the health of a community. We still recognize, for all of the reasons which the doctor mentioned before, that that may well require in a given community a matching up of all of those local conditions—a review of the health evidence, what is going on in the hospitals, what the doctors are reporting, they may develop a local experience which in effect, is evidence that would take this out of the area of being something arbitrary, but it would be something based upon the local findings, and that seems to us to be an orderly way to go about handling this problem which is so difficult across the country.

Mr. GILLIGAN. Thank you, Mr. Chairman. No more questions.

The CHAIRMAN. Any further questions?

Mr. NELSEN. One question, Mr. Chairman.

You indicated in your testimony the fear that the standards set up for Federal buildings might be the opening door to a projective

movement to expand, and that the cost would be too high and unnecessary in some cases. But would there not be some merit to—for example, in the instance of the Federal Government—to proceed with the new installations to meet the better standard with the hope that progressively nationwide others would do the same? This would not involve a very great cost at the moment, but as you put new equipment in, you would have to consider these factors.

Mr. SCOTT. I think that as far as equipment is concerned, and any corrective types of equipment that can be put into Federal installations, I think that we would certainly have no objection to that. And we feel—and I think we all know that there is a good deal of room left for progress. I think you had some testimony at your last hearing that there are different types of equipment that can be put in, and some of these are more satisfactory than others, but there is still room for improvement.

But when you get to the quality of fuel, that is the result of the latest HEW regulation, and the only possible way that you can conform to that is to use a fuel which has a sulfur content that is just not available.

I might add, incidentally—I cannot vouch for this—but I have been told that HEW is going ahead with the enforcement of this regulation with respect to Federal buildings, and that GSA is carrying this regulation out. To us this seems rather unfortunate, because I think that there is some pretty respectable testimony being developed here that would indicate that this has a direct impact on the fuel as opposed to the installation, and is not a realistic regulation. And we had rather hoped that this type of action would be suspended until more careful consideration had been given to the implementations of all this testimony.

I may be wrong in my information.

Mr. NELSEN. If your information is correct, it would appear that we do not need legislation to do what this bill proposes, if they are already doing it.

Mr. SCOTT. Well, they did it in effect when they passed their regulation.

Mr. NELSEN. Thank you. No more questions.

The CHAIRMAN. Do you have information of any particular instance where this has been carried out?

Mr. SCOTT. I do not have. I may be able to find out for you. I identified this as a rumor which was passed on to me, and I do not have the specific information. If I can get it, I will certainly pass it along.

The CHAIRMAN. I think it should certainly be affirmed if it is a fact. Otherwise, I do not think the implication should be put in the record.

Mr. SCOTT. I think you are correct.

The CHAIRMAN. We started out with these questions, following your presentation, trying to develop an approach to the problem through HEW under certain standards, restrictions, and conditions, and with certain cooperation with other agencies, such as the Bureau of the Budget, and so forth. And now we wind up with a discussion as to whether this should be a local problem or not. Do you come back to your original statement, then, that this is an approach that should

be made—put certain authority in HEW, with the limitations which you mentioned?

Mr. SCOTT. I will try and clarify it, and put together the pieces of what we said, because I think they do sound conflicting.

Perhaps the best way to illustrate it is when we talked about the desirability of having a uniform measuring device and uniform techniques of measuring.

This is only one way you can achieve that in a worthwhile way, and that is, develop that on a national basis. And I would consider that a very appropriate action on the part of HEW.

Even there, I think your objective would be to get the best types of measuring devices possible, so that there would still be room for advice with respect to it, there would still be room for a hearing on it, so that the thing does not get off on the wrong footing.

The CHAIRMAN. You did not have in mind, then, extending authority with certain limitations on the establishment of standards by the Government agencies?

Mr. SCOTT. It is difficult to state precisely what standard might be developed by HEW. I have indicated one possibility. There may be others. And there may be advisory standards.

But it is in the implementation that we are the most concerned, because we feel that what is to be done and what is necessary to be done in a community or a region must be determined on a local basis.

The CHAIRMAN. You get down to the administration of it. We cannot do it in legislation. You say in your statement on page 10—

from this same practical viewpoint, we believe that H.R. 7429 could be improved and strengthened by bringing to bear more technical knowledge and views of other Government agencies in carrying out the objectives.

Mr. SCOTT. Yes, sir.

The CHAIRMAN. That indicates to me that you believe that if we provided a technical committee that could give technical knowledge to the right place and provide consultation to other Government agencies, that this approach to it might be worthwhile?

Mr. SCOTT. Yes, sir.

The CHAIRMAN. That is what I wanted to find out. I do not think we can write legislation that can get down in on a community like the doctor was talking about a while ago. That would not be possible. We cannot do that. We have got to delegate some responsibility. But what kind of restrictions and standards can we apply? That is what I am trying to find out, and what Mr. Rogers was trying to find out.

Dr. COLLINGS. May I comment on that?

Using an illustration, the Public Health Service has been suggesting, if not formally, recommending to local legislative and air pollution bodies and other people that a standard for sulfur oxide should be established as one-tenth percent per million parts of air, and 99 percent of the time. This standard is low, deliberately low to take care of the worst kind of situation which I described previously, combinations of effects—in order to protect that one community for those few days when it has to be protected, in order to establish a standard so low that will protect that one, we have to cut all the other communities in this country to that same level.

The CHAIRMAN. And your idea is to have restrictions that where it is advisable from technical knowledge or research in that, that the standards should be applicable in order to meet the health requirements of that community.

Dr. COLLINGS. That is right.

Now, what I am suggesting to you, sir, is that it is appropriate that the Congress should consider legislation to direct HEW, or whomever else seems to be appropriate, to establish national standards of air quality. But we are interested to see that, No. 1, they are establishing standards which are not applicable generally across the country, and are not set at such a low level as to protect every community, but that there needs to be special standards in these communities.

Now, then, if the legislation, Mr. Harris, were written to do this, we would think this is appropriate, and we would cooperate with it. But we think that a technical advisory function could be built into this, and some kind of hearings should be held before these levels are officially established, so that everybody has a chance to be heard.

This is, I think, our case in a nutshell.

The CHAIRMAN. That woud be perfectly all right as a desirable thing. However, you would not want to saddle something on a Government agency that would make it impossible for them to carry out their responsibilities, and yet create all kinds of problems that would cause the public generally or the people in a community to be upset. We are in the midst of something like that now, trying to meet the requirements of certain legislative programs that have been enacted recently by this Congress, when the people throughout the country are trying to comply with the demand and the requirements. And I have never in my life, in the 25 years I have been here, seen as much turmoil that prevails now. And it just is not right. It is not right on the public, regardless of how desirable a particular standard or particular objective might be.

Dr. COLLINGS. I could not agree with you more.

The CHAIRMAN. There are ways to met these problems with the people themselves without creating all the turmoil that exists, I know, in many of the communities throughout this country.

Mr. Scott and gentlemen, thank you very much for your appearance here, and your discussion of this problem, and your advice, and your suggestions, which the committee will certainly give consideration to.

Mr. SCOTT. May I submit this resolution of the interstate oil compact for the record?

The CHAIRMAN. Yes, you may. And any other information you may wish to submit, you may now do so.

(The resolution referred to is as follows:)

RESOLUTION OF INTERSTATE OIL COMPACT COMMISSION

For many years, and with noteworthy success, the Interstate Oil Compact Commission has been dealing with various kinds of pollution problems. It is also aware that the petroleum industry as a whole has built an encouraging record in the field of air and water conservation. The compact commission therefore has been gratified by the positive leadership in this field demonstrated by President Johnson in his state of the Union message and particularly in his pledge of increased research "to learn much more about the control of pollution." From its own experience in dealing with pollution problems—for example, with brine

disposal problems—the compact commission is deeply convinced that careful research alone can produce sufficient accurate data on which to base effective corrective action.

As to the best type of corretive action, the compact commission recognizes the value of cooperative conservation efforts by citizen groups, both corporate and private. When the guidance of government becomes necessary, such guidance should come from the level of government at which officials are most familiar with the problem and therefore best able to arrive at an effective solution. In either case, action should correspond closely to local conditions and local needs, since they differ, sometimes widely.

Also, with regard to corrective action, Secretary of the Interior Udall has pointed out that since fuel and energy sources are complexly related to the conservation of natural resources, efforts to increase the use of one fuel in preference to another must be considered from more than an air pollution standpoint. The conservation of natural gas, for example, must be considered in any energy survey dealing with fuel use: Now, therefore, be it

Resolved on this 23d day of June 1965, in meeting duly assembled at Pittsburgh, Pa., That the Interstate Oil Compact Commission endorse President Johnson's position on air and water conservation, particularly with regard to the pressing need for research; be it further

Resolved, That the Interstate Oil Compact Commission affirm that the most effective pollution abatement action is taken when possible on a local and voluntary basis and when necessary under the guidance of the local regulatory authority most directly involved and most familiar with local conditions and needs; and be it further

Resolved, That the Interstate Oil Compact Commission recommend as highly desirable that those communities and areas contemplating the substitution of one fuel for another as a form of pollution control also include in their deliberations the most serious consideration of the impact that such action can ultimately have on the Nation's program for conserving its natural resources; and be it further

Resolved, That the executive secretary of the Interstate Oil Compact Commission be hereby instructed to furnish a duly certified copy of this resolution, for such action as they deem necessary, to the Governors of the compacting States, who bear heavy abatement responsibilities and who increasingly need the fullest cooperation of abatement specialists and general citizens alike.

The CHAIRMAN. At this time we will hear from our colleague, Hon. James Scheuer. Mr. Scheuer, we welcome you to the committee.

Mr. SCHEUER. Thank you, Mr. Chairman.

STATEMENT OF HON. JAMES H. SCHEUER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. SCHEUER. Mr. Chairman, and members of the committee, I am happy to appear as one of the sponsors of the legislation you are now considering and I appreciate the opportunity to be here. I have introduced a bill, H.R. 8723, identical to S. 306 which passed the Senate on May 18.

As you know, Mr. Chairman, this legislation is designed to provide additional means to abate the ever-increasing problem of air pollution in this country by furnishing several new methods of attacking the problem and by increasing our present efforts in this area under existing legislation. Air pollution has ceased to be merely a nuisance; it has become a problem rapidly assuming the dimensions of a national crisis.

The national economic loss attributable to air pollution is $11 billion or more a year and the costs to individual health are becoming alarmingly apparent. The report of a special committee of the New York City Council studying air pollution, headed by Councilman Robert

Low, released last week and the hearings it is now conducting, confirm the serious nature of this problem in metropolitan areas.

The report estimated the cost of dirty air to New York at $520 million a year. These costs come from damage to buildings, ruined crops on Staten Island, dying parkway trees and shrubs contaminated by automobile exhaust gases, and a general increase in cleaning costs. These costs are unnecessary, a waste of national resources. Studies now in progress show that a family of four living in its own home in a city with dirty air could be spending as much as $800 more a year for maintenance of its home, its clothing, and for personal care than it would in a city with cleaner air.

More important than these economic costs to this Nation, however, are the damaging effects of air pollution on the health of our citizens. The report of a medical research team from the Albert Einstein College of Medicine concludes that heavy air pollution was a major factor in causing deaths in the Asian flu epidemic in New York City in February 1963. The study attributes nearly two-thirds of the 647 deaths above normal that occurred during that epidemic to the added factor of air pollution, which was at abnormally high levels in the city at that time.

New York has one of the most serious pollution problems in the country. There is more sulfur dioxide in the air there than in any other major city—50 percent more than Chicago and twice as much as Philadelphia—and the levels of other types of pollutants are rising. But the problems of dirty air are well known in every section of this country. As early as 1948 the deaths of 20 people were attributed to a smog of toxic chemicals in Donora, Pa.

The link between air pollution and serious illness is becoming increasingly apparent. Dr. Leonard Greenberg, chairman of environmental medicine at the Albert Einstein Medical Center, held air pollution in urban areas at least partly responsible for increases in such disorders as chronic asthma, bronchitis, and emphysema. And the report of the New York City Council special committee finds: "It has been generally concluded that air pollution is one of the factors contributing to the steady increase of lung cancer." Mr. Chairman, such evidence clearly illuminates the need for national legislation to combate this menace to the safety of our citizens and to stop this shameful drain on our national resources.

One of the primary purposes of the bill, and its most controversial feature no doubt, is its proposal relating to pollution from automotive vehicles. Although we cannot speak as yet with complete accuracy concerning the precise amount of air pollution that is attributable to the automobile, we can say with a fair amount of certainty that this is the single most important source of pollution in our metropolitan areas. There is ample evidence that it accounts for around 50 percent. It has been reported that every day motor vehicles discharge an estimated 250,000 tons of carbon monoxide into the air along with a variety of other pollutants. This is evidence enough, it seems to me, to justify a concerted attack on this source of pollution.

The bill, accordingly, provides for motor vehicle exhaust emissions standards to be recommended by the Automotive Vehicle and Fuel Pollution Technical Committee and for the establishment of standards,

requirements, or limitations on emissions from new gasoline-powered motor vehicles. Next, the bill would require that any such new motor vehicle or engine offered for sale in the fall of 1967 must meet the prescribed standards either through a new design which incorporates the proper equipment or by the attachment of a device to the exhaust system.

The cost of equipping engines in this manner, it is estimated, will run from $12 to $75. This is a small price compared to the damages to health and property that will result if this source of contamination is allowed to continue unabated.

The automobile, though probably the most important single source of pollution is not, however, the only source. Other villains in this story of blight are apartment house and municipal incinerators, belching chimneys of utility powerplants, factories, space-heating plants in small homes and large commercial and institutional buildings, jet planes, auto scrapyards, and metal-burning plants. This bill would provide for a program of national research and development to find new and improved methods of solid waste disposal to combat these sources of pollution.

This is a national problem, requiring national legislation. The fact that States have already begun to enact legislation requiring pollution-reducing devices on automobiles argues toward the need for uniform regulation, as does the fact that pollution may be carried by the winds that cross this Nation. No matter what attempts one locality may make to reduce its air pollution, it has little chance of success if its neighbor cities are not taking similar steps. For example, New York City, through its department of air pollution control, is making considerable efforts to eliminate sources of contamination within the city. But between 20 and 30 percent of the air pollution of the city comes from New Jersey industrial areas just across the Hudson River which have done little to curb such pollution.

Mr. Chairman, I urge favorable action on this bill so that the problems resulting from numerous sources of air pollution may be met and resolved before they increase, as they most certainly will if allowed to run unchecked. I hope that we have at least learned the lesson from the national shame caused by the pollution of our waters, that the time for action is not when time—tragically and finally—has run out.

A New York Times editorial of June 27, 1965, made an eloquent plea for action now to clean up our waterways. The same thoughts apply equally to the fouling of our air. I would like to insert the editorial for your consideration.

LOST INHERITANCE

Now is the time when we like to think of the cool, clean waters, the lakes and ponds and the brooks and rivers, that traditionally are the inheritance of this country. Few nations were more richly endowed, and in few other countries have the people turned more eagerly to their fresh water for recreation.

But the unhappy fact is that cool, clean water has become a rare luxury in this country. The streams still flow, and the lakes and ponds are still here, but few of them are unpolluted. We have so abused our live waters that not only are our metropolitan waterfronts awash with filth but virtually all our major streams are now open sewers and industrial drainage ditches.

Name those streams and you name the areas of acute pollution problems—the Hudson, the Connecticut, the Potomac, the Ohio, the Mississippi, the Missouri,

the Rio Grande, the Colorado, the Sacramento, the Columbia—Lake Erie is so polluted that it has been called a dying lake; and all the Great Lakes have the same problem to some degree. To find those cool, clean waters that once were everywhere we now must get far away from man and his cities and his industries.

But the dream and the memory remain, even while we belatedly and inadequately, even reluctantly, argue the necessity of facing the pollution problem. Cool pines and a shimmering lakeshore. Sweet, cool brooks leaping down the hillsides and lazying across the meadows. Majestic rivers flowing clean and cool through the countryside. Sweet dreams and precious memories; a lost inheritance that becomes doubly precious day by day.

Mr. Chairman, let us strive to regain this inheritance, to restore pure water and clean air to this Nation. Air pollution has already had a deleterious effect on the quality of urban life. Let us delay no longer in mustering our resources to meet this scourge head on.

The CHAIRMAN. Are there any questions? If not, we thank you for your testimony, Mr. Scheuer.

Mr. SCHEUER. Thank you, Mr. Chairman.

The CHAIRMAN. We will also hear at this time our colleague from New York, the Honorable John Lindsay. Mr. Lindsay, we will be glad to hear your presentation.

STATEMENT BY HON. JOHN V. LINDSAY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. LINDSAY. In recent years, the contamination of the air we breathe has assumed the proportions of a substantial and critical national problem.

On many days, New York City's street-level atmosphere takes on a noxious, purplish cast, caused by smoke, soot, and a thousand stifling products of combustion.

Most of the time, the defiled air is merely an annoyance. But for a week in 1953, New York City was enveloped in a thick blanket of smog. The haze burned eyes and irritated lungs. When the wind returned to lift the pollution inversion, New Yorkers breathed deep once again and thought little more of the episode.

It was not until 9 years later that a study disclosed the incident claimed the lives of more than 200 people. Most were elderly and many had respiratory ailments. Nonetheless, their lives were cut short.

Only this June, it was reported that 405 New Yorkers died during a 15-day period of intense air pollution during early 1963. Again, many of the victims were aged and ill. But life was as precious to them as to the young.

In 1962, foul air hung over New York City for 8 days during Christmastime. More incidents occured in 1963 and 1964.

These episodes are taking place, it should be emphasized, in a port city bordering upon a large harbor only a few miles from the open sea. We have, without design or intent, corrupted the purity and freshness of the winds sweeping off a thousand miles of ocean. Only in New York City could an achievement of such magnitude be little more than a byproduct of everyday activities.

This condition, however, is not localized in any one city or in any particular State. Polluted air does not confine its movement within geographic or political boundaries. Smog and other forms of air pollution are no longer the problems of Los Angeles alone, or New York alone, or even a handful of our largest cities.

Pollution has pervaded the air, in varying degrees, in nearly every large metropolitan area in our country, and in many of our smaller cities as well. The problem of air pollution is national in scope, and its resolution calls for—indeed demands—a national remedy.

There are common sources of air pollution throughout the land which may be controlled only by effective national legislation. Our fresh air supply is one of our most precious, and limited, natural resources. As such, it is deserving of our protection and conservation.

In recent times in this country, we have been so preoccupied with realizing an unprecedented rate of industrial growth that we have largely ignored and neglected the great residue of waste which has been strewn in the wake of industrial progress. Just as the advancement of science and technology has created an abundance of products to be consumed, it has also left an abundance of byproducts to be disposed of. The airsheds of our urban industrial areas are in danger of becoming great wastelands. This need not be so.

We now have the technological capacity to reduce or eliminate nearly all forms of air pollution. To do so will be a costly project. It will require some economic sacrifice on the part of certain industries and additional expenditures by State and municipal authorities throughout the country. And it will require the Federal Government to give meaningful financial and technological assistance to local governments and private industry.

Most of all, the elimination of air pollution will require an increased determination on the part of those citizens most directly affected to cooperate in the resolution of this problem.

The inhabitants of our cities must be alerted to the hazards of air pollution and educated to the fact that pollution is not an inevitable part of the air around them. It is now more than a minor irritant and should no longer be tolerated.

It is well documented that only relatively short exposure to a heavy concentration of pollutants will result in a high incidence of illness and death. A 1948 episode of pollution in Donora, Pa., left 20 inhabitants dead and more than 4,000 acutely ill. In 1952, one of London's pea-soup smogs accounted for more than 4,000 deaths in a single week.

Aside from the proven effects of an episodic dose of air pollutants, there is much, though not conclusive, evidence that even the concentration of pollution normally found in many of our cities has an adverse effect on health. The incidence of several varieties of upper respiratory and pulmonary disease, ranging from asthma and chronic bronchitis to emphysema and lung cancer, shows a measurable increase under normal pollution conditions.

Existing research has yet to establish firm and irrefutable evidence of a direct causal relationship between disease and air pollution. Further and more intensified research is required. These efforts will be expensive, but failure to pay the price now may prove more costly later.

In 1963, $157 million was appropriated by Congress for mental health research to care for approximately 20 million people. In the field of cancer research, a Federal appropriation of $75 million benefited approximately 1 million patients. Yet only $6 million was allotted to air pollution research to take care of two-thirds of our popu-

lation—130 million citizens—whose health is endangered by industrial fallout.

It is well established that air pollution is injurious to certain forms of vegetation ranging from spinach to tobacco leaves. Substances such as sulfur dioxide, ozone, and fluorides have caused extensive damage to vegetation. Various sulfur gases react with moisture to form an acidic mist which corrodes metals, rubber, leather, and most other common materials. The estimated annual cost to the Nation of all property damage resulting from air pollution is over $11 billion.

As a result of our research efforts, we have identified most of the air-polluting agents and the sources from which they originate. The factors which contribute to air pollution, of course, vary from place to place. In some degree, however, the automobile is a contributing factor nearly everywhere. The hydrocarbons, carbon monoxide, and nitrogen oxides which are emitted from its crankcase and exhaust systems react with sunlight and other chemicals to form the so-called photochemical smog which is so acute in Los Angeles. Sulfur oxides which emanate from the combustion of sulfur-containing fuel, such as coal and residual fuel oil, are major contributors to pollution in many communities. The disposal of solid wastes by burning is a common practice throughout the country.

The first identifiable Federal program in air pollution came with the enactment of the Air Pollution Control Act of 1955—a program of research and technical assistance by the Federal Government to State and local air pollution control agencies, with modest provisions for Federal grants to assist them in formulating and conducting research programs. In this legislation, Congress expressed for the first time its basic policy which has thereafter guided the Federal-State relationship in the area of air pollution: The primary responsibility for regulatory control rests with the State and local governments, and the Federal role is to support them with financial and technical assistance and training.

Next came a 1960 amendment to the Air Pollution Control Act which directed the Surgeon General to study and report to Congress on the effect of motor vehicle exhaust on human health. The Surgeon General's report was published in June 1962.

The currently effective legislation, the Clean Air Act, was enacted in December 1963, as an amendment to the 1955 act. Basically, it provides for grants to local and interstate air pollution control agencies in amounts up to two-thirds and three-fourths, respectively, of the costs of developing air pollution control programs, for abatement of air pollution under certain circumstances, and for the encouragement of efforts to eliminate automobile exhaust emissions.

With the enactment of the 1955 act, the Public Health Service began its work in air pollution by establishing two programs. One was an engineering air pollution program which undertook research to inquire into the sources and control of air pollutants. Laboratory facilities for this work were established at the Robert A. Taft Sanitary Engineering Center in Cincinnati. The other program dealt with medical air pollution and was established for the purpose of evaluating the effect of air pollution on health. In 1960, the two programs were combined under the auspices of the new Division of Air Pollution in the Department of Health, Education, and Welfare.

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In carrying out its program, the Division of Air Pollution has been faithful to the legislative mandate that the primary responsibility for the regulation of air pollution rests with the State and local governments and that the Federal role should be a supporting one. In the area of research, the Public Health Service has studied the nature and control of automotive crankcase and exhaust emissions, the incineration of solid wastes, meteorological conditions affecting air pollution, and biomedical studies of the effect of air pollution on health. A national air monitoring network consisting of approximately 250 stations has been established to provide data on air pollutants in both urban and nonurban areas in every State. A training program has been established at the Taft Laboratory to afford State and local air pollution control personnel the benefit of the Federal research findings.

State and local regulation of air pollution control, as might be expected, varies considerably. Thirty-three States and territories have enacted some type of air pollution control legislation, but only a few of the States have adequately assumed their responsibility to control air pollution at its source, and only about one-third of the States spend as much as $5,000 per year on air pollution programs. The California program alone accounts for more than one-half of the total State expenditures. The per capita expenditure in Los Angeles is about 62 cents, whereas Chicago is spending 22 cents per capita and New York City only 17 cents.

California has the most extensive program for regulation and control of air pollution.

All new cars registered in California beginning with the 1966 models must be equipped with crankcase and exhaust control devices or otherwise meet California's automative emission standards. And, beginning in January of this year, all used cars in California are required to be equipped with crankcase emission control devices.

The Los Angeles district's control program features a permit system which requires the builder of any facility capable of emitting air contaminants to obtain a permit from the district's engineers prior to construction. Following construction, the builder must obtain another permit by showing that the operation of the facility will not violate the district's air pollution requirements. Another rule adopted in Los Angeles prohibits the use of sulfur-bearing fuel oils during a 7-month period of each year. For the remaining 5 months, fuel oil burning is permitted only on days when a supply of natural gas is unavailable.

New York State has legislation which requires all new cars sold there beginning with the 1963 models to be equipped with crankcase emission control systems sufficient to meet certain prescribed standards. New York and New Jersey, having contiguous metropolitan and industrial areas, are now conducting an air pollution control program on an interstate basis. This is the only interstate air pollution control program currently in operation. This approach is commendable, since local governments having a common air shed can deal most effectively with the problem on a regional basis. Only by means of uniform regulation and enforcement can sources of air pollution be effectively controlled within an area encompassing the jurisdiction of several local governments. Under the Clean Air Act, the Federal Government has encouraged interstate compacts to deal with air pol-

lution by providing an additional financial inducement for regional control programs.

The Clean Air Act of 1955 assumed that there were no technological answers to many of the recognized air pollution problems. Thus, it treated the problems on a rather modest scale and provided for additional, more intensified research. Since that time, research has shown that technological means are now available to control some of the most pernicious sources of air pollution and that failure to act quickly may pose a serious threat to human health. Therefore, it is clear to me that the new legislation is required to supplement and extend the policy of the Clean Air Act.

Senator Muskie, whose Special Subcommittee on Air and Water Pollution conducted extensive hearings throughout the country last year, apparently shares this view, for he recently introduced a bill in the Senate to amend the Clean Air Act, and was joined by 19 of his colleagues. An identical bill was subsequently introduced in the House. I endorse the objectives of these measures. They supplement the existing legislation in a meaningful way. However, I feel certain aspects of air pollution control require different or more extensive treatment. A bill which I have introduced incorporates most of the substantive provisions of Senator Muskie's proposed legislation. It would adopt a national standard for reducing or eliminating the emission of air pollutants from gasoline-powered vehicles, it would authorize grants to municipalities and air pollution control agencies for the acquisition, construction, or installation of devices or facilities designed to reduce or eliminate air pollution resulting from the disposal of solid wastes, and it would provide for the accelerated research programs which Senator Muskie proposes.

The bill would go beyond the Muskie bill by affording private industry a financial inducement to control the emission of air pollutants from solid waste disposal facilities by amending the Internal Revenue Code to permit expenditures to be deducted and an increased investment credit to be taken for the acquisition, construction, or installation of water and air pollution control devices. It would also direct the Surgeon General to study and report to Congress the effect of air pollution from all sources on human health, and, in particular, whether it has a causal relationship to lung cancer.

The most significant and far-reaching proposal advanced by Senator Muskie's bill, with which I substantially agree, would prescribe a national standard for allowable emissions of pollutants from gasoline-powered vehicles. The Secretary of Health, Education, and Welfare would be directed to prescribe those standards adopted by California and publish them in the Federal Register. Thus, section 6—which relates to automotive vehicle and fuel pollution—of the Clean Air Act, would be amended to provide that, within 1 year after the enactment of the amendment, crankcase emissions must be limited to 0.15 percent hydrocarbons by weight of the supplied fuel, and that after November 1, 1967, allowable exhaust emissions must be limited to 275 parts hydrocarbons per million and 1.5 percent carbon monoxide by volume, as measured by nondispersive infrared spectrometers.

Prescribing and enforcing a national standard for automotive pollutant emissions is to me the single most effective method of control-

ling air pollution on a national level. The automobile is truly a creature of interstate commerce and should be subjected to Federal regulation for the purpose of eliminating its contribution to air pollution. Even though many rural areas of our country do not require protection from automotive emissions, it is nonetheless appropriate to construct a national standard because of the great mobility of our population. Automobiles originally destined for rural areas may find their way into many urban areas during their useful lives.

The California standard is a particularly appropriate one for national adoption since the automobile industry is already required by the laws of that State to meet those specifications with respect to all new cars beginning wih the 1966 models. It is apparent from the testimony of industry representatives before the Muskie subcommittee that the industry does not intend to equip cars for distribution on a nationwide basis which would meet the California specifications. The industry reasoned that it would impose an economic burden on the rest of the country to charge the consumer for the cost of equipping new cars with exhaust control components. Since that time, however, the industry has reportedly perfected engine modifications which would not require additional equipment for the control of exhaust emissions. The engine modification adopted by one manufacturer has already demonstrated its ability to comply with the California standards and has been approved for the installation on 1966 models manufactured for sale in California. It is entirely proper—and indeed imperative—that the rest of the country be given the benefit of a design improvement intended for California.

Although the Muskie bill adopts the earlier California standard for crankcase emissions, I have conformed my bill to meet California's more stringent current standard.

The Muskie bill would also amend section 3 of the Clean Air Act to direct the Secretary to conduct and accelerate research programs relating to the control of hydrocarbon emissions from the evaporation of gasoline in carburetors and fuel tanks, and the control of emissions of oxides of nitrogen and aldehydes from gasoline or diesel-powered vehicles. I subscribe to this provision, while adding appropriate language to make it clear that the Secretary is empowered to initiate, as well as conduct and accelerate, such research programs, and that they should examine means of controlling nitrogen oxides and aldehydes emissions by modifying engine designs as well as by installing control devices.

The Muskie bill would further amend section 6 by requiring the Secretary to establish criteria for allowable emissions from diesel-powered vehicles manufactured or imported for distribution in interstate commerce. Once he establishes such criteria, the Secretary is required to make any necesary recommendations for additional legislation to regulate the discharge of pollutants from diesel-powered vehicles. This provision also appears in the bill which I have introduced. My bill, by an amendment in section 3, would better prepare the Secretary to establish criteria by instructing him to initiate, conduct, and accelerate research programs relating to diesel-powered vehicles for the purpose of reducing or eliminating emissions of hydrocarbons, carbon monoxide, oxides of nitrogen, aldehydes, and sulfur dioxide.

Comparatively little is known about the concentration or effect of emissions from diesel-powered vehicles. More research is required in this area. Recent studies have shown that the use of catalytic afterburners may control diesel smoke and odor to a certain extent. There has also been experimentation with fuel additives for the reduction of smoke.

In a separate bill, Senator Muskie proposes an additional amendment to section 6 which would provide that no appropriation made in any act of Congress after July 1, 1965, shall be available for the purchase of any automotive vehicle by any of the Government departments unless the vehicle is equipped with an exhaust control device which meets the standard established by the Secretary. I have included the substance of this provision in the bill which I have introduced with changes in language to limit its provision to any new gasoline-powered vehicle. The Muskie bill provision conceivably could apply to any new or used gasoline- or diesel-powered vehicle. Since no criteria have been established to limit emissions from diesel vehicles, it would be inappropriate to require that diesel vehicles be equipped with exhaust devices beginning July 1, 1965. Government-owned diesel vehicles, however, should be required to be equipped with control devices as soon as emission standards have been adopted and devices approved.

Both the Muskie bill and the one which I propose would direct the Secretary of Health Education, and Welfare and the Secretary of the Treasury to promulgate, jointly, rules and regulations to prohibit the importation of any gasoline-powered vehicles which fail to meet the standards applicable to domestically manufactured vehicles.

Both the Muskie bill and my bill provide that it is unlawful to manufacture for distribution in commerce or import any gasoline-powered vehicle, after the effective date of standards prescribed by the Secretary, which does not meet those standards. Senator Muskie's bill provides that whoever violates such standards or regulations prescribed thereunder shall be fined not more than $1,000 or imprisoned not more than 6 months, or both. As drafted, this provision could be read to subject an automobile manufacturer who violated the emission standards to only one fine of $1,000 regardless of how many substandard automobiles he distributed in interstate commerce. If this were so, a manufacturer might well elect to incur a $1,000 penalty rather than equip his automobile as the act requires. To avoid such an interpretation, the bill which I have introduced provides that each gasoline-powered vehicle manufactured and distributed or imported in violation of the applicable emission standards shall constitute a separate offense.

Another amendment to section 6 which is proposed by Senator Muskie's bill provides for agreements with and grants to appropriate State agencies to insure the proper inspection and maintenance of devices and other means required to meet the prescribed emission standards.

The Muskie bill would authorize $25 million to be appropriated for the fiscal year ending June 30, 1966, for the establishment of inspection programs.

I am in general agreement that the Federal Government should assist the States in conducting inspection and maintenance programs for this purpose. I would also favor Federal grants to States to insure

the proper measurement of automobile emissions. With the exception of California, the States are not equipped to inspect the installation and maintenance of control devices or engine modifications, and may not have available proper instruments for the measurement of auto emissions. My bill would also differ slightly from Senator Muskie's in that it would authorize $15 million to be appropriated for this purpose during both the 1966 and 1967 fiscal years.

Another source of air pollution which is common to nearly every city in our country is the disposal of refuse by burning it in large incinerators. Industrial plants, office buildings, and apartment houses also frequently incinerate their refuse themselves rather than have it collected by municipal authorities. Unfortunately, many local government and private waste disposal facilities pollute the air while disposing of the waste produced by our cities and industries.

Open burning of refuse is still permitted by many communities. Even where incinerators are required, few cities require the installation of air pollution control devices, and those which do often fail to regulate their operation and maintenance.

There are nearly 20,000 incinerators in New York City alone, most of which are found in apartment houses and office buildings, and which contribute daily to a heavy fallout of soot and fly ash. In addition to waste disposal facilities, many municipalities and public utilities operate heat and power generating plants which are a constant source of air pollution.

Our technology has progressed to the point where we have now developed devices and equipment capable of eliminating a very high percentage of the pollutants discharged from incinerators and powerplants. Unfortunately, their introduction has been greeted with a general lack of enthusiasm because of their high cost. The cost of an effective device to eliminate air pollutants from gas or smokestacks of steel mills, for instance, may range anywhere from $500,000 to $3 million per stack. Control devices for even small incinerators are very expensive. In fact, the cost of some of these devices may well exceed the value of the plants or buildings on which they would be installed. In view of the high costs involved, Federal assistance to local governments and private industry is clearly required.

Senator Muskie's bill would provide Federal assistance to municipalities in this area by amending section 4 of the Clean Air Act to authorize the Secretary to grant to municipalities up to two-thirds of the cost of constructing facilities designed to eliminate air pollution resulting from the disposal of solid wastes. Under this provision, no grant would be made to any municipality which did not prohibit open burning of solid wastes. In addition, the applicant for a grant would have to satisfy the Secretary that the facility would be properly and efficiently operated and maintained after its construction—$100 million would be appropriated for the making of such grants during the fiscal year ending June 30, 1966, and identical sums would be appropriated for the next 2 succeeding fiscal years. No grant could be made for any one project in an amount exceeding 5 percent of the total appropriation in any one fiscal year.

With certain refinements, I have included this provision in the bill which I introduced. As drafted by Senator Muskie and his colleagues,

the grants to municipalities would cover only the construction of facilities designed to eliminate air pollution resulting from the disposal of solid wastes. The bill which I introduced would authorize the Secretary to make grants for the acquisition and installation, as well as the construction, of both facilities and devices designed to reduce or eliminate air pollution resulting from both the disposal of solid wastes and the generation of heat and power.

In addition, private industry and individuals are often financially unable to purchase the equipment necessary to reduce or eliminate air pollution emanating from their plants or buildings, although they would otherwise be willing to cooperate in a control program. The Federal Government should seek to provide an incentive to the private sector in the form of a substantial tax benefit to those who would acquire, construct, or install certified air pollution control devices. The same treatment should apply with respect to water pollution control devices. To accomplish this purpose, my bill includes a provision amending the Internal Revenue Code of 1954 by adding a new section 183 relating to expenditures for the acquisition, construction, or installation of water and air pollution control devices.

Under this proposed amendment, the taxpayer could elect to treat as a deductible expense expenditures paid or incurred by him during the taxable year in connection with his trade or business for the acquisition, construction, or installation of any certified air or water pollution control device.

The taxpayer could elect to treat such expenditures as having been paid or incurred in any of the 3 taxable years preceding, or in any of the 5 taxable years following, the taxable year in which such expenses were paid or incurred. A deduction with respect to any air or water pollution control device would not be allowed unless the State or interstate air pollution control agency had certified to the Secretary of Health, Education, and Welfare that such device had been acquired, constructed, or installed in conformity with State requirements. The Secretary would then be required to certify to the Secretary of the Treasury or his delegate that the device was beneficial to the control of air or water pollution and in furtherance of the general policy of the United States of cooperating with the States in the reduction and elimination of such pollution.

The amendment would further provide that if the taxpayer realizes any income from the operation of any certified air or water pollution control device, through the recovery and profitable utilization of wastes or otherwise, his allowable deduction would be reduced. This limitation is appropriate since some of the latest methods of eliminating sulfurous emissions from stack gases show promise of yielding an economic return in the form of the recovery of marketable sulfur and sulfuric acid. In addition, if the taxpayer had taken a depreciation deduction under section 167 with respect to air or water pollution control device expenses, the deduction available under the new section 183 would be likewise appropriately reduced.

As an additional tax incentive, my bill also includes an amendment to section 46 of the Internal Revenue Code which would increase the amount of investment credit available for devices and facilities to control water and air pollution from 7 to 14 percent. The increased

investment credit would be available for any device, facility, machinery, or equipment used to reduce or eliminate air pollution by removing, altering, or disposing of air pollutants resulting from or affecting the taxpayer's trade or business. Senator Ribicoff, joined by 11 of his colleagues in the Senate, introduced a similar amendment to section 46 last year, as part of the Revenue Act of 1964, which was not enacted. His bill, however, differed from mine in that it confined the additional investment credit to facilities or equipment used to control air pollution resulting from any type of manufacturing or mining process. As such, it would not have covered investment in devices for the control of air pollution resulting from other kinds of businesses.

Further research is needed on methods of collecting and disposing of municipal solid wastes. Nearly 520 million pounds of refuse must be disposed of in our urban areas every day of the year. With a large increase in our population anticipated, greater attention must be given to developing efficient and low-cost techniques of collection and disposal.

With this in mind, I propose to amend section 3 of the Clean Air Act by directing the Secretary of Health, Education, and Welfare to initiate, conduct, and accelerate research programs designed to develop efficient and low-cost methods of collecting and disposing of municipal solid wastes. To carry out this research program, the Secretary shall appoint a technical committee consisting of representatives from the Department of Health, Education, and Welfare, the Public Health Service, and municipal solid waste collection and disposal agencies. The committee would meet from time to time to evaluate progress in the development of new techniques of collection and disposal, to recommend programs which would utilize these techniques, to inform and advise municipal solid waste authorities of any such recommendations, and to suggest additional legislation, if necessary.

Coal and sulfur-bearing fuel oil are burned in industrial facilities, powerplants, and private homes throughout the country. The gaseous sulfur oxides which emanate from the combustion of these fuels contribute heavily to the air pollution in many communities. These gases have a demonstrably adverse effect on human health and many forms of plant life, and react to corrode certain metals and other materials. High concentrations of sulfurous gases were responsible for the severe air pollution episodes which caused sickness and death in Donora, Pa., and London, England. Since the consumption of coal and residual fuel oil is expected to double during the next 15 years, there is an urgent need for prompt and effective action to reduce the emission of sulfur gases in every section of our country.

Basically, there are two ways of eliminating harmful sulfurous emissions: desulfurizing the fuel before it is burned or removing the sulfur gases from gas stacks upon its combustion.

Research conducted to date makes it clear that there are technically feasible methods of removing sulfur from fuel oil. However, the fuel industry has not adopted these methods because of their relatively high cost. Representatives of the industry have testified that the removal of sulfur would price their residual fuel oil out of the market, to the advantage of oil imported from Venezuela.

The ultimate solution may be to require use of natural gas or nuclear energy instead of sulfur-bearing fuel. However, natural gas is in lim-

ited supply in many areas and the development of atomic powerplants is still years in the future. The best alternative would be to undertake a concerted effort for the development of a low-cost method of removing sulfur from coal and fuel oil. In the meantime, the Federal Government should encourage the installation of control devices on smoke and gas stacks by means of the grants to municipalities and tax incentives to private industry which my bill would provide.

The Muskie bill would amend section 3 of the Clean Air Act by requiring the Secretary to appoint a technical committee composed of representatives from the Department of Health, Education, and Welfare, the Bureau of Mines, the Federal Power Commission, and the coal, petroleum, and electric power industries for the purpose of encouraging the development of improved low-cost techniques of reducing emissions of sulfur oxides produced by the combustion of sulfur-containing fuels.

The committee would report on the progress of research developments and make any necessary recommendations for legislation.

The corresponding provision of the bill I introduced would include representatives of the Atomic Energy Commission and the natural gas and atomic power industries on the technical committee. The purpose of the committee would include encouraging and accelerating the development of improved low-cost techniques designed to remove sulfur from sulfur-bearing fuels, as well as to reduce sulfur oxide emissions produced by the combustion of such fuels.

I would also charge the committee with conducting research programs relating to the feasibility of increasing the use of natural gas, electric power, and atomic power as a source of fuel and energy.

My bill would further amend section 3 by directing the Secretary to initiate, conduct, and accelerate research programs to reduce or eliminate pollutants emitted from jet aircraft and missiles, and from fuels used to power them. To carry out this research, the Secretary would be directed to appoint a technical committee consisting of representatives from the Department of Health, Education, and Welfare, the Department of Defense, the FAS, the NASA, the Atomic Energy Commission, the Department of Commerce, the jet aircraft and missile industries, and the affected fuel manufacturers.

Recent evidence indicates that emissions from jet aircraft and missiles contribute very little to the general pollution of the air. However, there is some indication that jet emissions do contribute significantly to pollution in the immediate vicinity of jet airports. A continued increase in the number of jet aircraft could result in a corresponding increase of air pollution. Moreover, the use and testing of missile fuels also represents a potential hazard to public health and welfare. Therefore, before these potential hazards become actual ones, studies should be made of ways and means of eliminating pollution emissions from jet aircraft and missiles and from the fuels which power them.

Both my bill and Senator Muskie's provide for the establishment of a Federal Air Pollution Control Laboratory to conduct such phases of the national research and development program for the prevention and control of air pollution as the Secretary deems appropriate. At present, the Federal Government lacks adequate facilities to carry out the research and development programs required by the Clean Air Act.

There is a pressing need for a fully equipped laboratory where a whole range of unanswered questions could be looked into and findings made available to both local government and private industry.

My bill would further amend section 3 by directing the Secretary to encourage and promote the policy and provisions of the Clean Air Act by initiating and carrying out a program designed to educate State and local government and the general public about the air pollution control policies of the Federal Government. This program would inform and advise eligible municipalities and air pollution control agencies of the availability of Federal grants, and would inform the business community of the income tax benefits which would be realized in connection with the acquisition, construction, or installation of air pollution control devices.

The policies of the Federal Government in the area of air pollution control can be fully realized only when the potential recipients of Federal assistance, as well as the potential subjects of Federal enforcement, are made aware of those policies. Until the public interest can be stimulated and its opinion enlisted in support of air pollution control, our objectives, however else well conceived, will go unrealized.

The CHAIRMAN. We appreciate your appearance and testimony, Mr. Lindsay.

Mr. LINDSAY. Thank you for the opportunity, Mr. Chairman.

The CHAIRMAN. This concludes the hearings on these proposals. The record will remain open for a period of 5 days, in which anyone who desires may file appropriate statements and information for the record.

The committee is now adjourned.

(The following material was submitted for the record:)

[Press release from the office of Congressman Sam M. Gibbons, 10th District of Florida, Washington, D.C., June 10, 1965]

WASHINGTON.—Congressman Sam Gibbons, Democrat, of Florida, today called for enactment of legislation requiring all new motor vehicles in the United States, beginning with the 1968 model year, to have exhaust control devices to help relieve a "national air pollution problem."

The Tampa representative, in testimony before the House Interstate and Foreign Commerce Committee which is holding hearings on the subject, warned that if this action were not forthcoming soon, "the poisonous smog which engulfs Los Angeles will not be uncommon across the length and breadth of the United States. At the present rate of increase of autos on the Nation's highways, and growing congestion in our cities, not even sunny Florida will be immune.

"Air pollution has become a pressing problem in the United States," Gibbons told members of the House committee. "Smog, caused largely by auto fumes, is a principal ingredient of the problem. In 1964, there were 86,297,133 motor vehicles registered in the country. According to the Census Bureau, this number will grow to nearly 90 million during 1965. And to almost 130 million within 15 years."

Gibbons pointed out that with more and more Americans being concentrated in cities and their sprawling suburban areas, the problem of dispersion and dilution of potentially harmful pollutants from all forms of combustion processes has steadily become acute.

"Air knows no State lines nor city limits," he stressed. "Economic damage from air pollution amounts to as much as $11 billion annually in the United States. Of this amount, approximately $500 million represents agricultural losses alone.

"There is substantial scientific evidence clearly linking air pollution to the aggravation of heart conditions and increases in susceptibility to chronic respiratory diseases, particularly among older persons, eye irritation, and even rickets.

More recently, there is growing evidence that polluted air may play an important role in growth of cancer among the American people," the Congressman noted.

Gibbons' bill directs the Secretary of Health, Education, and Welfare to establish standards requiring all cars manufactured or imported into the United States, within 1 year after passage of such legislation, to be equipped with exhaust control devices which would limit the amount of pollutants emitted into the atmosphere. The Secretary would conduct research into the problem and would model the standards which he establishes after the California regulations which are now in effect for all 1966 motor vehicles sold in that State.

"This is a national problem. It requires a national solution, because of the mobility of the motor vehicle. Legislation such as we are discussing today will not solve the entire problem, but it will make a significant and badly needed inroad. The American auto industry has the technical know-how to control the millions of tons of pollutants spread into the air we breathe every single day. Since the industry has had to attach such devices to cars going to California, it does not seem to be any undue hardship to require them on new cars in all parts of the United States," Gibbons concluded.

STATEMENT OF JAMES W. KELLY, JR., MAYOR OF THE CITY OF EAST ORANGE, N.J.

The city of East Orange, N.J., is a highly urbanized commercial and residential community of 80,000 plus located in Essex County 11 miles due west of New York City. East Orange, the "Crossroads of New Jersey" is easily identified at the intersection of the Garden State Parkway and new U.S. 280, the East-West Freeway.

We adjoin the central city core area of Newark, Elizabeth, and Jersey City. Our population is concentrated in an area of less than 4 square miles giving a population density in excess of 20,000 persons per square mile.

We are extremely proud that the city of East Orange was the first local community in the State of New Jersey to receive money under the provisions of the Clean Air Act of 1963. We are equally proud of the fact that East Orange was designated as the "Cleanest City in the Nation" in 1960. We are proud that the Air Pollution Control Association has recognized our grassroots efforts in air pollution control.

The residents of the city of East Orange are acutely aware of the imminent dangers facing our city from the increasing threat of uncontrolled and increasing airborne pollutants. We therefore wholeheartedly support Senate bill 306.

East Orange will unquestionably receive significant benefits from being at the crossroads of New Jersey. We, however, foresee numerous problems arising in addition to the immediate loss of ratables. It has been estimated that the combined daily usage of the Garden State Parkway and U.S. 280 will exceed 200,000 vehicles per day by the year 1970. The problem of the future use of air rights and the value of adjacent lands will be unfavorably influenced unless prompt action is taken in the research and control of motor vehicle emissions. We therefore encourage the establishment of a Federal Air Pollution Control Laboratory and the establishment of standards for gasoline- and diesel-powered vehicles as provided by Senate bill 306.

The main purpose of my appearance before this committee is to plead for the inclusion of the $100 million proposed in section 5(c) of Senate bill 306 to carry out the program of section 2(c) of the bill, for the construction of solid waste disposal facilities to eliminate air pollution resulting from the disposal of solid waste now in use.

We in suburban Essex County face a most serious problem. We live in about the most densely populated area in the Nation. Projections show that in the decade ahead the population will increase and so will industry and commerce. Meanwhile, available land will shrink. It is apparent that the quantity of refuse will grow while the means of disposal becomes progressively more critical. Already there is both competition and controversy over sites for sanitary land fill. To serve the total population, more economical methods of solid waste disposal must be found and used. And I do not mean "economical" merely in the sense of money. I am speaking, rather, in terms of the basic resource—land. We are advised that the residue from incineration only requires one-sixth the land area for disposition. It is obvious to me that we must meet the solid waste disposal crisis which carries with it ramifications affecting air pollution control.

Today incineration costs two to three times as much as other sanitary land fill methods. Much of this is due to the high initial costs which must be amortized. It is in the area of experimentation and in meeting initial cost outlay that the Federal Government could help us find a way of achieving a long-range solution to disposition of solid waste—which at the same time will minimize this as a source of air pollution, will eliminate the blighting effect on adjoining properties, and reduce the public health hazard to the people in adjacent areas.

East Orange presently pays a private contractor $425,000 per year for the collection and disposal of our residential garbage and refuse and for a limited collection from our commercial establishments. The present contractor has access to a privately controlled dumping site in Hudson County portion of the Hackensack meadows where a modified landfill operation is conducted. All are aware that the present modified landfill operation as carried out in the meadowlands of Hudson and Bergen Counties, remains a serious source of air pollution for the Metropolitan New York-New Jersey area due to a continuing series of smoldering fires. Some of these fires have burned as long as 10 years. This problem will apparently continue, out of necessity, until the dumping lands are exhausted or until incineration becomes an economical alternative. Senate bill 306 as proposed could be a major step forward in the elimination of the use of these unsightly, blighting, unhealthy, and air polluting dumps.

The city of East Orange has entered into a joint authority with the communities of Bloomfield, Cedar Grove, Glen Ridge, Montclair, Orange, and Verona, in an effort to secure suitable dumping lands.

To date we have been completely unsuccessful in our efforts to secure dumping lands. We have also unsuccessfully resorted to the courts on two occasions in an attempt to purchase or lease dumping lands.

It appears that regional incineration, with transportation of the residue, is the only possible alternative. This solution is supported by exhibit A—a statement of conclusions submitted by the former East Orange representative to the joint authority. It is further supported by the conclusions and recommendations which will shortly be forthcoming from the Newark area study being carried out by the National Commission on Local Health Services.

The seven communities represented by the joint authority have a total population of 250,000 persons with estimated 150,000 tons of garbage and refuse per year.

It would appear that, if the $100 million or more can be made available in an amendment to the Clean Air Act of 1963, this joint authority has an excellent opportunity, with Federal assistance, to demonstrate the benefits of a well managed, efficient, joint municipal incineration plant. Such a plan will alleviate the serious problem of solid waste disposal in a high density population area with a resulting reduction in air pollution, blighting, and health hazards.

STATEMENT OF PROF. P. H. MCGAUHEY, DIRECTOR, SANITARY ENGINEERING RESEARCH LABORATORY, UNIVERSITY OF CALIFORNIA, BERKELEY, ON THE PROBLEM OF SOLID WASTES MANAGEMENT

INTRODUCTION

In the year 1950 the legislature of the State of California expressed its concern for the growing unsolved problem of solid wastes disposal in the State by appropriating to the University of California the sum of $50,000 for research in that field. This established the sanitary engineering research laboratory and initiated comprehensive studies of incineration, sanitary landfill, and composting which were completed in subsequent years under the normal budget of the university. From this beginning the laboratory soon expanded its research interest to include liquid and gaseous wastes as well; and directed attention to the whole matter of control of pollution of the air, water, and land environments. Today it continues as the research arm of the educational program at Berkeley dedicated to sanitary engineering and environmental health sciences in the college of engineering and the school of public health. However, it has at no time lost interest in solid wastes problems.

Currently, the laboratory is cooperating with a similar group on the Davis campus of the university to develop a National Conference on Solid Wastes Management scheduled for February 1966; and is seeking support for a long-term program of research and training in solid wastes management.

Having participated in the work of the laboratory since 1951 and in most of the all too few nationwide efforts to focus attention on solid wastes problems since that date, I should like to summarize, for whatever use it may be to the subcommittee on H.R. 890 and identical bills, some of the basic aspects of the solid wastes management problem which make timely and urgent the proposed legislation. For specific examples I shall draw upon the California situation, with which I am most immediately concerned.

OUR HERITAGE OF WASTE

Part of the American heritage is a wastefulness of resources with little concern for any long-range implications of the expedients of the moment. Perhaps the very problems of survival made it inevitable that we should burn the hardwood forests to clear land for farming, throw the topsoil to the winds, and otherwise despoil rather than conserve the resources of North America. The point might be argued, but this is not the occasion. The important factor in the context of solid wastes management is that the experience helped to establish a national attitude toward "unwants" of the moment which is reflected in both the economic and technological aspects of wastes disposal.

Any material becomes a "waste" when its owner or producer no longer considers it of sufficient value to retain. Any suggestion that he should thereafter invest more money in it, for the sake of disposal or any other financially unrewarding goal, is likely to be considered absurd, however inclined he may be to object to polluted water, smog, rodents, unsightly debris, and other conditions which result from his loss of interest in ownership. Ensnared in this public economic spirit, engineers and officials responsible for wastes management in the community have tended to respond in a negative manner. In general, they have apologized for the fact that their systems cost anything at all, often retreating from expedient to expedient on the basis of cost in dollars instead of leading the public to understand that wastes management is worth whatever it costs within the framework of honest engineering and sound public health practice; and that the cost is the price man must pay for the benefits of a modern urban-industrial-agricultural society. Similarly, the administrative official of the city often mistakes a policy of no spending at all for the ideal goal of municipal government, or finds it more politically and socially rewarding to confine tax spending to more popular public works, or to monumental developments having greater cultural appeal than wastes management.

The spendthrift attitude toward resources which is reflected in a disconcern for wastes also reacts in another way to accentuate the solid wastes problem. So great were our national resources that we became an affluent society in spite of our wastage; and once the natural harvest of the earth had been reaped by simple extractive enterprise, we turned American energy and inventiveness to a sophisticated industry capable of maintaining and extending that affluence. The byproduct of this development has been the never-ending variety of new waste products that spew forth from our industry. With opulence also grew the desire for greater convenience of living. The result is disposable containers, nonreturnable bottles, short-lived plastic objects, urban renewal, planned obsolescence, and all the other concepts and gadgetry which magnify the amount as well as the types of wastes that must be managed within a community. Furthermore, our domestic economy has come to depend to a considerable degree upon the continued replacement of goods.

Thus it may be said that our heritage of wastefulness derived from an economy which now demands that the volume of wastes be constantly increased in order that the economy itself be maintained. This, coupled with the public attitude of disinterest in waste materials, especially of further investment in them, defines the first problem in solid wastes disposal.

THE GROWTH OF URBANIZATION

Closely related to proliferation of waste products by industrial and economic factors is the physical structure of the community in which industry thrives. The rapid spreadout of cities, popularly known as the "urban sprawl," which followed World War II is widely recognized as having revolutionized our concepts of urban life. Its effect on the solid wastes management problem, however, is less understood. Particularly in areas where explosive increase of population has had a maximum of impact, of which California is a notable example,

urbanization has progressed beyond the limits of cities, even beyond their satellite suburbs, to become a characteristic of agricultural areas as well. These agricultural areas are themselves characterized by high land values and heavy investment in fixed installations dedicated to specialty enterprises. Thus the urban-industrial sector of a community is surrounded by a rural shell that has lost the elasticity historically associated with country areas. Moreover, this high-investment agricultural sector exists in sufficient depth to have a profound effect on both its own and the city's problems of wastes management.

Cities have traditionally solved a portion of their environmental problems by going "beyond" the populated community for a solution. The classic example is, of course, public water supply. However, this same concept of seeking a solution by exporting the problem has dominated wastes disposal as well, liquid and solid wastes being discarded in the cheapest manner beyond the confines of the city. In the case of human and industrial wastes that might readily be water transported, both cheapness and convenience led to the early adoption of sewers designed to conduct such materials to some natural receiving water beyond the range of sight and smell of at least the most influential urban citizens. As for solid wastes, a portion was likewise hauled a minimum distance beyond the city limits and dumped on the countryside. The remainder was even more cheaply managed by burning it essentially at its point of origin, thus converting it to particulate matter and gases which, hopefully, might be diluted by the air mass in and over the city and ultimately transported elsewhere at no cost by the wind. Freedom to manage wastes in such a manner, however, is now vastly constrained. As a result of water pollution considerations, the urban-industrial sector can no longer export liquid wastes beyond its own limits unless they are first upgraded in quality. Similarly, the city is finding it increasingly difficult to export its solid wastes such as rubbish, garbage, cannery wastes, and debris from urban redevelopment and freeway construction, while air pollution problems restrict its burning in any economically feasible location. Thus the problem of disposing of large volumes of both liquid and solid wastes within the confines of a community is added to such environmental problems as vector control, housing, food sanitation, mental health, etc., which have traditionally been unexportable.

Just as the city is confined by the surrounding rural sector, it in turn exerts pressure against the air polluting, water polluting, vector producing, and other adverse environmental potential of that sector. Specific environmental problems arise from a number of considerations. First, as previously noted, the advance of urbanization has caused high-intensity urban subdivisions to impinge upon the high-investment fraction of rural areas, such as animal feeding pens, dairy barns, and poultry and egg production installations. Such installations represent the investment of many millions of dollars in enormous facilities. In California, for example, in some single installations 3,000 to 6,000 steers are fattened for market annually; in others, a single owner maintains 10,000 to 100,000 hens. Animal manures produced at this zone of urban and rural contact in California alone is estimated at 20 million cubic yards per year—enough to produce a conical pile some 800 feet high and 800 feet in base diameter.

The fly-breeding potential of such quantities of organic wastes can be expressed only in astronomical numbers. Odor and other nuisance likewise harass the urban dweller, who, in turn, harasses the rural owner by enforcement of nuisance abatement laws, and the extension of city limits to overwhelm rural enterprise with ruinous tax rates. As previously noted, both fixed investment and the unavailability of land farther away destroy the elasticity of the high-value rural belt. The farmer is thus confronted with the choice of going out of business, to the disadvantage of the entire community, or finding someway himself to resolve the environmental problems his activities create. Collection of manures is expensive, and its disposal on land beyond the confines of the community is quite as difficult as is the disposal of urban solid wastes.

Other problems of wastes management within the modern community derive from agricultural pursuits in the high-density rural sector. For example, burning of tree trimmings and other agricultural wastes accentuates the air pollution problems already begging solution in more than 10,000 U.S. communities as a result of urban-industrial activities. On the other hand, if such wastes are buried in the earth, crop diseases and insects increase, thus requiring more intensive use of stronger and stronger insecticides and herbicides. This, in turn, increases the exposure of man to toxic materials in his food and in his water supply.

Thus, the second major aspect of the solid wastes management problem is that the urban, suburban, and agricultural sectors of the community are so heavily impinged one upon another that wastes management can no longer effectively be achieved by the various sectors acting independently.

FRAGMENTED JURISDICTIONS

Inasmuch as solid wastes are a byproduct of the life of the individual citizen and his institutions and there is no way for him to export his wastes in a manner acceptable to society, wastes management is of necessity a matter of public concern. Specifically, it becomes an activity of local government, which, in turn, may impose requirements upon the citizen or upon individual entrepreneurs or industries that may contribute significantly to the wastes problem. Lacking the technology to recycle wastes within the community itself, the local jurisdiction seeks, as previously noted, to export its wastes.

Normal fragmentation of governmental jurisdictions whether at the administrative, regulatory, operative, or investigative level, precludes an effective direct attack on the overall problem itself. In fact, the problem is too complex to define or resolve in toto within such an organizational framework. This invites a fragmentary approach even when a single agency is involved. For example, the health department divides itself into sections designed to attack discrete fragments of the overall problem. Often this results in solutions by one section that increase the problems which confront another section; e.g., a problem in refuse disposal becomes a problem in air pollution or water pollution, in accord with some law analogous to that of the "conservation of energy."

An example of fragmented jurisdiction within the total urban-suburban-agricultural complex that constitutes a modern community is the San Francisco Bay area. Here there are 82 agencies responsible for solid wastes disposal, each seeking to dispose of its refuse in the other's backyard at 77 separate sites.

The third major problem of solid wastes management, then, is the lack in many areas of any coordinated jurisdiction which can approach the solid wastes management of an area on a communitywide or regional basis.

LACK OF PUBLIC UNDERSTANDING

The disinterest of the citizen in his waste materials and the overall public disinterest in wastes has led to, or is at least characterized by, a profound public ignorance of the nature and magnitude of the problem. In general, it might be said that as urbanization progresses and the daily life of the citizen becomes more remote from the production of his food and goods, and removal of residues from his home more convenient to him, he understands less and less of the nature of the associated problems. Thus, the only place to locate an incinerator is "somewhere else"; the steep walls of a canyon which might be filled are suddenly worth $2,000 per acre; the hog farm, dairy, and poultry establishment should move or locate elsewhere; and so on.

There is a particularly profound lack of knowledge of alternative methods of disposal and their effect upon the land, water, and air resources of the Nation or community. The opponent of landfilling, for instance, cannot understand why incineration, or composting is not adopted instead, because no one has ever told him that neither of these two alternatives do more than reduce the amount of material to be disposed of on land. Likewise he is unprepared to comprehend the nature of competition for resource values. Hence he often confuses preservation of areas in an untouched condition with conservation of resources. In an urban concentration this lack of a clear understanding becomes particularly critical. For example, in the San Francisco Bay area the lives of some 4 million people are to various degrees affected by the existence of a shoreline resource. Since there are a number of resource values of the shoreline and not enough shoreline to provide each value in scale with the needs of 4 million people, a competition develops between the "true believers" in each separate value. In this case solid wastes management, as might be expected, is far below the top of the list in public sentiment although the community has long depended on filling the margins of the bay for solid wastes disposal. "Take it somewhere else, but don't raise my taxes in the process," is a typical response of the citizen.

Thus one very difficult factor in solving the problem of solid wastes disposal derives from the uninformed status of the citizen which leads both citizen and official to place a very low estimate on the most the public can "afford" to pay

for waste disposal, and to hesitate to dedicate any resource value to solid wastes disposal.

WASTES DISPOSAL AND THE LAND RESOURCE

Fundamentally, there is no method of disposal that does not return a large fraction of solid wastes to the land. Landfill, of course, has the potential to dispose of essentially all the solid wastes of a community by placing it on or under the land surface, but the degree of land disposal associated with other methods is often overlooked. To some extent this is the result of obsolete estimates of the amount of wastes to be managed.

Traditionally, the amount of municipal refuse has been estimated at approximately 2 pounds per capita per day, of which 0.5 pound represents garbage. These figures were derived from experience throughout the United States at a time when many of the solid wastes of the community were handled separately from the municipal collection. However, in the urban-suburban-agricultural complex of today the picture is vastly changed. Animal manure, tree trimmings, demolition debris, cannery wastes, old automobiles and junk, sewage sludge, and some industrial wastes must be reckoned with in any disposal scheme. At the same time, the garbage fraction has been greatly reduced by household grinders (e.g., 60 to 100 percent in many communities) and the content of paper and plastic increased. Exclusive of automobiles, the total weight of community wastes is already at 6 or more pounds per person per day in many communities (e.g., San Francisco Bay area). The percentage of overall community wastes which are burnable or compostable, and the weight-volume ratio of the remainder has not been established. Quite probably one-half of the total refuse will always have to be disposed to the land even if incineration of the organic matter is practiced. In the case of composting an even greater residue remains, as does the compost itself, for which no large-scale markets have been developed.

If landfill alone were the disposal method it is estimated that the San Francisco Bay area would fill an area of more than 5 square miles to a depth of 10 feet before the end of the century.

Clearly the relationship between the solid wastes of today and the land resource needed for disposal by any combination of methods, as well as the land use planning appropriate to this unavoidable contribution to the land, is a critical factor in any solution to the solid wastes problem.

STATUS OF TECHNOLOGY

Although the technology of solid wastes disposal is well advanced in many cases it is not yet adequate to the needs. For example, incineration, which has been widely adopted by major U.S. cities is largely conceived as a device to reduce the refuse to a minimum volume. Reexamination of the method both technically and economically is now suggested by the fact that more than 10,000 U.S. communities recognize air pollution as a local environmental problem. Furthermore, as the percentage of pastics in refuse increases so does the needed furnace temperature, with resultant shortening of life of furnace liners.

Landfill techniques, although well established, are still but the crudest form of materials handling. Composting is stalled between the economics of production, the nature of an organization to manage the process, and agricultural disinterest in the product. Disposal at sea; disposal of organic fractions to the sewage treatment plant; disposal of sewage sludge; and long-distance transport are but a few of the inadequately resolved problems technically and economically.

Finally, no experience with the application of current techniques to the combined wastes of a total community is available.

Demonstrations of the best and most economical methods of applying present technology to communitywide wastes is a needed factor in solving the solid wastes disposal problem.

ECONOMICS OF WASTES MANAGEMENT

Reference has already been made to the attitude of citizens and public officials toward spending money in getting rid of materials judged by their owners to be worthless.

Engineering and economic studies are needed to evaluate the most economical way of managing the overall wastes of a community or region—solid, liquid, and gaseous—with due regard to the problems of managing the land, water, and air resources.

RESEARCH

Although researchers have been contributing to a clarification of the problem of solid wastes management the public attitude of financial disinheritance of its rejected goods has been reflected in its support of research. Lack of research, however, has not been the critical factor in delaying the solution to solid wastes disposal problems. Research and development must go hand in hand and development has been slow for many reasons. For example, the principles of composting were clarified by the University of California in 1954. Yet in spite of wide public enthusiasm for conservation of organic matter the method is but little used today. Nor does the fault lie with developers. Their efforts were stymied by economic factors and institutional aspects which are hard to overcome. The pertinent fact is that after a certain point had been reached by research, there was little more that the research could do until development proceeded.

Another case of stalled technology and its effect on research is demolition wastes. The construction industry, lacking satisfactory means of disposal of wastes, has for several years been willing to finance research. However, in a circumstance of fragmented jurisdictions and inattention to the areawide concept of wastes, no hopeful avenue of approach could be found by research people.

Today research directed to overcoming the limitations of present technology and alleviating the problem of solid wastes management is needed in parallel with the adaptation of current technology to today's wastes and resources management concepts. There is little new in fundamental processes which would justify a delay in attacking solid wastes problems until the results of research are reported. Research directed along three lines is needed:

(1) Reduction of quantity of waste at source;
(2) Recycling and reclaiming waste materials; and
(3) Improved methods of disposal.

Details of individual projects aimed at one or more of these objectives have been conceived by various investigators and are being directed to agencies which sponsor research. The important fact here is that a program of research is a needed facet of any solution to the solid wastes management problem.

TRAINING OF PERSONNEL

At the educational level very little has been done to train personnel for the management of solid wastes. Here again the attitude of neglect of solid wastes has been reflected in university courses in favor of the very urgent matter of water pollution control. Even at the University of California where enthusiasm for the solid wastes management problem has been sustained over a long period, the number of engineers becoming concerned with solid wastes has been small. Interest on the part of planners, public administrators, and others outside the public health field has remained constantly at zero throughout most, if not all, of the United States. This reflects not so much a special indifference of men to solid wastes per se, as an inattention to those matters in which society seems unconcerned. To be successful any program designed to solve national problems of solid wastes disposal must be led by men who understand the problem and the role of their own profession—be it engineering, planning, administration, or finance—in bringing about a solution.

Therefore any overall program of solid wastes management should include provision for training personnel in the whole spectrum of areas involved in the planning, financing, administering, and executing of public works.

NATURE OF NEEDED PROGRAM

Some features of a needed program to resolve the myriad problems of solid wastes are implicit in the foregoing paragraphs, and in current programs of the President of the United States. The policy of beautifying America, for instance, might be reflected in a reclamation of steel from automobiles, and in a public consciousness of resource values, thus helping to establish a cultural climate in which a program of solid wastes management might flourish. Concerning the solid wastes of the total community the need is for:

(1) A widespread understanding of the communitywide nature of wastes and the need for coordinated management.

(2) Suitable jurisdictional arrangements to make possible areawide or regional solid wastes management.

(3) Demonstrations of the applicability of current technology to areawide wastes disposal.

(4) Sustained public information efforts to help the citizen understand the problem and the costs involved.

(5) A program of research paralleling the program of demonstration.

(6) Financial support of feasible methods such as composting, which are stalled by institutional and economic considerations, at least during the developmental stage.

(7) A program of personnel training at the university level.

WHAT IS BEING DONE

It is virtually impossible to present a complete summary of what is being done about the solid wastes disposal in the United States. In general, it might be said that each jurisdiction which has the responsibility for solid wastes disposal has been increasingly beset by the growing wastes load and the social pressures against wastes management practices. Some have found unilateral expedients which are temporarily acceptable to their communities. Essentially all are looking for some better approach. Many are confronted with citizen demands for other uses of the land resources now dedicated to wastes disposal.

The American Public Work Association has held conferences and carried on committee work for several years to identify areas of needed research and encourage research groups to undertake the most urgent problems. The Public Health Service in 1963 sponsored a National Conference on Solid Wastes Research likewise to identify and publicize research needs. The American Society of Mechanical Engineers sponsored a conference of incineration in 1964. The American Society of Civil Engineers has a single committee on solid wastes management. Thus is may be said that there is no lack of awareness at the technical and operational level of wastes management. What is being done is largely the identifying and documenting of the roadblocks to progress and the programs needed to overcome the roadblocks, such as have been summarized in preceding sections of this statement. Action programs are still largely the unilateral efforts of individual jurisdictions.

In California several developments are worthy of note. Some of these attest to an awareness of the solid wastes disposal problem; others point the way to possible solutions. Some important examples are as follows:

1. Los Angeles County sanitation districts have demonstrated how an areawide coordinated program under a broad jurisdictional arrangement can cope with solid wastes problems. Through a well-conceived program of refuse collection and land use planning, land fill disposal is proving satisfactory to a very large community at a cost which is leading to the abandonment of incinerators for economic rather than for air pollution reasons.

2. The Association of Bay Area Governments is conducting, through the State department of public health, a thorough inventory of the sources, amounts, and nature of solid wastes in the overall community, and of the current jurisdictional arrangements for solid wastes management in the area.

3. The State of California, under funds budgeted to the State department of public health, has awarded a $100,000-contract to the AeroJet-General Corp. for a study of the application of the methods of operations research to the management of wastes in California. The nature of a jurisdictional system suited to regional wastes mangement is among the factors being explored.

4. The Planning Commission of the City of Richmond, as well as planning groups in other communities, is studying the manner in which sanitary land fill in its area may be a part of an overall land use plan for the area.

5. The University of California, is as previously noted, sponsoring a National Conference on Solid Wastes Management to explore the nature of the problem; evaluate the usefulness of operations research in developing jurisdictional and physical systems of management; make a critical review of the AeroJet findings; summarize recent research developments; and outline needed action programs.

Subsequently the Sanitary Engineering Research Laboratory and the Environment Division of the Berkeley and Davis campuses, respectively, plan to combine a long-range program of research and training in solid wastes problems.

Although the foregoing examples of interest and activity in solid wastes problems in California cannot be expected alone to revolutionize the concepts and technology of solid wastes disposal, they do show an awareness of the problems summarized in this statement and a potential to play a leading role in carrying out the objectives of the Congress set forth in H.R. 890 and identical bills.

STATEMENT OF ABRAHAM MICHAELS, P.E., DEPUTY STREET COMMISSIONER, CITY OF PHILADELPHIA

On behalf of the Honorable James H. J. Tate, mayor of Philadelphia, the National League of Cities representing over 1,300 municipalities, and the American Public Works Asociation, which organization I serve as chairman of the committee on solid waste, I welcome the opportunity to discuss the aforementioned legislation.

The solid waste disposal problem and the attendant air, water, and land pollution problems which prevail in the Philadelphia metropolitan area are typical of the experience of many urban areas throughout the country. The increasing affluence of our society causes the increased generation of solid wastes. The movement of people to urban areas decreases available waste disposal space. The pollution problems caused by landfilling and incineration are intensified by these changes.

In 1964, the people of Philadelphia produced approximately 1.5 million tons of solid waste, which represents three-fourth of a ton per person per year. An examination of solid waste production records for the last 10 years reveals an average per capita increase of approximately 2 percent a year.

Most of the rapidly depleting landfilling space available in and near the city is located in swampland or adjacent to rivers and streams. Disposal of solid waste in these areas may be polluting potable water sources. Early tests indicate that even some incinerator residue may be unsatisfactory for filling in these areas.

Philadelphia currently has a total incineration capacity of approximately 525,000 tons per year. This will be increased to 675,000 tons per year with the opening of a new 600-ton-per-day plant this year. Of this capacity, 375,000 tons is provided by four obsolete, inefficient incinerators which should be modernized in order to meet good public health standards. Even the newest incinerator built in 1960 should be improved by the addition of equipment which would provide better air pollution control. The remainder of the solid waste generated in the city is disposed of by sanitary landfilling and hog feeding, a method of disposal which is rapidly disappearing.

Because of insufficient incinerator capacity and landfill space within the city limits, over 40 percent of the solid waste generated in the city is disposed of in landfills outside the city limits including some located in the neighboring State of New Jersey. The solid waste disposal problem has already transcended local government boundaries and is in fact a regional and/or State problem in large urban areas.

Solid waste disposal standards in the communities surrounding Philadelphia are less stringent than city standards. For example, many communities permit the open burning of brush and demolition material, and incinerators are built and operated without adequate air pollution control devices. As a result, incinerators and other refuse disposal facilities outside the city produce particulate and gaseous emissions which add to the total air pollution load in the city.

Although the reported public health incidents which are directly traceable to solid waste disposal have been few in number, and although present knowledge may be adequate for today's need, the rapidly expanding population, the increased per capita refuse production, and the concentration of population in large urban areas resulting in the elimination of space which had been available for refuse disposal are all rapidly combining to make the solid waste disposal problem acute.

The two major methods of solid waste disposal, incineration and sanitary landfilling, can significantly contribute to land, air, and water pollution in congested area, and this contribution may cause the degradation of potable waters from long periods of time due to sanitary landfilling operations, or may seriously aggravate air pollution incidents.

Recognizing the potential public health dangers inherent in the rapidly growing solid waste problem, the membership of the American Public Works Association adopted a resolution in 1960 and again at their 69th annual meeting at Detroit, Mich., on September 30, 1963, expressing their interest in supporting federally financed research in solid waste. The resolution reads as follows:

"Whereas the proper storage, collection, and disposal of community solid wastes is basic to a clean and healthful environment; and

"Whereas the problems associated with solid waste collection and disposal are becoming increasingly difficult and expensive to solve because of the growth

of urban areas and its attendant health problems and the continuing increased per capita production of solid waste resulting from improved living standards; and

"Whereas improper disposal of community solid waste can create polluted atmospheric, water, and land conditions which could jeopardize the health and welfare of the community; and

"Whereas the cost of collection and disposal of community solid wastes is a growing financial burden amounting to $2,800 million annually; and

"Whereas there is an immediate need for a comprehensive program to stimulate scientific and technological advances in this field as indicated by a study entitled 'Solid Wastes Research Needs' which was prepared by the American Public Works Association Research Foundation in May 1962; and

"Whereas the Department of Health, Education, and Welfare has excellent personnel and facilities available for the development of research programs to control and dispose of liquid and gaseous wastes and thereby effect a more healthful environment for the people: Therefore be it

"*Resolved*, That the appropriate congressional committees of the U.S. Department of Health, Education, and Welfare be requested to expand their activities to provide for a more adequate program of basic and applied research in the field of municipal solid waste collection and disposal."

The job of collecting and disposing of the Nation's solid waste is costly ($2.5 to $3 billion per year) and must be performed in a manner which protects the health of our people. The urbanization of our society introduces new limits to solid waste disposal and eliminates local government boundaries. In order to prevent future health problems, new, realistic solid waste disposal standards should be developed based upon basic and applied research studies. Surveys of local and regional needs should be conducted to establish long-range solid waste disposal programs. Solid waste disposal programs designed to develop improved disposal methods should be supported financially.

Since the pollution produced by solid waste disposal knows no governmental boundaries, and since the knowledge acquired from research would be useful to the entire Nation, we believe that the Federal Government should take a more active interest in and provide the financial support for an expanded Clean Air Act which would include the provisions of the solid waste disposal bill.

For these reasons we urge passage of bills H.R. 7429 and S. 306 and the other related similar bills.

STATEMENT OF ROSS E. MCKINNEY, CHAIRMAN, DEPARTMENT OF CIVIL ENGINEERING, AND DIRECTOR, C. L. BURT ENVIRONMENTAL HEALTH RESEARCH LABORATORY, UNIVERSITY OF KANSAS

The following comments made in behalf of S. 306 are based on my personal observations and convictions and do not necessarily reflect the views of the University of Kansas. It is hoped that these comments will contribute to a better understanding of the need for Federal assistance with regard to solid waste disposal.

THE WASTE PROBLEM

In this country we take many things for granted. It is only natural that we expect to find good food in all restaurants through this entire country of ours. We expect pure water when we turn on the tap. We expect that our household sewage will be quickly removed in the sewers and treated so as not to create pollution. We expect the storm waters to be collected and removed before they cause damage to our property. We expect that garbage and trash be collected and disposed of without creating nuisances. These things we have come to expect as automatic rights belonging to all citizens of our country. There are a lot more similar things we have come to expect automatically.

Yet, these services we have taken for granted do not come automatically. They have been produced as a result of much effort in the fields of public health and public works. We find that the organizational talents of a few people have set up the water systems, the storm water systems, the sewerage systems and the garbage systems. The success of their efforts is obvious by the fact that we all expect quality in these critical public health areas.

It has not been easy to develop our current water and waste systems. We have been so busy building new systems that we find ourselves faced with a real problem in obsolescence.

Following World War II there was a significant change in the nature and magnitude of the water resources and waste water pollution problem. We found out that movement to the suburbs and changing industries created problems which could not be solved by conventional water systems. Suddenly, we realized that we had failed to develop new water systems to meet the changes of society. Our 50-year-old system were no longer satisfactory to handle the problems. The net result was a crash program to develop new technology. Our only problem was that you cannot create instant answers in an area lacking trained personnel and with an outmoded viewpoint based on 50 years' experience with design criteria no longer adequate. The net result is that we are floundering in the water area, trying to solve a problem which can be solved; but which will take valuable time not readily available. A critical question is, Can we stay up with the increasing population and industry?

By comparison the solid waste problems are staggering. There has been no awakening to the seriousness of the solid waste problem. We are still content to limp along with antique methods because there has been no public clamor for solving this problem. Occasionally, we hear a few local rumbles but no real groundswell. Yet, it takes only a short look at the solid waste problem to realize it is already too late. We have already allowed the problem to exceed the solution.

EDUCATION

One of our major problems with regard to solid waste is our lack of education of specialists to work in this area. Few universities offer courses to engineers in the collection and disposal of solid wastes. Most of the universities training sanitary engineers are concerned with water pollution and air pollution but have little concern with solid wastes even though solid wastes can have a pronounced effect on both water pollution and air pollution.

Engineers concerned with solid wastes are being educated in the school of experience, on-the-job training. It is no wonder that our techniques in solid waste disposal are crude. No one is prepared for the problem. When we get right down to it, no one wants to be concerned with solid wastes. Solid wastes are too difficult to handle and require new concepts not available in the background of most public works engineers. Thus, our problem stems from a lack of education in solid wastes. We do not have an adequate supply of trained technical personnel to deal with solid wastes and are doing almost nothing to increase the number of technical personnel in the area of solid wastes. Our failure to concern ourselves with training technical people to solve solid waste problems is going to create a serious situation in the near future with our exploding population and increasing industrialization.

DEFINING THE SOLID WASTE PROBLEM

One of the most difficult problems we face is trying to define the solid waste problem. Part of the difficulty lies in the fact that we do not deal with even partly homogeneous material as we do in the case of water pollution and air pollution. Solid wastes come in all shapes and forms. Garbage is a solid waste we are all familiar with, as is rubbish. Junk becomes a solid waste disposal problem unless it becomes an antique first. The debris from urban removal poses an interesting solid waste problem as do old automobiles. The impurities from water purification plants and sewage disposal plants form critical solid waste problems which cannot be ignored. The ashes produced from coal-burning power stations must be disposed of satisfactorily. Crop residues and animal manures form solid waste problems in agricultural regions. We find out that we are even filling outer space with garbage of a different type, burned out space boosters and satellites. These are just a few of the solid wastes we have to deal with.

LACK OF RESEARCH

There has been so little research on solid wastes that we hardly know the nature of the material we deal with. Garbage is not a reasonably fixed material like domestic sewage but is a widely varying material depending upon the season of the year, the economic level of the people and the changing food technology. Rubbish also lacks definition. We recognize the importance of paper as a major component of rubbish but this varies widely. The tremendous paper

disposal and tree disposal following Christmas staggers not only the imagination of any one thinking about it but also the workers faced with the problem of collection and disposal.

The best data to date indicates we produce about 4 pounds of refuse, garbage plus rubbish, per person per day. Considering an urban population of 130 million people, we produce 520 million pounds of municipal refuse each and every day. This would occupy a volume of over 1 million cubic yards. Needless to say we would soon find ourselves inundated with solid wastes if we did not find adequate disposal methods.

Have you ever stopped to consider how to collect 1 million cubic yards of garbage and rubbish each and every day? As we spread out, the problem becomes even more difficult. Distance, volume, time, and waste characteristics are key factors in the solid waste problem. Little research has been done on the scientific application of existing technical knowledge to the solid waste problem. We have lots of information which would be brought to bear on the solid waste disposal problem if we had the support required.

RESEARCH NEEDS

The major research need is in the area of waste characteristics. We need to develop the techniques for sampling and analyzing various types of solid wastes. The need to know the nature of materials being disposed of is critical.

A second major research need is concerned with site storage and collection. Is the garbage can outmoded? Are there better methods for storing solid wastes on the site? Industry-developed containers to store and to collect solid wastes in a single unit. Industry has also developed a disposable paper bag to store solid wastes and to eliminate transfer from the can to the truck. Can we develop an economical compaction device to reduce waste volumes at the site and permit more volume for each haul? The compaction trucks permit some waste compaction but this is lost when the wastes are discharged from the truck. While industry has improved the garbage truck, little is known about the efficiency of collection. System analysis provides a technique to study the most efficient collection system with existing equipment. It can also be used to evaluate new systems or proposed changes in old systems. Unfortunately, we lack people trained in systems analysis techniques in the solid waste field.

Another problem lies in better disposal methods for solid wastes. At the present time we have open dumps, sanitary landfill, incinerators, and composting. Each of these methods has certain advantages and disadvantages. But are there other methods that offer more potential? We do not know because research funds in this area are not sufficient for real studies.

At the University of Kansas we are looking into a new method for solid waste disposal. We think it has real promise but have been unable to obtain research support from existing agencies because of their lack of trained personnel on reviewing committees to understand the problem. The research reviewing committee personnel are high level scientists and educators who are not qualified to evaluate research in solid wastes and who have no interest in this problem. We are continuing our research at a very low level and eventually hope to obtain private support to try our ideas out in the field. We are not easily discouraged.

Some of the solid waste problems tie in with water pollution but more of them are tied with air pollution. The smoke and dust from open dumps has been shown to create definite public health problems. Incinerators used for solid wastes were not designed for this use and often create air pollution problems. The design of incinerators thus becomes a combined air pollution and solid waste problem. The disposal of the ashes after combustion is a solid waste problem that could create a water pollution problem.

One of these days we may stop trying to solve little problems that keep coming up and set up an overall program to solve the environmental pollution problems, air, water, and solid wastes, including nuclear wastes. What we need most is to realize that we cannot continue to pollute our environment as we have in the past and expect to enjoy all the comforts of our modern civilization. We are destroying the world we live in day by day. We have recognized our mistakes in water pollution and air pollution but have ignored solid wastes. We cannot afford to ignore solid wastes any longer. The longer we wait the more critical the problem will be. Currently, we do not have many trained personnel in this field. It is essential that we increase training in this area. Properly developed

training programs can utilize research as a teaching tool and to assist in solving solid waste problems. An immediate program would help get us off the ground, but it may be too late already.

STATEMENT OF THE GOVERNMENT EMPLOYEES' COUNCIL, AFL–CIO

Mr. Chairman and members of the subcommittee, the 31 AFL–CIO unions associated with the council and representing employees in the wage board, classified, and postal services of the Federal Government, endorse H.R. 7429.

We desire to express our appreciation to you for your sponsorship of the measure and to the other House Members who have introduced bills on the subject.

The initial Clean Air Act announces the desirability of Federal agencies' controlling sources of pollution at their installations.

While the principal effect of the pending legislation will be to eliminate hazards to public health generally, employees in Federal establishments will benefit also.

Health hazards and irritation from air pollution can be traced to two sources—fuel exhaust and disposition of solid waste. Some of the ingredients in smog, such as carbon monoxide, hydrocarbons, and nitrogen oxides, are produced by vehicle exhaust.

H.R. 7429 requires that after October 1966, any automotive vehicle purchased by the Federal Government must be equipped with exhaust controls meeting standards promulgated by the Secretary of Health, Education, and Welfare.

The council applauds this effort to place the Federal Government in a position of leadership in attacking the rapid advance of air pollution, particularly in urban areas. Hundreds of industrial plants are operated by Federal agencies. In the Defense Department alone, there are numerous shipyards, arsenals, depots, and bases. At the other end of the spectrum, we have the Government Printing Office here in Washington. Other agencies involved include the Federal Aviation Agency, the National Aeronautics and Space Administration, and the Atomic Energy Commission. Many are located in or near metropolitan areas.

Continued operation of these facilities necessitates thousands of vehicles. In fiscal 1965, passenger and cargo vehicles owned by the U.S. Government traveled 2.5 billion miles. The total number of civilian vehicles numbered 300,316. This figure does not include troop training or tactical conveyances in use in military agencies.

Thus, a significant contribution could be made by Federal agencies by installing devices to curb air pollution alone.

Administration witnesses have testified that the automobile industry could install such controls in automobiles by the fall of 1957. Hopefully, that date could be advanced, if research and engineering were intensified.

There is little need to emphasize the national problem created by the introduction of ever-increasing amounts of air pollutants. There could be no more effective display of good faith in the purpose of the Clean Air Act than for the Federal Government to apply the principles enunciated in that statute to its own installations.

Sections 1 and 2 of the bill will result in development of uniform standards for use by the various departments. In some instances, there is no State or local requirement; in others, there are numerous State standards, with which Federal activities must cooperate. Enactment of these sections of the bill would insure equal application of the clean air principles by all Federal agencies.

Section 2 of the bill requires also that construction, preparation, or expansion of Federal buildings in the future include provisions for adequate air pollution control.

The Federal building program envisions continuing construction and renovation of these structures. Inclusion of plants for preventing air pollution will benefit not only the general public but also the thousands of employees assigned to work in these installations.

The provision for the Secretary of Health, Education, and Welfare to supply training for Federal personnel in the maintenance and operation of air pollution control devices is a desirable means of encouraging agencies to utilize such devices to the maximum extent. It will make available to these employees the

technical knowledge necessary for them to execute their responsibilities under the act and the program of their own agencies.

Subsection (g) of section 2 empowers representatives of the Department of Health, Education, and Welfare, to inspect Federal property to determine control practices of the various agencies. The council believes such authority is essential if the Secretary is to present annually to the President and Congress a factual report on the status of the control program throughout the Federal Government.

Responsibility for keeping the Secretary informed about pollution conditions and steps taken to remedy them is placed in the hands of each department head. In some cases, at least, the distance between unsafe practices at the local installation and the office of the agency head can be long, indeed. In dealing with Federal activities as widespread, numerous, and complex as these, it is necessary that inspection by another agency be authorized.

Finally, the council is happy to endorse H.R. 7429, either on its own merits or as incorporated in any other bill of general application to eliminate air pollution.

STATEMENT BY BENJAMIN SCHWARTZ, EXECUTIVE CONSULTANT OF NATIONAL FEDERATION OF INDEPENDENT SCRAP YARD DEALERS, INC.

In studying S. 306—the Solid Waste Disposal Act of 1965—we respectfully note the following:

The unwarranted confusion that has developed in the concepts of scrap processor, auto graveyard, garbage, and other forms of "solid waste," is a gratuitous denigration of more than 50 years of effort invested in raising the standards and the image of those engaged in the secondary raw materials industry, as "conservers of natural resources."

We are dealing with an industry that collects, grades, prepares in merchantable form, and otherwise processes scrap iron and steel, nonferrous scrap metals, paperstock, cotton and woolen textiles, burlap, scrap rubber, and other secondary byproducts of obsolescence and manufacturing operations, as part of a continuous cycle of conserving for future generations primary ores and metallics, nature's plant fibers, the forests that supply pulp, and other virgin resources.

The two important characteristics of the economics of the secondary raw materials industry, are the collection army at the base of the industry, and the function of the law of supply and demand, operating in a free market. The industry is composed essentially of independent and small business units who represent the last outpost of individual initiative, within a highly "captive" industry. The survival of the small and independent operator, and his share of the market, are threatened by the increasing concentration of economic power in the scrap business.

Monopolistic trends in the industry, and the reciprocal and exclusive deals affecting the commodities, are raising the serious question whether there will be a place for the small or independent dealer in the future of the industry. In terms of a national emergency, the question is not whether the scrap will be around, but whether the human beings and the organization for the collection and processing of the scrap, with its unique ability and experience acquired over many years, will be there when it is needed.

It is our position that scrap is charged with the "public interest," because it involves three national policies—national defense, conservation, and the preservation of small business. Unless the top policymakers in Washington, who represent and interpret the "public interest," include the secondary materials industry in their policy studies, the activity at lower administrative and non-policy-making levels of advisory committees, task forces, solid waste panels and other ad hoc inspirations (of which we have had many in our time), will cause the industry to fall between many stools, and will speeed up the disintegration of the industry's essential base of small and independent units, so vital to the economics of secondary raw materials.

Fundamentally, the major problem is one of merchandising and marketing; of balancing the annual crop of secondary raw materials with the primary or virgin metallics, fibers, and other of nature's products; of removing the forces that tamper with the "free market" function. We respectfully question whether "solid waste" or "natural beauty" are proper forums for the study of the "free market."

We question the advisability of spending any "solid waste" funds for any research projects affecting the equipment, the operations or the end products of

the secondary raw materials industry, or setting up any experimental facilities that would duplicate the adequate facilities now in existence within the industry.

We do not believe in the necessity of subsidy or other financial incentives, direct or indirect, for our industry; nor do we have any projects to suggest, because of the generous appropriations which Congress may have made in its wisdom in the name of research or "natural beauty."

We respectfully urge an amendment to S. 306 (or a clarification of the definition of "solid waste" contained therein), exempting the services and the operations of the secondary raw materials industry from its scope.

[Telegram]

PHILADELPHIA, PA., *June 29, 1965.*

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
Rayburn House Office Building, Washington, D.C.:

On behalf of the National League of Cities, representing over 13,000 municipalities, and as mayor of Philadelphia, one of the largest cities in the country, located in the heart of a congested, rapidly expanding urban area, I am deeply concerned about the potential health hazards attributable to improper disposal of solid wastes. Present practices and knowledge are inadequate to manage this growing source of land, air, and water pollution. The need for research in refuse collection and disposal methods designed to prevent public health incidents is immediate. Since the problem transcends local and State boundaries and is the concern of three-fourths of the population of the United States, I believe it is a Federal as well as a local problem and therefore I strongly urge that you and your committee give favorable consideration to the immediate passage of bills H.R. 4854, S. 306, and other related bills.

JAMES H. J. TATE.
Mayor, City of Philadelphia.

[Telegram]

DENVER, COLO.

HON. OREN HARRIS,
Chairman, House Committee on Interstate and Foreign Commerce,
Washington, D.C.:

Re S. 306, title II, solid waste disposal, the National Association of Sanitarians, 1550 Lincoln Street, Denver, Colo., the second largest public health organization in the United States, is a door to safety.

But we would appreciate the addition of the following: State Governors should have authority to determine where the funds should be used, since all States do not have an air control organization. Federal money is needed to help States in getting solid waste disposal programs initiated, and a minimum of $2 million should be appropriated to assist in solving the waste disposal problem. If we can be of any assistance, please feel free to call this office, 303—222-4456. We will be grateful for your consideration of the above.

NICHOLAS POHLIT,
Executive Director, National Association of Sanitarians.

[Telegram]

BOSTON, MASS., *July 2, 1965.*

HON. OREN HARRIS,
Chairman of Interstate and Foreign Commerce Committee,
House Office Building,
Washington, D.C.:

Massachusetts Department of Public Health strongly urges passage of title II of S. 306. Passage of this act will provide sorely needed research, technical, and financial assistance in planning and conducting solid waste disposal program. Disposal of solid wastes is becoming increasingly difficult and expensive. Development of sanitary and economical method of solid waste disposal must be encouraged since space for disposal of these wastes by present means is rapidly disappearing in Massachusetts.

ALFRED L. FRECHETTE, M.D.,
Massachusetts Commissioner of Public Health.
STATE HOUSE, BOSTON, MASS.

[Telegram]

NEW YORK, N.Y., *July 2, 1965.*

SUBCOMMITTEE ON PUBLIC HEALTH AND WELFARE,
OF THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
House of Representatives, Washington, D.C.

(Attention of Hon. Oren Harris, Chairman):

Wish to express deep interest in the research on solid waste disposal that is contemplated in S. 306. Our committee has a membership of 272 including the foremost designers of municipal, industrial, and commercial incinerators. We are active in collecting, organizing, and freely disseminating technical information on incineration. The control of air and water pollution are important topics of study. Frequent meetings are held for these purposes, with liaison and interchange with other professional and trade associations. A national incinerator conference of 600 persons was held in May 1964, to hear engineering papers on various phases of the subject. A second national conference is scheduled for May 1966. We have frequently discussed the obvious lack of sufficient published or private information on all aspects of incineration, including, among others, refuse analyses and quantities, combustion, prevention of fly-ash emissions, equipment design and maintenance, prevention of water pollution by plant effluent and residue. It is our conclusion that the necessary research will not be supported sufficiently by municipalities or others, but that a Federal research program under Public Health Service is necessary. We are favorably impressed with the publications that have resulted from the Public Health Service programs on late disposal and air pollution control. As further research is conducted and published the incinerator profession and industry will be better to design plants to cope with the mounting refuse problem in an economical manner and in the best public interest.

JUNIUS W. STEPHENSON,
Chairman, Incinerator Committee,
Process Industries Division, ASME.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., July 7, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. HARRIS: Your letter of June 29, 1965, asked if we construe the provisions of the Senate-passed bill S. 306 with the amendments suggested by the Department of Health, Education, and Welfare in their report of June 10, 1965, to include authority to restore abandoned strip mines. Your letter refers to section 203(a)(3) of the HEW draft bill. We think the reference was probably intended to be to section 204 (a) and (b)(3).

This section when read in conjunction with the definition of the term "Secretary" in section 203(a) directs the Department of the Interior to encourage, cooperate with, and give financial, technical, and other aid to public and private agencies and institutions, and individuals in the conduct of research, investigations, experiments, training, demonstrations, surveys, and studies relating to the operation and financing of solid waste disposal programs, the development and use of new and better methods of disposal, and the reduction of the amount of waste and unsalvagable waste materials. The Secretary is also authorized to carry out these activities directly. Thus, the bill enables this Department to carry out a comprehensive program designed to meet the problems of solid waste disposal resulting from the extraction, processing, or utilization of minerals or fossil fuels where such activities are or could be controlled within the operating or inactive facility or facilities, such as the plant, a coal mine (active or inactive), or strip mine (active or inactive).

It includes authority to make grants to public or private agencies and institutions and to individuals for, among other things, demonstration projects. One type of demonstration project relates to the disposal of solid wastes, which could include restoration work at abandoned or active strip or surface mines. This is, of course, only one of many types of demonstration projects.

Surface or strip mining began in Illinois as early as 1866. It is a surface operation which removes or strips the overburden of soil and rock to expose the

subsurface minerals. This type of mining involves problems of solid waste disposal, soil erosion, and water pollution. Either because of inadequate local laws or lack of enforcement thereof, little work has been done by the owners of these areas to restore the land for useful purposes.

The removal or disposal of the huge pile of overburden is one of the major cost items in the extraction of some minerals from strip or surface mines. In addition, these piles of overburden pose serious problems of disposal. One proposal is to return the overburden to the excavation and recontour the area and add plantings. S. 306 with the Health, Education, and Welfare amendments will aid us in finding, on a demonstration basis, economic and feasible means for disposing of this overburden and removing this unsightly condition from the landscape.

These demonstration projects will also aid us in our comprehensive and long-range study of reclaiming and rehabilitating strip and surface mine areas in the United States which we are now conducting pursuant to the recently enacted Appalachian Regional Development Act of 1965 (79 Stat. 5). Insofar as these demonstration projects are carried out in other than publicly owned lands, we will take such steps as may be necessary to prevent anyone from receiving windfall benefits from the projects.

We appreciate this opportunity to further comment on the bill.

Sincerely yours,

STEWART L. UDALL,
Secretary of the Interior.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
July 8, 1965.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in response to your letter of June 29, 1965, requesting clarification of the definition of the term "solid waste" contained in the draft Solid Waste Act recommended by the administration.

The definition contained in the draft bill is: "The term 'solid waste' means garbage, refuse, and other discarded solid materials, including solid waste materials resulting from industrial, commercial, and agricultural operations, and from community activities."

The American Public Works Association has classified wastes into solids, liquids, and gases. "The gases are principally industrial fumes and smoke; the liquids consist mainly of sewage and the fluid part of industrial waste; the solids are classed as refuse." "Municipal Refuse Disposal," American Public Works Association, 1961.

Refuse can be classified in different ways, i.e., according to point of origin—domestic, industrial, agricultural, or commercial; or, as preferred by American Public Works Association, according to kinds of materials—"garbage, rubbish, ashes, street refuse, dead animals, abandoned automobiles, industrial wastes, demolition wastes, construction wastes, sewage solids, and hazardous and special wastes." Clearly, it does not include dissolved solids carried in liquid form through sewers and watercourses, although it is to be noted that improper disposal of solid wastes may contribute dissolved substances to ground and surface waters, by leaching.

In the definition of "solid waste disposal" in our amendment, to avoid program duplication, we recommended that organic solids in untreated domestic sewage be excluded from the purview of this bill, as the Federal Water Pollution Control Act deals with this factor. Similarly, that act, in establishing a pattern of water pollution control activity, deals with other significant pollutants in water resources, such as silt, dissolved salts, suspended solids in municipal and industrial sewage effluents, and other common water pollutants. This distinction makes clear that salt pollution in irrigation return flows, a major contributor to water pollution, is within the scope of that act and is not included within a solid waste disposal program.

It is the position of the Department of Health, Education, and Welfare that solid waste is appropriately described by the definition in our proposed amendment to the bill. However, it would be appropriate to further explain this definition by including these comments in the legislative history of S. 306.

Sincerely,

WILBUR J. COHEN, *Secretary.*

AMERICAN PETROLEUM INSTITUTE,
New York, N.Y., July 22, 1965.

Hon. OREN HARRIS,
Chairman, House Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Attached is a copy of a letter from the chairman of the American Petroleum Institute's central committee on medicine and health to Dr. John L. Buckley, of the Office of Science and Technology, Executive Office of the President. This letter was delivered yesterday to Dr. Buckley in compliance with the request he had made earlier to the American Petroleum Institute.

The letter proposes, we believe, a knowledgeable and workable system to prevent health-damaging air pollution.

We think you will find it to be of interest.

Sincerely yours,

FRANK N. IKARD.

STANDARD OIL CO. (INDIANA),
Chicago, Ill., July 21, 1965.

Dr. JOHN L. BUCKLEY,
Executive Office of the President,
Office of Science and Technology, Washington, D.C.

DEAR DR. BUCKLEY: At our meeting on June 11, you offered me the opportunity to present, at a later date, our viewpoint on an acceptable health standard for sulfur oxides in ambient air. I am pleased to present the following to you at this time on behalf of physicians of the petroleum industry and the Coordinating Committee on Air and Water Conservation of the American Petroleum Institute.

Recognizing that an air quality standard by itself will not control air pollution, we are including discussion of other aspects necessary to effective solution of the problem. We suggest for your consideration the outline of a realistic control system that incorporates guidelines to communities, both for air quality and for their action. When properly utilized, we believe it is a system capable of preventing health-damaging air pollution episodes from occurring in the future in American cities.

The suggestions represent the best thoughts of petroleum industry medical and technical people with a broad range of experience in this field. In addition, a number of these people, including myself, had the opportunity of attending the recent Gordon conference on sulfur oxides and related compounds. There, we were able to explore with many of the world's experts the latest findings in this complex field. I believe, therefore, that the proposal which we are making is as faithful a reflection of present knowledge as can be obtained.

Available information does not indicate that sulfur dioxide by itself is causing any adverse health effects in our population. However, elevated concentrations of particulates and sulfur oxides in the air produce a combination capable of pronounced health effects. Also, we have carefully studied all available data on air pollution episodes which were associated with illness among humans and find that experience agrees with the above. In none of these health-affecting episodes for which atmospheric pollutant concentrations were measured was there an increase in sulfur dioxide which was not accompanied by a significant increase in particulates. On the other hand, instances are on record where SO_2 levels were high, but particulate levels low, and local illness and death rates remained within their normal range.

A logical explanation for these observations exists. Inhaled alone, most sulfur dioxide is removed by the mouth, nose, and throat, thereby preventing all but a small fraction from gaining entrance into the lower respiratory tract. But when substantial particulate matter is present in ambient air along with sulfur dioxide, the sulfur dioxide may be adsorbed onto the particles and may then be carried deeper into the respiratory tract where any irritation it produces would be of much greater significance. Thus, we believe any realistic proposal on the acceptable levels of air contaminants ties these two together. Furthermore, any practical control system must deal with sulfur oxides (not just sulfur dioxide by itself) in combination with particulate matter.

Every recorded air pollution episode involving more than a limited area has involved air stagnation brought about by an atmospheric inversion; a high layer of warm air has virtually formed a lid or cover over the community and

stayed there for some time. This causes a stagnant atmospheric condition during which the density of pollutants in the air tends to increase. Since weather conditions have been a considerable factor in all past episodes, the control procedure we have formulated has taken this into consideration.

Our proposal is, therefore, based on three things:

(1) Meteorological forecasting.
(2) Particulate monitoring.
(3) Sulfur oxide monitoring.

Under the proposal, predetermined corrective actions should be taken when conditions are such that, beginning 4 hours later, a period of 8 hours or more may be expected during which the sulfur oxide concentrations are expected to exceed 0.3 parts per million accompanied by particulate levels exceeding 4 Coh units. The conditions which would be taken into consideration in this decision to immediately instigate preventive action would include such matters as meteorological conditions, trends in sulfur oxide, and particulate levels from the monitoring system. In attachment A the technical requirements of this system are laid out—types of measuring equipment, the frequency and level at which readings are taken, and the grid system necessary.

The level of 4 Coh units for particulates was selected on the basis that, during the past harmful episodes where such readings were made, the level of such contaminants has always been above 4 or 5 Coh units. Seldom, in normal times, does the particulate level in ambient air get to 4 Coh units. The level of 0.3 parts per million for sulfur oxides is based on a substantial amount of data and experience, the principal points of which are presented in attachment B. Compared with the current officially accepted industrial tolerance level for SO_2 alone, the preceding figure is lower by a factor of more than tenfold. This industrial tolerance level, 5 parts per million, is based on exposure up to 8 hours a day, 5 days a week, for a working lifetime, not merely for a period of hours.

An analysis of the system we propose will show it to be stringent. Any community can minimize, if not eliminate, the possibility of significant health-affecting air pollution episodes by employing the proposed system, including proper procedures to follow when the system sounds an alert.

A community which has an air pollution problem should study and design a series of procedures which can be implemented as soon as an alert is sounded. In doing so, it will, of course, tailor these procedures to fit the local conditions including the type and degree of controls which are required. An analysis should be made of the various sources which contribute to air pollution in the community and of the most practical corrective alternatives which are available. Thus, in one community, a local chemical plant, refinery, or other industrial operation may be the prime offender and it may be possible, with acceptable short-term disruption, to switch its operations for a limited period of time to practices which reduce emission of air pollutants. Since particulates are such an important element in the air pollution problem, an obvious consideration would be to prohibit incineration and open burning for the period of the emergency. With respect to contaminants contributed to the air by fuel users, several alternatives are possible. Included among these choices could be a programed switching to fuels of lower sulfur content or the dilution of usual fuels by those having a lower sulfur content.

Whether one or all of the possible corrective measures are required, the consuming public located in the community would be penalized only for a brief period of time and would not be subjected to higher heat and energy costs or other economic disruption on a year-round basis. Moreover, given a choice of corrective measures, it is reasonable to expect that the action taken will be designed to cause minimum disruption in the life and business of the community.

We believe our proposal has many advantages. I would like to enumerate some of them, as follows:

1. Federal Government installations can set a good example within their communities under this system. If a monitoring network and alert procedure is in operation, a Federal installation can adhere strictly to its requirements. Federal construction specifications should include such provisions as would make such compliance possible. If monitoring networks are not in existence, and there appears to be a need, Federal installations in the area, by relatively simple air sampling and use of readily available weather data, could bring to the attention of local authorities the need for corrective action consistent with the proposed system.

2. The proposed system offers the basis for uniformity in monitoring data and studies of health effects associated with such data. Information based on such

uniform data would greatly facilitate the ability to accomplish further improvements in the quality of ambient air within local communities.

3. The recommended procedures are fundamentally performance-type regulations. Long experience has indicated this approach retains competitive incentive to develop superior voluntary solutions and improvements. Such a process to develop solutions has generally produced maximum benefit to the entire public. Although regulations that control by stipulation, composition, or design are usually simpler to implement, they predominantly stifle competitive incentive and tend to retard progressive developments.

4. The proposed approach is considered to be workable in any community that might need to protect itself from the possibility of an air pollution episode, yet unlike average annual ambient air standards, it does not enforce unnecessary requirements at times or places in which they are not needed.

5. The proposed approach minimize the cost penalty on fuel users while providing protection for the people from health-affecting episodes.

6. By not imposing year-round high fuel costs, a community establishing this reasonable system keeps itself attractive to new industry and the new jobs it can bring with it.

7. The mechanics of the proposed approach are such that after a short time information would be available that would make it possible for fuel users to predict, within reasonable limits, the frequency and duration of future alerts and so be able to better prepare for them.

8. The proposed approach avoids the necessity for developing average annual air quality standards which, to date, not a single official committee of experts has been able to agree upon.

9. The proposed guidelines for air quality have the advantage that they are preventive in nature so that unhealthy episodes do not occur. Oher standards which are applied "after the fact," can only show that at some time in the past conditions in excess of an established standard did exist.

10. The very nature of the proposed approach is such that the individual operator of an air polluting emitter would be encouraged by virtue of the inconvenience and expense of periodic alerts to make more permanent improvements in his operations.

We believe that our recommended guidelines, which are intended for local consideration and adoption, will facilitate voluntary community solutions of abatement proceedings brought under the Clean Air Act. A practical result should be more rapid progress toward achieving the objectives of the Clean Air Act, while at the same time protecting the consumer against unnecessary economic penalty.

The petroleum industry stands ready to assist Government agencies at all levels to achieve workable procedures in implementing the control system it proposes. Furthermore, we are prepared to make such future efforts as may be necessary to assure that these recommendations are continually updated to take into account the latest technological advances.

On the part of the physicians and the Coordinating Committee on Air and Water Conservation of the American Petroleum Institute and myself, I want to thank you very much for giving us the opportunity to present our proposal. We are ready and anxious at any time to work with you or others toward further development of the ideas we have here put forth and we look forward to doing so.

Very truly yours,

G. H. COLLINGS, Jr., M.D.,
Chairman, Central Committee on Medicine and Health.

[Attachment A]

PROPOSED CONTROL SYSTEM

Control procedures are based on forecasting of impending air pollution episodes in advance of their occurrence and taking action to reduce emission of pollutants until the danger is over.

This forecasting process relies on monitoring of air concentrations of particulates and sulfur oxides and on weather data. Details of the forecasting process should be established locally after study of the conditions existing in the local airshed which is to be controlled. Such predictive processes are not particularly difficult, however, and will in most cases be based on undesirable

weather conditions plus upward trends in the particulate level, the sulfur oxide level, or both. Regardless of the specific factors used in the prediction, whenever it is forecast that within 4 hours, a period of 8 hours or more may be expected during which the sulfur oxide concentrations are expected to exceed 0.3 part per million accompanied by particulate levels exceeding 4 Coh units, an alert is to be sounded and previously planned action put into effect.

Determinations of particulate level for the above calculations should be based on an arithmetic mean of readings from all stations in the monitoring grid which readings should be made utilizing the method described by ASTM–D–1704.

Determinations of sulfur oxide levels should be based on an average of all reporting stations utilizing the test method described by ASTM–D–1355, method A.

The monitoring equipment is to be located to give a grid network of stations located a maximum of 5 miles between stations, and the sampling point of each station is to be between 30 and 40 feet above ground level.

[Attachment B]

HEALTH CONSIDERATIONS

Knowledge of the toxic effects of sulfur oxides is based upon human experience and animal studies. The highlights of this information are presented first with respect to sulfur dioxide alone and second with respect to sulfur dioxide accompanied by particulate materials:

Sulfur dioxide alone

10,000 parts per million SO_2	Irritant to moist areas of the skin in a few minutes.	Frank A. Patty, Industrial Hygiene and Toxicology, John Wiley & Sons, 1963.
1,350 parts per million SO_2	Median lethal concentration for mice in 10 minutes.	Ibid.
610 parts per million SO_2	Median lethal concentration for mice in 1 hour.	Do.
400 to 500 parts per million SO_2.	Considered immediately dangerous to life in humans.	Do.
340 parts per million SO_2	Median lethal concentration for mice for a 6-hour exposure period.	Do.
200 to 500 parts per million SO_2.	Cannot be tolerated by humans for long and would probably lead to severe illness and death if continued.	Greenwald, I., AMA Archives of Ind. Hyg. and Occ. Med. 10:6, December 1954.
130 parts per million SO_2	Median lethal concentration for mice for a 24-hour exposure period.	Idem. Patty.
65 to 100 parts per million SO_2.	In guinea pigs and mice causes acute dilation of the stomach with perforations appearing in about 4 days.	Weedon, F. R. and others, Boyce Thomson Institute, 10: 281: 1939.
50 to 100 parts per million SO_2.	Considered the maximum permissible safe concentration for human exposure for ½ hour to 1 hour.	Idem. Patty.
30 to 100 parts per million SO_2.	Human exposures for over 2 years at this level associated with increased incidence of nasopharyngitis, alteration in sense of smell and taste, increased urinary acidity, and increased fatigue. There was no increase in number of colds but those that did occur lasted longer.	Kehoe, R. A. and others, J. Ind. Hyg. 14: 159: 1932.
33 parts per million SO_2, or less.	Exposures at these levels to guinea pigs and mice produced no effect.	Idem. Weedon, F. R.
6 to 30 parts per million SO_2	Produced acute irritation to the upper respiratory tract in white-collar workers. However, industry's experience has shown, curiously enough, that men working in these and higher concentrations develop tolerance for these levels and find it not disagreeable.	Idem. Greenwald.
1.34 to 80 parts per million SO_2.	The lower ranges of these levels produced no demonstrable effects on human subjects. The higher levels caused respiratory resistance increases. Such increases occurred in the first 10 minutes with little additional change from longer exposures.	Sim, V. M. and Pattle, R. E., JAMA 165: No. 15: 1908: 1957.
20 parts per million SO_2	20 years of exposure by industrial workers to concentrations as high as 20 parts per million of SO_2 showed no adverse effects on health.	Moranda, Med. Larovo, 47: 557: 1956.
5 to 10 parts per million SO_2	No consistent changes in respiration and pulse rate. (Compare with Amdur's work.)	Lawther, P. J., Lancet 2: 745: 1955.

Sulfur dioxide alone—Continued

5 parts per million SO_2	The current tolerance level set for industrial exposure in the United States is 5 parts per million of SO_2. There is no reason to believe it should be lowered since it was based on extensive study and research, and no effect on health or effect on morbidity or mortality has been noted in thousands of people working under this exposure level. It should be pointed out that this figure relates to exposures of 8 hours a day, 5 days a week, year in and year out.	Amer. Conf. of Govt. Ind. Hyg. Apr. 25, 1964.
5 parts per million SO_2	Even under the worst conditions of inversion, pollution, smog, etc., ambient atmosphere in this country does not reach anywhere near this level.	Air Pollution Division, PHS. Annual Reports all years to date.
1 to 8 parts per million SO_2	Human subjects responded by changes in respiration and pulse rate. These results could not be confirmed by Lawther or McIlroy et al.	Amdur, M. O. et al., Lancet 2:758:1953.
1 to 8 parts per million SO_2	Could not reproduce results of Amdur (respiration and pulse rate effects) at this level in normal people.	McIlroy, M. B. et al., Clin. Sci. 13:127:1954.
1.1 parts per million SO_2	Level below which there was no effect on the lung resistance of humans.	Frank, N. D. and Ambur, M.O., Public Health reports, 75: 1173, December 1960.

Sulfur oxides accompanied by particulate materials

1. Addition of smoke to SO_2 increased its toxicity	Pattle et al., 1956 (quoted by Sim, V. M., and Pattle, R. E., JAMA, Dec. 14, 1957, p. 1908).
2. With SO_2 concentrations in the range of 25 to 100 parts per million the addition of particulates increased the toxicity 3 to 4 times, but with a level of SO_2 around 2 parts per million, the addition of particulates increases the toxicity 30 to 40 times.	Amdur, M. O., Amer. Ind. Hyg. Assoc. Quarterly 18 : 149 : 1957.
3. In "hypersensitive" animals (showing more than normal airway resistance), irritant gases (including SO_2) plus particulates produced greater increase in airway resistance than SO_2 alone.	Amdur, M. O., Ind. Hyg. J. 25 : No. : 564 : 1964.
4. 0.4 parts per million of SO_2 plus 0.2 mgm/M^3 of soot produced symptoms in asthmatics.	Lawther, P. J. Proc. Roy. Soc. Med. 51 : 626 :1958.
5. A review of data from the various episodes of air pollution which have been shown to be associated with significant adverse health effects shows that in every case where data is available, the particulate content of the air reached elevated levels.	
6. In the Donora, Pa., episode an estimate was made of the highest concentrations. Actual measurements were made 1 day after the episode began to lift. The estimates were that the worst levels were 2 parts per million of SO_2 with 2.5 mgm/M^3 of particulates.	Hemeon, W. C. L., AMA Arch Ind. Health 11 : 397 : 1955.
7. In the 1952 London disaster the average level of SO_2 for 3 days was 0.73 parts per million, plus large amounts of fog and particulates. The highest momentary level measured was 1.34 parts per million SO_2 with 3.34 mgm/M^3 or particulates. (Note: In a later London episode the SO_2 levels were higher than in 1952, but the particulates were lower. This combination produced far fewer deaths.)	Drinker, Phillip, the Harben Lectures, 1956 and J. Inst. Fuel 28 : 175 : 1955.
8. 1.4 parts per million SO_2 is the highest level recorded in New York City during a 5-year period between 1959 and 1963.	New York City Department of Air Pollution Control annual report. 1963.
9. 0.86 parts per million SO_2 was the top level (1 minute) reading in New York City in the November 1953 inversion.	New York City Publication, Department of Air Pollution Control, annual report, 1964.

OREGON STATE BOARD OF HEALTH,
Portland, Oreg., June 4, 1965.

Hon. OREN HARRIS,
Chairman, House Subcommittee on Public Health and Welfare,
Washington, D.C.

DEAR SIR: It is my understanding that your subcommittee, on June 10, 1965, will hold a hearing on S. 306 as amended. It is respectfully requested that the following statements pertaining to solid wastes disposal be included in the record

of that hearing. The Oregon State Board of Health is in favor of such legislation as an instrument of providing technical guidance for the State in this field.

A review of that portion of S. 306 (Rept. No. 192), Calendar No. 178, pertaining to solid wastes has been made. It is suggested that on page 25, lines 16 and 17 be made to read "to State or interstate agencies as designated by the Governor or Governors of the States affected." This would allow flexibility of the law and avoid duplication of survey data and development of plans, by allowing the Governor to place the responsibility in the agency which has jurisdiction for solid wastes. Cooperation between agencies could thusly be enhanced.

The recent population growth and the trend toward greater concentration of people in metropolitan centers have added new urgency to the need for accessible, properly designed and operated refuse disposal facilities. The sanitary landfill method of refuse disposal in Oregon has been the method of choice to eliminate the common practice of open disposal of refuse, with abundant air pollution and rodent and insect problems associated with such open dumps. Properly operated sanitary landfills can be utilized in close proximity to population centers without creating a vector or air pollution problem. However, this type of operation, in many situations, presents what is believed to be a serious threat to the quality of our valuable ground water resources. In many of the populated valleys of Oregon, the available sites proposed for sanitary landfills are in areas underlain at shallow depth by ground water reservoirs that serve as important sources of water for domestic stock, irrigation, municipal, and industrial uses. The use of such sites would result in the sanitary landfills extending below the water table and the decomposition of the refuse under saturated conditions. The questions of, "How serious is the ground water pollution potential of such operations?" and "What are the geologic and hydrologic factors that should be considered or determined in the site selection for a sanitary landfill?" will confront us more and more as our population grows and the volume of our refuse increases.

The importance of the ground water resources as agricultural, industrial, and potable sources of water has made it imperative that increased effort be made to protect and maintain them in their natural state as an invaluable commodity. This becomes more important each year with the expanding population and overall scarcity of our ground water resources.

In the development of sanitary landfills in various counties, especially those areas where a considerable amount of rainfall and topographical conditions subject landfills to either continued contact with the ground water or intermittent contact in the rainy season, few recommendations can be made until more knowledge of the possible pollution occurring to the ground water from the introduction of refuse into it is gained. The reclamation of lands such as abandoned gravel pits, quarries, and other industrial lands which have been exhausted for their original intent cannot be fully utilized until more exacting information is found on the pollution of the ground water by various types of organic and inorganic materials.

Improved collection and storage would add considerably to a cleaner environment through the elemination of vectors of public health importance. While the ultimate disposal is probably the most important phase, the collection and storage of solid wastes has led to a considerable problem which can be alleviated only through proper research and technical guidance.

Senate bill 306 would provide a needed emphasis for research and technical guidance necessary to fulfill the void presently existing in solid wastes research.

Very truly yours,

RICHARD H. WILCOX, M.D., *State Health Officer.*

METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS,
Washington, D.C., June 8, 1965.

Hon. OREN HARRIS,
Chairman, Subcommittee on Public Health and Welfare, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. HARRIS: The Metropolitan Washington Council of Governments wishes to voice its general support for new Federal legislation in the field of solid waste disposal. One of the major goals recently adopted by COG for the National Capital area seeks "to secure adequate sites and methods for the disposal of solid wastes such as rubbish, garbage, and other noncombustible refuse."

Metropolitan Washington is faced by a growing crisis in disposing of the solid waste it produces. In the District of Columbia, and at least two other jurisdictions, sites have already been exhausted or are near depletion. This year COG is conducting a study, in cooperation with the Northern Virginia and the Maryland-National Capital Park and Planning Commissions, to identify sources and volumes of solid wastes, to determine the most efficient means of collection and disposal, and to recommend future sites for the location of sanitary landfills, incinerators, and other disposal facilities.

We generally favor provision for solid wastes assistance as included under title II of H.R. 306, but feel some revision is necessary in section 206 of this title. It is felt that Federal grants should be available to a broader group of agencies beyond those charged with the air pollution control function. Our own case is an example of an interjurisdictional council of governments having interest in solid waste problems, but no air pollution control authority. Moreover, even though our agency performs varied activities in relation to air pollution including the operation of a year round areawide air monitoring network, we would still not be eligible for a grant under the restrictive language of section 206. There are no doubt similar instances throughout the Nation of health and planning agencies which are working in the field of solid wastes disposal, but which do not have air pollution control authority.

We appreciate this opportunity to express our thoughts on this very important legislation and know that you will give careful consideration to our comments.

Sincerely yours,

SAMUEL HUMES, *Executive Secretary.*

CITY OF SEATTLE DEPARTMENT OF ENGINEERING,
Seattle, Wash., June 4, 1965.

HON. OREN HARRIS,
Chairman, House Subcommittee on Public Health and Welfare,
House Office Building, Washington, D.C.

DEAR SIR: Disposal of solid wastes generated within the city of Seattle is now one of Seattle's major problems. Over 500,000 tons of solid waste material must be disposed of by the city each year. For the past 50 years, we have been disposing of this material at landfill sites within the city. This is no longer possible as these sites will be completed this year.

We now, like many other rapidly developing urban areas throughout the United States, have to look to some other method to dispose of this never-ending stream of solid waste.

For the past 10 years, our engineers have been studying other disposal methods such as incineration, composting, etc., which are used by many cities throughout the United States and Europe. We have found that very little progress has been made in developing nuisance-free, practical, and economical disposal methods as alternates to the no longer available landfill method.

Air pollution, stream pollution, and rat infestation, with resultant menace to the public health of the community, are immediate results of improper disposal methods.

Conservation of our country's material resources can be achieved through recovery of waste heat, salvage of metal, etc., from solid waste material, as well as production of a soil building type of compost needed by agricultural areas of our country.

Basic research and demonstration projects are badly needed to make information available to local communities, fitted to the need of the local area, on the most economical and healthful method of solid waste disposal.

To accomplish this, we believe it is essential that this research and study on disposal methods be conducted on a national scale. Each individual community of a different size, financial resources, and available technical personnel, cannot provide the type of study and research needed in this field.

We therefore strongly urge that your honorable body pass the Solid Waste Disposal Act of 1965 in order to provide the badly needed technological research to assist local communities in adopting practical, economical, and healthful methods for disposing of their solid wastes.

Yours very truly,

ROY W. MORSE, *City Engineer.*

OFFICE OF THE MAYOR,
Milwaukee, June 10, 1965.

Hon. OREN HARRIS,
Chairman, House Committee on Interstate and Foreign Commerce,
Washington, D.C.

DEAR CONGRESSMAN HARRIS: It is our understanding that public hearings will be held at 10 a.m., Thursday, June 10, by the Subcommittee on Public Health and Welfare of the House Committee on Interstate and Foreign Commerce with regard to the subject legislation.

We should like to inform you that the city of Milwaukee supports the enactment of this legislation, especially as it relates to the solid waste disposal problem. This is currently a very serious municipal problem in Milwaukee and we are unable, with our limited resources, to fully explore the possible solutions.

We would, therefore, feel that Federal funds to support research in this field would be extremely beneficial. It would seem to be entirely reasonable that this be done since precedents have already been set for this in that Federal aids have been provided in the general areas of liquid waste disposal and air pollution control.

Very truly yours,

HENRY W. MAIER, *Mayor.*

CONFERENCE OF STATE SANITARY ENGINEERS,
DIVISION OF PUBLIC HEALTH ENGINEERING,
STATE DEPARTMENT OF HEALTH,
New Orleans, La., June 21, 1965

Hon. OREN HARRIS,
Chairman, Subcommittee on Health and Welfare, House Committee on Interstate and Foreign Commerce, Washington, D.C.

DEAR MR. HARRIS: The Conference of State Sanitary Engineers is very much interested in the current legislation being considered relative to establishment of a Federal program in solid wastes. We strongly endorse legislation which would accomplish the objectives of a research, development, technical assistance, and financial aid program in this field.

During the past week the conference adopted a resolution on this subect, setting forth our position. Enclosed is a copy of this resolution for the consideration of your committee in connection with the proposed Federal legislation.

Sincerely yours,

JOHN E. TRYGG, *Secretary-Treasurer.*

RESOLUTION NO. 1—SOLID WASTE DISPOSAL LEGISLATION

Whereas the Conference of State Sanitary Engineers recognizes the increasing problems encountered by U.S. communities in providing satisfactory refuse storage, collection, transportation, processing, and disposal systems; and

Whereas the broad public considerations involved in the management, administrative, and technical aspects of the problem warrant greatly expanded research, technical assistance, field studies, demonstrations, and training at the Federal level and the development of adequate State programs; and

Whereas S. 306 (containing title II, the Solid Waste Disposal Act) was passed unanimously by the Senate of the 89th Congress on May 18, 1965; and

Whereas the position of the executive board of the Conference of State Sanitary Engineers relative to solid waste disposal has been made known to the House Committee on Interstate and Foreign Commerce on June 11, 1965; and

Whereas there are proposed for enactment in the 89th Congress bills (H.R. 890 and the following identical bills: H.R. 4798, H.R. 4854, H.R. 4878, H.R. 4940, H.R. 5182, H.R. 5373, H.R. 5560, H.R. 5568, and H.R. 8248):

1. To initiate and accelerate a national research program for improved and economic methods of solid waste disposal;

2. To provide technical assistance to State, metropolitan, and local governments in the planning, development, and conduct of improved solid waste disposal programs;

3. To provide financial assistance on a matching basis to assist in the establishment of demonstration projects for improved solid waste disposal program; and

4. To provide for the training of professional personnel: Therefore be it *Resolved*, That the Conference of State Sanitary Engineers endorses the principles set forth in the President's message on natural beauty (H. Doc. 78) regarding the need for solid waste legislation; and be it further

Resolved, That the Conference of State Sanitary Engineers instructs its executive committee and urges its individual members to take every possible action to bring about passage this year of Federal legislation which will realistically finance and implement a nationwide program of research, field studies, demonstrations, and training in the field of solid wastes management.

WASHINGTON STATE ASSOCIATION OF SANITARIANS,
Seattle, Wash., June 9, 1965.

Hon. OREN HARRIS,
Chairman, House Subcommittee on Public Health and Welfare,
House Office Building, Washington, D.C.

DEAR CONGRESSMAN HARRIS: For years most municipalities in the State of Washington have been disposing of their solid wastes at landfill sites, usually on the edge of town or in a remote rural location. With the growth of population in the Pacific Northwest, many cities and metropolitan areas have already found that some other method must be developed to dispose of this ever-increasing stream of solid waste.

Sanitarians in local health departments throughout the State have been studying other disposal methods such as incineration, composting, etc., but thus far have not found a nuisance-free, practical, yet economical way, to dispose of solid wastes when landfill sites are exhausted.

Water and air pollution as well as the menace of flies, mosquities, cockroaches, and rodents are immediate results of improper disposal methods which are of great concern to public health workers, to say nothing of the unsightliness of the mounds of old auto bodies and discarded household appliances.

Basic research and demonstration projects in the field of solid waste disposal are badly needed to make available to local communities information on which they can act. To properly accomplish this and to disseminate the information to all areas, we feel that such an undertaking should rightfully be conducted on a national scale. It is impossible for most communities to undertake such research with their limited financial ability and lack of competent technical personnel. The Solid Waste Disposal Act of 1965 appears to our organization to be the best answer to the need for research and demonstration projects in this field.

The Washington State Association of Sanitarians, therefore, strongly urges that your honorable committee recommend passage of H.R. 890. We further respectfully request that this statement be made a part of these hearings and placed on the record.

Sincerely,

FRANKLIN A. CALICO, R.S.,
President-Elect.

THE AMERICAN PUBLIC HEALTH ASSOCIATION, INC.,
New York, N.Y., June 4, 1965.

Hon. OREN HARRIS,
Chairman, House Committee on Interstate and Foreign Commerce,
Washington, D.C.

DEAR MR. CHAIRMAN: I am pleased to forward to you the views of the American Public Health Association relative to H.R. 7429, a bill to amend the Clean Air Act to provide for improved control of air pollution emanating from Federal installations and facilities and from automotive vehicles on which bill your committee is conducting hearings on June 10, 1965. The interest of the APHA in this area of health so vital to the populaiton of the United States has been evidenced over the past years in appearances before yours and other committees of the Congress and in statements submitted in behalf of the APHA. We are persuaded that (a) thees dangers have been dealt with realistically in the past by the actions of your committee, (b) danger to the health of the American public from the hazards of air pollution is serious now and in danger of increasing, and (c) continued and increased activities and actfons authorized after due considerations by your committee are needed. Herein follow the comments

of the American Public Health Association relative to the provisions of H.R. 7429, which you have introduced into the House of Representatives.

The first portion of the bill would require that the Federal establishment purchase only those automotive vehicles which are manufactured or equipped to prevent or reduce the discharge of pollutants from their exhausts in accordance with standards to be established by the Secretary of the Department of Health, Education, and Welfare. We believe, first of all, that it is in keeping with the highest principles that the Federal establishment conduct itself in a role of leadership in innovations and endeavors which will improve the health of this Nation. We are convinced, too, that there are presently available control devices sufficiently sophisticated and effective to reduce hazardous pollution via emissions from gasoline and diesel-powered vehicles and that enactment of this portion of H.R. 7429 is waranted. May I point out that the ultimate in control devices has not been attained but most certainly the accomplishments of our technology warrant a beginning in this area. We should put into effect those mechanism which are presently available in order that the pollution of our air can be decreased within the boundaries of the possible known at present.

We are in complete accord with the second part of the proposal contained in H.R. 7429 which relates to the reduction and elimination of air pollution from Federal buildings, installations, or other properties which are under the control of the Federal establishment. Surely performance of the Federal Government should be equal to if not superior to that required of non-Federal agencies which have been referred to in legislation previously enacted by the Congress. We are in complete accord with your proposal that appropriations be made directly to the offending or potentially offending department for equipment necessary to control air pollution. We support too the proposal that the Secretary of HEW provide training of personnel as to the proper maintenance and operation of devices which will prevent or control air pollution. We agree that the Secretary or his representative should be authorized to investigate or inspect the air pollution control practices of federally controlled establishments.

To reiterate, we believe that the excellence of performance should be no less for the Federal establishments than it is for the State, local, private, or other establishments as prescribed by Federal law. We are delighted to add our voice in support of the passage of H.R. 7429.

The American Public Health Association is encouraged by your committee's consideration of proposals to direct Federal attention to the increasingly serious problems attendant to collection, storage, and disposal of solid wastes contained in H.R. 890, in bills introduced by members of the House Committee on Interstate and Foreign Commerce, and in S. 306 which has been approved by the Senate. Although open burning of solid wastes contributes substantially to air pollution, and the American Public Health Association has long urged banning this practice, the problems of collection, storage, and disposal of solid wastes go well beyond the contribution to air pollution and should be treated as a separate problem and by measures consistent with its magnitude. We believe that remedial efforts, long overdue, should encompass (1) an enlarged and accelerated research program for improved and economical methods of storing, collecting, processing, and disposing of solid wastes; (2) technical assistance to State, metropolitan, and local governments in planning, development, and conduct of improved solid waste disposal programs; (3) financial assistance to aid in the establishment of demonstration projects for improved solid waste disposal programs; and (4) training of professional personnel in methods and procedures of improved solid waste disposal programs.

The growing mountains of discarded papers and cartons and cans and tires and bottles and the multitude of sundry additional items too numerous to mention pose a serious and expensive problem. The logistics of waste collection are made increasingly difficult by virtue of our burgeoning population. Disposal problems, never an easy or inexpensive task because incineration reduces the volume but results in a residue which must be disposed of and land for sanitary fills is increasingly difficult to find, will become even more acute unless improved, more efficient methods are developed through research.

We believe a most worthwhile contribution can be made by the Federal Government to the solution of this problem and urge enactment of legislation consistent with the four-point program outlined above.

The American Public Health Association appreciates this opportunity to present its considered judgment on this legislation.

Sincerely yours,

BERWYN F. MATTISON, M.D., *Executive Director.*

ARIZONA STATE DEPARTMENT OF HEALTH,
Phoenix, Ariz., May 28, 1965.

Hon. OREN HARRIS,
Chairman, House Subcommittee on Public Health and Welfare,
Washington, D.C.

DEAR MR. HARRIS: It has come to our attention that you are holding hearings June 10, in regard to disposal of solid wastes, as well as burning of wastes and the effects on air pollution.

Due to other commitments it will not be possible for me to attend the hearings in person, but we should appreciate it very much if you will let us register our support for the type of legislation which Congressman Roosevelt introduced as H.R. 890.

The State of Arizona, experiencing a tremendous growth in population, is confronted with ever-increasing problems of proper disposal of its solid wastes and the potential health hazards which result from improper disposal of community wastes, and the despoiling of roadside scenic beauty by dumping of refuse, trash, and garbage. We are in full accord with the theme of the President's recently proposed measures to beautify the country. Smoldering or burning dumps are eyesores in a beauteous State like ours.

What is needed is the kind of legislation which will provide technical aid, research, demonstrations, and assistance to solve the problems and prevent their recurrence. In our opinion H.R. 890 comes very close to providing what we feel would be desirable.

Sincerely,

WILLIAM J. MOORE, M.D., *Commissioner.*

AMERICAN PUBLIC WORKS ASSOCIATION,
Chicago, Ill., June 2, 1965.

Hon. OREN HARRIS,
Chairman, Subcommittee on Public Health and Welfare, Committee on Interstate and Foreign Committee, House of Representatives, Washington, D.C.

DEAR MR. HARRIS: I understand that before your subcommittee at 10 a.m., June 10, 1965, there is to be a public hearing on H.R. 7429 (Harris) and S. 306, cited as the "Solid Waste Disposal Act."

The American Public Works Association has for many years actively promoted research in the field of solid waste disposal, and at its annual meeting in 1960 and again in 1963 resolutions were adopted urging the Congress to set up a broad program of research in the field of solid waste collection and disposal.

Every urban area in this country faces the problem of disposing of its share of the half billion pounds of solid waste that must be disposed of each day.

Two principal means of disposal are practiced:

The first of these is sanitary landfill. Significant strides in improving this method of disposal have been made in the past few years, but all officials recognize that sooner or later satisfactory landfill sites will become unavailable. When that day arrives, new and different methods of disposal become mandatory.

Many cities, particularly the larger ones, have already turned to incineration as the only presently satisfactory alternative to sanitary landfill. Incineration serves to reduce, though not entirely dispose of, the solid wastes.

Newer and better means of disposal are needed. These can be discovered only through a broad program of research.

This association strongly supports the purpose and intent of H.R. 7429 and S. 306 and similar bills. Early adoption of one or more of these bills will be a major step forward in achieving cleaner air through better solid waste disposal methods.

Sincerely,

ROY W. MORSE, *President.*

NEVADA STATE DEPARTMENT OF HEALTH,
Reno, Nev., June 3, 1965.

Hon. OREN HARRIS,
Chairman, House Subcommittee on Public Health and Welfare,
Washington, D.C.

DEAR CONGRESSMAN HARRIS: It is my understanding that there will be a hearing on H.R. 890 and the nine other identical bills pertaining to solid waste disposal. This office has also received a copy of S. 306 pertaining to the same subject but related to the Clean Air Act.

Solid waste disposal is very much a Nevada neglected problem. There is no true program in the State and when a community has trouble, everyone rallies around, tries to solve the problem in the same manner as putting out a fire. Almost all of our communities would benefit by more attention to the programs as outlined in these various bills.

The protection of Lake Tahoe requires the removal of solid wastes from this basin and hauling this garbage 50 miles. This is unsatisfactory and the planning boards of the five counties adjoining the lake are in a quandary as to disposal for these wastes.

In a recent review with the Western Pacific Railroad Co., I was shocked to find that they had made studies indicating the hauling of solid wastes from the coast cities back into this area for disposal as a means of supplementing their income.

This is a serious problem that needs attention, and I would hope that your committee can act favorably on a bill similar to S. 306 or H.R. 890.

Very truly yours,

W. W. WHITE,
Chief, Bureau of Environmental Health.

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY,
Los Angeles, Calif., June 2, 1965.

Hon. OREN HARRIS,
Chairman, House Subcommittee on Public Health and Welfare,
Washington, D.C.

DEAR CONGRESSMAN HARRIS: This letter is written to your subcommittee in support of H.R. 890 (Solid Waste Disposal Act) and identical bills scheduled for hearings, Thursday, June 10, 1965, in Washington, D.C.

Each day approximately 20,000 tons of refuse is produced in Los Angeles County alone. Nationally, an estimated 150 million tons must be handled and innocuously disposed of each year. This amount has doubled since World War II; predictions indicate that it could double again in the next 20 years. While progress is being made in many local areas on handling and disposing of refuse, little or nothing is being done on a national level or by the Federal Government. Much of the work that needs to be done lies in the field of research and development. Much of the work will require skilled technicians not generally available on a local basis. Much of the work will not be productive and will be lost; however, if sufficient effort is financed and put forth much can be saved by development of new and better techniques for collecting, transporting, and the ultimate disposal of our solid wastes. This research and development work is believed can best be encouraged, sponsored, and financed by the Federal Government. Ultimate implementation of the project can be carried out by the local authorities.

On August 12, 1964, the subject of Federal sponsorship of research, technical and financial assistance with regard to the disposal of solid wastes as represented in H.R. 10804 and H.R. 11236 was discussed with the members of the boards of directors of the sanitation districts in Los Angeles County. After consideration of the matter the board of directors of County Sanitation District No. 2, acting upon the behalf of all the county sanitation districts of Los Angeles County, representing some 70 cities with a population in excess of 3 million, adopted a resolution to endorse, in principle, H.R. 10804 and H.R. 11236. Copies of this resolution were forwarded to the Honorable Kenneth A. Roberts, chairman of the House Subcommittee on Public Health and Safety, Washington, D.C., on August 18, 1964.

Since the Solid Waste Disposal Act was not enacted into law by the 88th Congress but was subsequently amended and reintroduced in the 89th Congress by nine Congressmen—Roosevelt, Roybal, Kluczynski, Hawkins, Celler, Van Deerlin, Corman, Brown, and Dingell, favorable action by the subcommittee is again recommended.

Yours very truly,

JOHN D. PARKHURST,
Chief Engineer and General Manager.

RESOLUTION SUPPORTING H.R. 10804 AND H.R. 11236

Upon motion of Director Bond, seconded by Director Murray and unanimously carried, the following resolution was adopted:

"*Be it resolved*, That the Board of Directors of County Sanitation District No. 2 of Los Angeles County upon behalf of all the county sanitation districts of Los Angeles County, parties to the joint administration agreement, endorse, in principle, H.R. 10804 and H.R. 11236 to provide research, technical, and financial assistance with respect to the disposal of solid waste; be it further

"*Resolved*, That the secretary of the district be directed to request the chairman of the House Committee on Public Health and Safety on behalf of the district to schedule public hearings in Los Angeles County on said bills and that testimony by the districts' staff at said committee hearings be invited and the secretary of this board of directors is instructed to notify the chairman of the House Committee on Public Health and Safety of the adoption of this resolution."

STATE OF CALIFORNIA,
County of Los Angeles, ss:

I, J. R. Foster, secretary of the board of directors of County Sanitation District No. 2 of Los Angeles County, do hereby certify that the foregoing is a true and correct copy of excerpts of the minutes of the regular meeting of the board of directors of said district held August 12, 1964.

[SEAL] J. R. FOSTER, *Secretary.*

COUNTY OF LOS ANGELES,
DEPARTMENT OF COUNTY ENGINEER,
Los Angeles, Calif., June 4, 1965.

Hon. OREN HARRIS,
Chairman, House Subcommittee on Public Health and Welfare,
Washington, D.C.

DEAR MR. HARRIS: The Los Angeles County Board of Supervisors, on July 28, 1964, passed a resolution approving the current Federal Solid Waste Disposal Acts and authorized the county engineer to testify at hearings which might be held in the Los Angeles area. This letter is in response to your recent notice of a hearing to be held in Washington, D.C., on H.R. 890, and other identical bills.

It is requested that this letter be made a part of the proceedings of your committee on June 10, 1965, and placed in the record. I will appear before your committee to further explain the importance of this legislation if desirable.

With an increasing population and consequent absorption of marginal lands for commercial, industrial, and residential uses, it is now very difficult, if not impossible, to acquire sanitary landfill sites close to the metropolitan areas where the great majority of wastes originate. We estimate that the population of Los Angeles County will be about 9,500,000 in 1980, with a corresponding solid waste production of over 12 million tons per year.

In 1960, we estimated the cost for collection and disposal of refuse in this county was over $100 million annually; this represents a per capita cost of nearly $17 per year. The costs for transportation and disposal are on the increase, and unless improved economical processes are developed, these costs will become greater.

Our increasing volumes of solid waste must be hauled longer and longer distances. New Methods of disposal could halt this trend. The use of more efficient incinerators may become acceptable even though the cost of this method of disposal will be relatively high. The use of the available types of incinerators has been found to be both expensive and unacceptable under local air pollution control regulations. However, acceptable incineration will still leave us with the disposal of noncombustible wastes.

Since it is becoming more and more difficult to establish refuse landfills convenient to production areas, it seems possible that refuse transfer stations, which have been found to be more practical in highly urbanized areas, might be one solution to this problem. Up to this time this method of disposal is extremely costly. However, well conceived and executed research could furnish some alternatives which are desperately needed. Such research should begin with a study of present disposal procedures; establishment of freight rates of common carriers for refuse; and as a result of these, the needs and feasibility of new methods should become more obvious.

To summarize some of the areas in which research is required are:

(1) The design and placement of sanitary landfills should be further investigated to order to utilize the most economical methods and to achieve the best uses of the sites when they are completed.

(2) Methods of reducing costs of incineration and elimination of their air pollution potential could result in additional application of this method of disposal within metropolitan areas.

(3) More efficient handling and loading methods at transfer stations, together with the development of improved method of transporting the waste should be undertaken including the use of hauling refuse by common carriers to distant disposal sites. Economic procedures for salvage of valuable byproducts at these stations is worthy of study.

(4) Composting of rubbish is becoming more widespread; but additional research is needed to improve this method and to develop uses for the end product.

Adequate research might develop improved methods of creating usable land by filling areas along or adjacent to ocean shores.

The study of grinding solid waste for disposal to the sewer as is presently done with garbage, should be given further consideration. The development of central grinding stations, or even home units, could result from such research.

These are some of the more obvious areas that could be studied with the funds made available by the Solid Waste Disposal Act. I am sure that out of this research would come additional methods and improvement of existing techniques which would save the citizens of this country many times the amount of the funds allocated.

The needs of Los Angeles County are not exclusively ours. Similar problems plague all of the urban, as well as rural areas of this Nation. There is a vital need for research in this field and the need is immediate.

Los Angeles County would be willing to cooperate in any way in research programs to determine ways to reduce waste disposal costs and to improved disposal methods.

Very truly yours,

JOHN A. LAMBIE, *County Engineer.*

AIR POLLUTION CONTROL DISTRICT,
COUNTY OF LOS ANGELES,
Los Angeles, Calif., July 2, 1965.

Hon. OREN HARRIS,
Chairman, Subcommittee on Public Health and Welfare, Interstate and Foreign Commerce Committee, House of Representatives, Washington, D.C.

DEAR SIR: I have read with great interest and care the recent testimony provided to your subcommittee, by Mr. John J. Scott, chairman of the American Petroleum Institute Coordinating Committee on Air and Water Conservation. Because of the many alarming errors contained in that testimony, I am compelled to write you so that the record may be clear.

A misstatement that is frequently made by witnesses for the petroleum industry (when they are offering testimony far from Los Angeles County) is the steps taken here to abate pollution from petroleum refineries and other similar source were foolish and failed to improve air quality. Mr. Scott, told your committee that, in Los Angeles County "refineries were summarily required to install very stringent controls. But after special refinery emissions control devices were installed, the city's smog problem remained as bad as ever * * * the cost in the false start in Los Angeles was high * * * time was wasted while the community waited to see if the devices would work—time that could have been better spent trying to find the real cause of the pollution problem."

This statement is totally false. The truth is, the Los Angeles County Air Pollution Control District was formally created in late 1947. In April of 1948 its first prohibitions on air pollution emissions were enacted, and its control program was placed in force. Among the first targets for control were the emissions of sulfur dioxide arising from the uncontrollel operations of petroleum refineries, and the emissions of particulate material derived from a broad spectrum of industrial activities. Having opposed vigorously the adoption of the State legislation which created the Los Angeles Country Air Pollu-

tion Control District, it is not surprising that the petroleum industry viewed the activities of that district with some concern. The fact however is that, a reduction of 295 tons of sulfur dioxide per day from petroleum refining emissions, and a measure of control over particulate losses from other industrial sources, brought about a marked improvement in visibility conditions in Los Angeles County. For a period of time thereafter, visibility conditions were restored to the levels of before World War II, damage to growing field crops in the vicinity of the petroleum refineries ceased, and noxious refinery odors and unsightly plumes were virtually eliminated.

While this control effort was going forward, the district was pursuing an aggressive research program which led, in 1950, to the discovery by Dr. Arie J. Haagen-Smit that certain kinds of hydrocarbons and oxides of nitrogen react with each other in the atmosphere to form a variety of compounds, and a variety of effects resembling the undesirable smog effects which occur in Los Angeles County. Armed with this research evidence, we proceeded on a program to control hydrocarbon emissions from not only petroleum refineries and industrial sources, but from automobiles as well.

Our initial concern, in period 1951 to 1953, over the uncontrolled emissions of hydrocarbons from motor vehicles is now a matter of historic record and fact. Time was being wasted, not by the air pollution control district, but by those industries responsible for the emission into the Los Angeles atmosphere of hydrocarbons, sulfur oxides, and other problem-causing materials.

While the quality of our atmosphere was declining as a result of pollution emissions from automobiles, petroleum refiners, and other industries, the associations and managerial personnel of these same industries were protesting to legislative bodies that more time should be devoted to research, that alternative control steps should be weighed, that the economic consequences of air pollution control on community life should be considered.

Fortunately, in this State and in this county, those appeals fell on deaf ears. Our control program proceeded, with the result that, today, we are preventing more than 5,000 tons per day of noxious contaminants from entering the atmosphere of Los Angeles County. Without this extensive control, Los Angeles County would be virtually unhabitable on many days. In spite of the stringency of these controls, there has been no slowing of the growth trend in Los Angeles County, southern California, and indeed in the entire State of California. In this area, air pollution control has not killed the industrial goose that laid the golden egg; quite the contrary, air pollution control has made it possible for industry, and the population that sustains it, to live together and share a limited air supply.

The second major error in Mr. Scott's testimony is the inference that the proposed Federal fuel specification represents a goal that is unobtainable. This is false. In 1958, rule 62 was adopted by the Los Angeles County Air Pollution Control District. That rule prohibits the burning of any fuel in this basin containing more than one-half of 1 percent sulfur by weight. Rule 62 is effective during the summer months of the year, when adequate supplies of natural gas are available to fuel the entire community. In January 1964, the board of supervisors adopted rule 62.1 which bans the burning of these high sulfur fuels, during the colder months whenever adequate supplies of natural gas are available. These rules have been applied to a community that contains a population of nearly 7 million, with all of the industries, fossil fuel-fired generating plants, and other similar operations necessary to sustain a community of that size. Certainly, if we can live with a severe prohibition like this, a comparative handful of Federal facilities and installations will certainly have no difficulty in meeting the terms of the proposed Federal fuel restriction.

It is my view, that the adoption of such a fuel specification by the Federal Government will provide the spur so sorely needed to motivate the petroleum industry to stop complaining about fuel restrictions and instead expend its time and money on development of reasonable, effective, and economical means for desulfurizing residual fuel oil. Without such a spur, in the absence of such a motivation, it is a certainty that the petroleum industry will continue to report to governmental bodies that sulfur limit restrictions on fuels are impossible to live with.

The third major error committed by Mr. Scott is his suggestion that abatement of sulfur oxide emissions are not needed on a year-round basis in urban communities in the United States. In contrast to this statement by Mr. Scott, however, it is interesting that the U.S. Public Health Service has recommended to the Federal Power Commission (Transwestern Pipeline Company, et al., docket No. CP 63-204 et al.) that, to protect the public health, no community should permit

average 24-hour sulfur dioxide values to exceed 0.10 parts per million for more than 1 day out of any 90-day period. This standard is being exceeded with increasing frequency throughout the United States. In 1963, New York exceeded the U.S. Public Health Service SO_2 standards on 196 days, while Chicago exceeded the same standard 186 days. This fact was reported to the Federal Power Commission by the Western Oil & Gas Association in their opening brief, dated May 24, 1965, and should be available to Mr. Scott.

This leads us to the fourth error by Mr. Scott. The petroleum industry would have your subcommittee believe that the sole objective of air pollution control should be to prevent the kind of catastrophic air pollution occurrence which has claimed thousands of lives in London, England, Donora, Pa., the Meuse Valley of Belgium, and several hundred lives recently in New York City. This kind of catastrophic recurrence is the acute episode which Mr. Scott's proposed air monitoring program allegedly would avert. His proposal totally ignores the link between long-term air pollution levels and chronic illness. This is a little like suggesting that the death of 60 bus passengers at one point on a highway is bad, but the death of a single pedestrian at each of the 1-mile markers along a 60-mile stretch of the highway is unimportant. The catastrophic air pollution disasters which have occurred throughout the world are dramatic and deserving of attention, but do not diminish the impact of the insidious, long-term exposures upon human health and happiness.

The nondisastrous and chronic pollution occurrences should be today the greatest cause for concern throughout the United States.

The final error by Mr. Scott is his suggestion that the construction of the kind of air monitoring and warning network he contemplates is quite simple and that means are readily at hand for creating such a system. The fact is that Los Angeles County today has the most extensive and complicated air monitoring network ever devised for any community. It is also one of the largest cost items in our budget, one which is more demanding of manpower than any other single activity, and one which despite all this, is inadequate to meet the air monitoring requirements of Mr. Scott's program. The capital costs, alone, of each of our air monitoring stations is in excess of $30,000. The manpower backup necessary to sustain each station in the field for 1 year is 3-man years and our current average payroll expense per employee exceeds $10,000. There are not enough people in the United States with the requisite technical training even to staff the kind of network that Mr. Scott proposes, much less the local financial capability to implement it.

The County of Los Angeles has applauded the farsighted actions taken by the Congress in protecting the national community from the ravages of air pollution. The accomplishments of the Federal establishment have been due, in considerable measure, to the care with which Congress has focused responsibility for air pollution research and control matters on knowledgeable officials. To dilute that responsibility now to such an extent that, no one would be responsible for air pollution control would be to retrogress. The alleged improvement that Mr. Scott has suggested for H.R. 7429 would actually weaken that legislation, and was suggested by Mr. Scott for that very purpose. It is clearly Mr. Scott's intention not to promote air pollution control, but to impede it. The serious consequences that Mr. Scott sees in the Federal program amount to nothing more than inconvenience to the petroleum industry and the usual economic costs which are associated with most worthwhile public programs. In respect to economics, the sole question that is relevant to Congress is whether the benefits to be derived from control of air pollution are worth the cost.

From my own experience in Los Angeles County, I assure you that the benefits of air pollution control are worth every penny.

Very sincerely yours,

S. SMITH GRISWOLD,
Air Pollution Control Officer.

STATE DEPARTMENT OF HEALTH,
Olympia, Wash., June 8, 1965.

Hon. OREN HARRIS,
Chairman of House Subcommittee on Public Health and Welfare,
Washington, D.C.

DEAR CONGRESSMAN HARRIS: It is our understanding that your subcommittee on Public Health and Welfare will be conducting a hearing on June 10th on S. 306 and that this bill contains specific provisions for grants to States to survey

solid waste disposal practices. We also have been advised that your committee has under consideration H.R. 890 and several identical bills which deal with the solid waste problem in a comprehensive fashion.

The purpose of this letter is to indicate our objection to the handling of solid wastes in S. 306 and our concern for early consideration of H.R. 890 or a similar bill.

The solid waste problem and the inability of States generally to handle it with the resources currently at their disposal poses a serious problem for all health agencies. The meager attention which this matter has received from Congress, in spite of the President's message, (H. Doc. 70, has not been encouraging. Perhaps the problem is felt particularly keenly in this State where the natural beauty for which this State is recognized is being threatened by the inadequate disposal of solid wastes from our expanding population. The health problems resulting from the existing situation and those which the future will bring are not subtle, dramatic, unkown or poorly understood and thus lack the appeal of those associated with air pollution or radiation. Because of their familiarity they have inevitably come to be accepted by many as the price to be paid for the expansion of population and industry.

A new attitude and a fresh start are needed if we are to be successful in altering the inevitable cycle in which we are presently entrapped. The assistance of the Federal Government in the exact ways outlined in H.R. 890 will, in our opinion, provide the incentive and the means. The proposal contained in S. 306 (the clean air bill) is not the answer and introduces an administrative concept which will not work in this State.

Your consideration of this letter and your assistance are respectfully requested.

Sincerely,

BERNARD BUCOVE, M.D., *State Director of Health.*

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS,
Washington, D.C., June 10, 1965.

HON. OREN HARRIS,
Chairman, Subcommittee on Public Health and Welfare, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. HARRIS. The National Society of Professional Engineers wishes to record its support for S. 306, the bill now pending before the subcommittee to amend the Clean Air Act of 1963 to require standards for controlling emission of pollutants from gasoline-powered or diesel-powered vehicles, to establish a Federal Air Pollution Control Laboratory, and to authorize grants to air pollution control agencies for support of air pollution control programs.

As set forth in the attached copy of our society's policy on this general subject, we believe that primary responsibility for the regulatory control of air pollution should rest with the local communities and States, but that the Federal Government should provide support and assistance where necessary through legislation and other appropriate action.

We feel that S. 306 would help provide such necessary support and assistance to combat the rapidly growing hazard posed to the public health, safety, and welfare by air pollution.

We respectfully request that this letter and the enclosed policy statement be made a part of the record of the hearing on this bill.

Very truly yours,

PAUL H. ROBBINS, P.E., *Executive Director.*

POLICY NO. 73—AIR POLLUTION

Pollution of the air poses a continuing and serious threat to the public health, safety, and welfare. The primary obligation of professional engineers is to protect the public health, safety, and welfare. It is, therefore, incumbent upon the engineering profession to provide all possible assistance in meeting this problem, based upon sound engineering principles, and in recognition that some of the primary sources of air pollutants are the very equipment, processes, and engineering works which have been developed by engineers.

Primary responsibility for the regulatory control of air pollutants should rest with the local communities and States. To assist the State and local communities

in meeting these problems, the Federal Government may provide significant support through legislation including the following principles:

1. Encourage and assist in the development of cooperative activities among the States.

2. Provide support for research and studies into the causes of air pollution and appropriate methods for solution. Such support should be administered through grants and intramural programs.

3. Make available to State and local communities financial support for State or local studies and action programs to control air pollution.

4. Sponsor conferences, seminars, and other methods to explore new developments in combating air pollution, and disseminate information resulting from such discussions.

5. Authorize a procedure for abatement of air pollution of an interstate character through conferences among various interests and States, recommend corrective action if the State or parties in interest are unable to agree on a proposed course of corrective action and, as a last resort, if cooperative measures fail, secure an abatement order from courts of appropriate jurisdiction after a reasonable period of time has been provided for the parties or States in interest to arrive at a satisfactory solution.

6. The Federal Government should accept responsibility for control of air pollution associated with Federal installations and other direct Federal activities.

7. We also strongly recommend that a National Advisory Board be established including professional engineering representation.

8. There are air pollutants not commonly considered by the public as part of the air pollution problem, such as dusts and sprays, which are an essential part of any consideration of the whole matter of air purity as it affects the health, safety, and welfare of the public.

AMERICAN MEDICAL ASSOCIATION,
Chicago, Ill., June 14, 1965.

Hon. OREN HARRIS,
Chairman, Subcommittee on Public Health and Welfare, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. HARRIS: On behalf of the American Medical Association, I would like to respectfully submit for your consideration our views on S. 306, 89th Congress, which we understand is now under consideration by the Subcommittee on Public Health and Welfare.

We agree with the basic objectives of S. 306 as they relate to the need to regulate pollution from automobiles. The relationship between air pollution and certain health conditions has been established. In view of the expanding seriousness of the problem, we believe that there exists a need to control automotive air pollutants.

Although the technological and economic implications of automobile exhaust control are complex, data from both government and industry indicate that control technology is available. The State of California has approved a variety of automobile exhaust control devices and measures, and an increasing number of devices are being offered for official testing. The industry has announced that, beginning with the 1966 model cars, it will manufacture, for the California market alone, automobiles which meet the standards of that State.

As a result of the research, development, and testing programs conducted in California over the past 10 years, a growing control technology has emerged from which further refinements can be expected.

There is good reason to believe, therefore, that the preventive action indicated and desired under S. 306 is feasible within the time limits of this proposal.

We feel that the exhaust control devices scheduled for California may be equally applicable to other parts of the country even though photochemical smog, to which California standards relate, does not appear to occur to the same degree outside California. The reduction of total exhaust emissions of carbon monoxide and hydrocarbons and other combustible contaminants is desirable in itself, since automobiles probably contribute up to 50 percent of the total pollution emissions to the atmosphere of our major population centers. It is felt, morever, that the standards applied in California represent a desirable means of attaining the goal of air pollution reduction.

While it might be preferable to regulate automotive exhausts only in the States most affected and willing to assume the costs involved, we believe that in this situation such selective control does not appear to provide an effective solution. Automobiles are designed, manufactured, and distributed on a national basis, and they move continually across State lines. Varying requirements of different States and jurisdictions would add to the cost and confusion of control procedures.

Federal legislation of this type should be helpful in the solution of automobile emission problems. If clear goals and procedures are outlined, a high degree of uniform compliance should be obtained.

Under S. 306, the Secretary of the Department of Health, Education, and Welfare would be given the discretionary powers to set standards and implement enforcement action. The usual program phasing and assurances of scientific objectivity which can be found, for example, in the enforcement provisions of the 1963 Clean Air Act with respect to stationary sources, and in the operation of the California Motor Vehicle Pollution Control Board, are not included in this bill. We suggest, therefore, that S. 306 provide for a commission or control board which would conduct open hearings with regard to the setting of standards and the certification of control measures. The commission or board, through technical advisory committees, would evaluate the progress of California and other States in controlling automotive exhausts and the technological, economic, and administrative aspects of the automotive exhaust problem.

Hearings should provide for adequate notice, and mechanisms should be established which would provide for conferences held before any enforcement action is taken. These procedures would, while maintaining the intent of the law, provide a clear opportunity for public and private cooperation and understanding, and for compliance at each stage in the implementation of this program. While we support the objectives and principles of this legislation, we believe that it could be improved in accordance with our above suggestions.

In addition to automotive emissions, the American Medical Association also recognizes that the problems associated with solid waste disposal in the United States are significant and deserving of much greater attention than they have yet received. The production of solid wastes is increasing with the increase in population of this country, and the disposal of solid waste is particularly difficult in the large metropolitan areas where the population is concentrated. Problems potentially associated with the disposal of solid wastes from a public health standpoint include: the prevention of pollution of the atmosphere, prevention of pollution of ground water supplies, and the control of disease vectors. The development and demonstrations of new methods of disposal, as provided for in S. 306, could resolve these problems.

Section 206(d) provides for grants to State and interstate air pollution control agencies for surveys and planning with respect to solid waste disposal. We believe that this section should be amended so that the funds would be made available to the agency designated by the Governor of each State as being responsible for problems associated with solid waste disposal, rather than to State and interstate air pollution control agencies. Other agencies, such as the State health department, could in some States be the appropriate group to receive such funds.

With the adoption of the above suggestions, the American Medical Association welcomes the opportunity to support and endorse the provisions and intents of S. 306.

Thank you for this opportunity of presenting these views. I respectfully request that this statement be made a part of the record of the hearings on S. 306.

Sincerely,

F. J. L. BLASINGAME, M.D., *Executive Vice President.*

CITY OF OAKLAND, CALIF.,
June 7, 1965.

Hon. OREN HARRIS,
Chairman, House Subcommittee on Public Health and Welfare,
Washington, D.C.

DEAR CONGRESSMAN HARRIS: The city of Oakland supports passage of H.R. 890 (Solid Waste Disposal Act) and identical bills.

Oakland is one of several cities bordering the San Francisco Bay where the outlook for future solid waste disposal presents serious problems. A chief problem lies in the present practice of utilizing a fill or dump type operation on

the shores of the bay. Obviously, such methods cannot continue indefinitely without detrimental consequences to the best use of these lands. Another major concern is the ever-increasing amount and kinds of solid waste material. With such increases coupled with anticipated population increases, it becomes essential that modern technological advances be made in this field.

It is requested that your subcommittee on the Solid Waste Disposal Act accept this statement of support as part of the scheduled hearings and that the statement be placed in the record.

Sincerely,

WAYNE E. THOMPSON,
City Manager.

MANUFACTURING CHEMISTS' ASSOCIATION, INC.,
Washington, D.C., July 8, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This letter is being sent to you on behalf of the Manufacturing Chemists' Association (MCA), a nonprofit trade association including 196 U.S. member companies, large and small, which together account for more than 90 percent of the country's productive capacity for chemicals.

Our purpose is to oppose the amendment to the Clean Air Act recommended in item 3 on page 5 of the June 10, 1965, report of the Department of Health, Education, and Welfare to you regarding S. 306 and the seven related House bills under consideration. This amendment would empower the Secretary to call a public conference concerning "potential air pollution" that in his judgment might arise from "new or additional discharges into the atmosphere."

This proposal has serious shortcomings. It would permit the Secretary—with duty implied—to intervene in local situations, without regard to whether interstate pollution is involved. This action could be taken without regard to State or local officials or their established air pollution control agencies, with no requirement even that they be parties to the proceeding.

Such an amendment, in practical effect, would make it hghly advisable to obtain prior Federal approval of each new industrial facility and of each enlargement or modification of existing industrial establishments with regard to air pollution control. Failing to do so, manufacturers would risk the prospect of a publicized conference which could involve disclosing company plans and business secrets to the world at large, including competitors. The heavy burden on both the Federal Government and industry of a system leading to prior approval of the details of air pollution controls is immediately apparent, as is also its deterrent effect on State and local regulatory activity and responsbility.

Accordingly, we believe the proposed amendment is not in line with the policy intent of the Clean Air Act, and would be detrimental to the accelerating program of the States on air pollution control under the act's provisions.

Moreover, it seems clear to us that the Secretary already has ample authority to accomplish the purported objective of the President who, in his message on natural beauty, encouraged the investigation of "potential air pollution problems before pollution happens."

Under section 3(a) of the act, the Secretary has the power and duty to "establish a national research and development program for the prevention of air pollution." As part of that program he is directed to "conduct research, investigations, experiments, * * * surveys, and studies relating to * * * prevention of air pollution." Also, under section 3(c) of the act, the Secretary is directed to publish criteria reflecting knowledge useful in indicating the effects which "may be expected" from air pollution agents.

We have noted the absence of any testimony during the hearings on the proposed amendment by the representatives of HEW or by anyone else, also rejection by the Senate Public Works Committee of an amendment having similar effect.

The chemical industry has worked diligently toward control of air pollution through research and the application of appropriate control technology. Research for better tools to meet future needs is a continuing process. We have supported what we believe to have been constructive improvements in Federal legislation in the past, and expect to be similarly responsive in the future.

We appreciate this opportunity to express our views for your consideration, and request their inclusion in the printed hearings record.

Sincerely,

G. H. DECKER, *President.*

VOLVO, INC.,
Rockleigh, N.J., June 28, 1965.

Re Senate bill 306.

Hon. OREN H. HARRIS,
Chairman, Subcommittee on Public Health and Welfare, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR CHAIRMAN HARRIS: The undersigned is president of Volvo, Inc., the wholly owned U.S. subsdiary of AB Volvo, manufacturer of the Volvo automobile. This statement is being submitted by me on behalf of Volvo, Inc., its distributors, and approximately 425 franchised dealers who have a vital interest in Senate bill 306.

During 1964, there were about 17,400 Volvo automobiles sold at retail in the United States, which sales comprised 3.6 percent of all imported cars sold in the United States and 0.22 percent of total sales of automobiles in the United States.

The committee may know of the pioneering developments made by Volvo in advancing certain phases of automobile safety. All Volvo automobiles are equipped with the three-point safety harness, generally recognized as the safest and most advanced safety harness. Our factory in Gothenburg, Sweden, however, is continually experimenting with ways and means of improving even this far-advanced design. Standard equipment on all Volvo automobiles also includes such safety items as padded dashboards and sun visors, energy-absorbing steering wheels, safety anchor seats, and oversized brakes, to mention but a few. In addition, Volvo makes substantial contributions to automobile safety throughout the world by contributing the results of its research and engineering developments to scientific organizations and engineering societies.

With this reputation for safety in automobiles, our company naturally supports the philosophy and objectives underlying S. 306. We would, however, present three points with respect to the bill which we do not believe have been brought before the committee and which we feel it is incumbent upon the committee to consider.

1. The committee has heard testimony from a number of witnesses who have indicated that the automobile industry will be able to supply exhaust control systems on cars for distribution in California with the 1966 model year and that such systems could be supplied on all new cars if required by S. 306, by the 1968 model year.

Dr. Vernon G. MacKenzie, Assistant Surgeon General, Chief, Division of Air Pollution, Public Health Service, in his testimony before the committee on June 10, 1965, indicated that "all new cars manufactured in the United States by the 1968 model year" could be equipped with emission control systems. By implication, it was noted that only U.S. manufacturers have indicated the 1968 model year cars could be supplied with exhaust control systems. It is recognized, that automobiles equipped with engines of smaller displacement than U.S.-manufactured automobiles have exhaust control problems unique from those presented by larger displacement engines. As yet, no suitable device has been perfected for controlling exhaust emissions from these smaller displacement engines. California has recognized this unique problem and has given those automobile manufacturers with engine displacements of less than 140 cubic inches until December 1, 1967, to comply with the California exhaust control regulations.

As the committee has heard, automobiles manufactured in the United States control exhaust emissions by the injection of air into the exhaust manifold or by finer tuning of the engine. Approximately 10 percent of engine horsepower is lost by utilizing these methods. If either of these systems is installed in automobiles with engine displacements smaller than cars sold in the United States, the 10-percent decerase in horsepower would drastically reduce the efficiency of such smaller cars. Thus, in order to control exhaust emissions on smaller cars other methods must be applied.

Volvo commenced investigating and testing vehicular exhaust control devices in 1962, before the first State legislative action to reduce pollution of air by

motor vehicles was taken in the United States. Since then, Volvo engineers have experimented with a number of ideas utilizing six different exhaust control devices and are at present continually engaged in an effort to arrive at a technologically sound and effective device. It is tentatively estimated by Volvo's engineering and research staff that such a device could reach a stage of perfection in order to comply with the California standards by December 1, 1967.

It would appear that those who testified before the committee recognized that regulations promulgated by the Secretary of Health, Education, and Welfare (HEW) would be applicable only to those automobiles manufactured for the 1968 model year, if the bill were passed. This assumption, however, is not based upon the provisions set forth in the bill.

S. 306 provides in section 204(a)(1) (pp. 3–4) that vehicles manufactured after the effective date of the regulations promulgated under the bill must conform to those regulations. Section 202(b) provides that the Secretary's regulations shall be effective no later than September 1, 1967. Although it appeared that a number of witnesses appearing before your committee assumed that any regulations promulgated by the Secretary shall not be effective prior to September 1, 1967, the bill does not specifically state this.

It is suggested that the S. 306 provide that the Secretary's regulations shall not be effective prior to September 1, 1967, amending section 202(b) as follows:

"(b) Regulations initially prescribed under this section shall be promulgated by the Secretary to become effective no earlier than September 1, 1967."

Alternatively, this result could be achieved by providing in section 204 (a)(1) that the Secretary's regulations be applicable to all automobiles manufactured after the effective date of the Secretary's regulations, or September 1, 1967, whichever is later. Thus, lines 25, 1 and 2 (pp. 3 and 4) of section 204(a)(1) could be amended as follows:

"* * * manufactured (i) after the effective date of regulations under this title which are application to such vehicle or (ii) after September 1, 1967, whichever occurs later."

2. As pointed out above, there is some question whether all smaller displacement automobiles can be equipped with technologically sound exhaust control devices by the 1938 model year. Thus, as S. 306 currently provides, some of the manufacturers of these smaller vehicles could be foreclosed from the domestic market, notwithstanding their attempts, as evidenced by their expenditure of moneys and of research and engineering time, to produce an effective exhaust control device. We would suggest that the committee provide the Secretary of HEW with some administrative flexibility in promulgating his regulations under the bill which he may utilize in the event a company producing automobiles equipped with smaller displacement engines cannot comply with such regulations at September 1, 1967, and requires additional time for such compliance.

Thus, we urge that the Secretary of HEW be empowered to make interim exemptions on an equitable basis. This may be done in a way completely consistent with the public interest, as well as the economic interest of the importers and dealers in these automobiles. I would not presume to tell this committee how to accomplish this purpose, but one method would be to authorize the Secretary of HEW to grant interim exemptions to automobiles manufactured by companies whose sales in the United States for the previous year represents less than 1 percent of total sales of automobiles. The Secretary should have discretion within a 1-percent limitation to exempt automobiles from the general standards where the hardship outweighs the public benefit.

I suggest that this could be accomplished by adding to the Secretary's powers to exempt under section 204(b)(1) the words:

"* * * if new motor vehicles or new motor vehicle engines manufactured and sold by a manufacturer in the United States constitute less than 1 percent of the total retail sales of all new motor vehicles in the previous year."

However, I would not urge this upon the committee without additionally pointing out that I believe the Secretary should not grant any such exemption unless the company requesting the exemption be able to produce evidence, satisfactory to the Secretary, that it is making a bona fide endeavor to comply with the Secretary's regulations through research, testing, and the like.

3. I wish to point out one additional fact to the committee which I do not believe has been thoroughly presented by the witnesses appearing before it, although the point has been raised. The committee has heard evidence that the addition of exhaust controls would increase the price of cars manufactured by one domestic company by $13 to $24. Testimony before the committee has estimated that two other domestic companies will increase their prices from $45

to $60. Other testimony has been presented which would indicate that such increases are nominal. Without commenting on this, I believe the committee should be apprised that if Volvo is able to adopt one of the presently available devices for inclusion in Volvo automobiles manufactured after September 1, 1967, the increased price of the Volvo automobile to the consumer will be considerably in excess of the $60 due to Volvo's low sales volume, when compared to domestic companies. To the general public, hardly "nominal".

In summary, I do not believe it presumptuous of me to point out that the suggestions made in paragraphs 1 and 2 above adhere to the basic philosophy of S. 306 and may assist in providing a solution to the problem of air pollution by motor vehicles confronting your committee. Questions posed by the members of the committee indicate that it is obviously not the committee's intent to present to the manufacturers of the world's automobiles an inflexible, dogmatic position. We at Volvo appreciate the problem of controlling motor vehicle air pollution with which your committee is faced. I believe that the suggestions made here may be of benefit, not only to Volvo and those other manufacturers of smaller motor vehicles who are confronted with our unique exhaust control problems, but to advancing the solution of the entire problem of reducing, and soon eliminating, air pollution by motor vehicles. As pointed out above, Volvo's pioneering contributions to vehicular safety is well known throughout the automotive community. We hope that the committee will give due consideration to the foregoing so that Volvo may continue to serve the U.S. public.

It is respectfully requested that the foregoing be inserted in the record.

Yours very truly,

STIG JANSSON, *President.*

CITY OF BOISE, IDAHO,
July 1, 1965.

Re Senate bill 306, title II, Solid Waste Disposal Act.

Hon. OREN HARRIS,
House of Representatives,
Washington, D.C.

DEAR CONGRESSMAN HARRIS: My attention is called to the above-captioned legislation under consideration.

One of the most important problems to be solved for the benefit of the health and welfare of our communities is the sanitary disposal of the accumulated solid waste, such as garbage, paper, containers, etc.

Sanitary landfill disposal is excellent but, due to our population explosion and the need for urban expansion, it is creating a problem of considerable expense in procuring areas for this operation.

It appears logical that a program of research will develop a more economical method of disposal, and a possible salvage value heretofor not devised.

An operation of this type at present is carried on either by a municipality or contractor without sufficient funds to do the necessary research in this field; therefore, an appropriation to carry on a study of this type is very essential for the health and welfare of each community, whether large or small.

Your leadership in a project and program of this magnitude will be appreciated not only by our present generation but by future generations if an economical and sanitary method of solid waste disposal may be accomplished through research.

Yours truly.

A. J. WAHL,
Commissioner, Department of Public Works.

THE CITY OF NEW YORK,
OFFICE OF THE PRESIDENT OF THE COUNCIL,
New York, N.Y., July 2, 1965.

Re Senate bill S. 306, House hearings—Committee on Interstate and Foreign Commerce.

Hon. OREN HARRIS,
Chairman, Subcommittee on Public Health and Welfare,
House of Representatives, Washington, D.C.

DEAR CONGRESSMAN HARRIS: As a former commissioner of the city of New York's Department of Sanitation and as immediate past president of the American Public Works Association, I am deeply aware of the need for developing a major program of improvements in the field of air pollution control.

It is gratifying, therefore, to note that Congress has, after due study and deliberation, taken cognizance of this problem. Senate bill S. 306 also contains a separate act, title II "Solid Waste Disposal Act" which proposes to provide Federal support for a broad approach including research, training, demonstrations, and planning. The benefits which would accrue to local communities and public officials currently facing the frustrating and ever mounting problems of solid waste disposal are obvious. There is urgent need for improvements in technology and the application of the best available technical competency for the solution of these problems. If every local community were to undertake its own research, there could result a huge waste of public funds because of endless duplication of efforts. It is more logical and efficient to do this at the Federal level where such duplication can be avoided. I am happy, therefore, to support the general principles of the bill.

My only reservation relates to the provisions of section 206 of title II which provides that grants may be made "* * * to State or interstate air pollution control agencies" for surveys of solid waste disposal practices and the development of comprehensive solid waste disposal plans for State and interstate areas.

Solid waste disposal practices affect and may even create, not only air, but also water and land pollution problems. In some local situations it may be more appropriate to place the responsibility for the development of corrective plans and for the administration of attendant Federal funds in agencies having interest and competency in all three fields. Traditionally, public health agencies have had the broad view required for such problems. I would therefore recommend that this section be amended to provide that such grants be made "* * * to State or interstate air pollution control or public health agencies."

Yours truly,

PAUL R. SCREVANE, *President.*

GREATER DETROIT BOARD OF COMMERCE,
Detroit, Mich., July 28, 1965.

Hon. OREN HARRIS,
House Office Building,
Washington, D.C.

DEAR CONGRESSMAN HARRIS: Our directors have asked me to convey to you the views of the Greater Detroit Board of Commerce on S. 306, amending the Federal Clean Air Act, and especially on section 102 thereof concerned with complaints from foreign countries. Although we have opinion on other parts of the bill we will confine our statement to section 102.

Our organization, composed of over 5,500 business leaders of this area, believes that there is no need for section 102. Although there are a number of States on our international border, it seems to us that Michigan and its industry would be most affected by this proposal.

When Congress enacted its Clean Air Act of 1963, it was to stimulate States into air pollution control legislation. Michigan accepted the challenge and passed a law that establishes an air pollution commission and sets regulations for the control of containments released in the air. It is one of the finest and we believe will be one of the most effective in the country. One of the reasons for urging adoption of the law was our belief that it would continue to leave control of this vital activity at State level. We feel that Congress wanted it that way.

In our opinion we believe that it would be a mistake to invite foreign countries to act on local and State air pollution problems, which we believe the Muskie amendment will do.

We know that our Detroit and Michigan officials act promptly and efficiently on any air pollution complaint received from our Canadian neighbors. There is no necessity for additional legislation.

We urge that you and your committee oppose section 102, S. 306.

Sincerely,

WILLIS H. HALL, *President.*

(Whereupon, at 12 noon, the committee adjourned subject to the call of the Chair.)

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