ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 60

[AD-FRL–5150–9]

RIN 2060–AC62

Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Medical Waste Incinerators

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed standards and guidelines, and notice of public hearing.

SUMMARY: Today, EPA is proposing standards and guidelines for new and existing medical waste incinerators (MWI's) that will reduce air pollution from MWI's. Once implemented, these standards and guidelines will protect public health by reducing exposure to air pollution.

This proposal would add subparts Ec and Cc to 40 CFR part 60. Subpart Ec would limit emissions from new and modified MWI's. The proposed standards would implement sections 111(b) and 129 of the Clean Air Act (Act) as amended in 1990, and would require new MWI's to control emissions of air pollutants to levels that reflect the degree of emission reduction based on maximum achievable control technology (MACT). In addition, this notice includes proposed standards for fugitive fly ash/bottom ash emissions, MWI operator training and qualification, siting, and permitting.

Subpart Cc would establish emission guidelines and compliance schedules for use by States in developing State regulations to control emissions from existing MWI's. The proposed emission guidelines implement sections 111(d) and 129 of the Act, and would initiate State action to develop State regulations. These State regulations would control air pollutant emissions from existing MWI's to levels that reflect the degree of emission reduction based on MACT. In addition, this notice includes proposed guidelines for fugitive fly ash/bottom ash emissions, equipment inspections, training and qualification of MWI operators and permitting.

DATES: Comments. Comments must be received on or before April 28, 1995.

Public Hearing. The EPA will hold at least one public hearing in Washington, D.C. in mid- to late-March 1995. Additional hearings may also be held. A Federal Register notice will be published within the next 2 weeks to announce the details of the hearing(s) and to confirm the date(s) and location(s) for the hearing(s).

ADDRESSES: *Comments.* Comments on the proposal should be submitted (in duplicate, if possible) to: The Air and Radiation Docket and Information Center, ATTN: Docket No. A–91–61, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460.

Commenters wishing to submit proprietary information for consideration should clearly distinguish such information from other comments, and clearly label it ''Confidential Business Information.'' Submissions containing such proprietary information should be sent directly to the following address, and not to the public docket, to ensure that proprietary information is not inadvertently placed in the docket: Attention: Mr. Rick Copland, c/o Ms. Melva Toomer, U.S. EPA Confidential Business Manager, 411 W. Chapel Hill Street, Room 944, Durham, North Carolina 27701. Information covered by such a claim of confidentiality will be disclosed by the EPA only to the extent allowed and by the procedures set forth in 40 CFR part 2. If no claim of confidentiality accompanies a submission when it is received by the EPA, the submission may be made available to the public without further notice to the commenter.

Background Information Documents. Two ''Fact Sheets'' are available that succinctly summarize the proposed standards and guidelines. The Fact Sheets are suggested reading for persons requiring an overview of the proposal. The Fact Sheets can be obtained by (1) calling Ms. Julia Latta at (919) 541–5578 or (2) accessing the EPA's Technology Transfer Network (TTN) electronic bulletin board. See SUPPLEMENTARY INFORMATION for instructions on accessing the TTN (electronic bulletin board). The background information documents (BID's) for the proposed standards and guidelines may be obtained from the docket; from the U.S. EPA Library (MD–35), Research Triangle Park, North Carolina 27711, telephone number (919) 541–2777; or from the National Technical Information Services, 5285 Port Royal Road, Springfield, Virginia 22161, telephone number (703) 487–4650. See **SUPPLEMENTARY INFORMATION** for a listing of these documents.

Docket. Docket No. A–91–61, containing supporting information used in developing the proposed standards and guidelines, is available for public inspection and copying between 8:00 a.m. and 4:00 p.m., Monday through Friday, at the Air and Radiation Docket and Information Center, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, telephone (202) 260–7548, fax (202) 260–4000. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Mr. Rick Copland at (919) 541–5265 or Mr. Fred Porter at (919) 541–5251, Emission Standards Division (MD–13), U.S. EPA, Research Triangle Park, North Carolina 27711.

SUPPLEMENTARY INFORMATION:

Incineration is a common method of medical waste disposal in the United States and around the world. However, while it is a very effective method of medical waste treatment with regard to rendering waste non-infectious, incineration results in the production of air pollutants. The EPA estimates that there are about 3,700 MWI's currently in operation in the United States. While these incinerators are small in size relative to municipal waste combustors, their large number makes MWI's a significant source of air pollution. The EPA recently released a draft report reassessing the health effects of exposure to dioxin. In the draft report, currently undergoing public review, MWI's are identified as a significant source of dioxin emissions. In addition, MWI's emit substantial quantities of hydrogen chloride (HCl), lead (Pb), cadmium (Cd), and mercury (Hg).

Today's proposed standards and guidelines will result in greater than 95 percent reduction in air pollution from MWI's. Once implemented, these standards and guidelines will protect public health by reducing exposure to air pollution.

The EPA, the Sierra Club, and the Natural Resources Defense Council (NRDC) have filed a consent decree with the U.S. District Court for the Eastern District of New York (Nos. CV–92–2093 and CV–93–0284) that requires the EPA Administrator to sign a notice of proposed rulemaking not later than February 1, 1995 and a notice of final rulemaking not later than April 15, 1996.

The EPA will hold at least one public hearing to provide interested parties an opportunity for oral presentation of data, views, or arguments concerning the proposal. Additional hearings may also be held (see discussion of public hearing above).

The EPA seeks full public participation in arriving at its final decisions and strongly encourages comments on all aspects of this proposal from all interested parties. Whenever applicable, full supporting data and detailed analysis should accompany all

comments to allow the EPA to adequately respond to the comments.

The key documents used to develop the proposed standards and guidelines include:

1. ''Medical Waste Incinerators—Background Information for Proposed Standards and Guidelines: Industry Profile Report for New and Existing Facilities,'' EPA–453/R–94–042a, July 1994;

2. ''Medical Waste Incinerators—Background Information for Proposed Standards and Guidelines: Process Description Report for New and Existing Facilities,'' EPA–453/R–94–043a, July 1994;

3. ''Medical Waste Incinerators—Background Information for Proposed Standards and Guidelines: Control Technology Performance Report for New and Existing Facilities,'' EPA–453/R–94–044a, July 1994;

4. ''Medical Waste Incinerators—Background Information for Proposed Standards and Guidelines: Model Plant Description and Cost Report for New and Existing Facilities,'' EPA–453/R–94–045a, July 1994;

5. ''Medical Waste Incinerators—Background Information for Proposed Standards and Guidelines: Environmental Impacts Report for New and Existing Facilities,'' EPA–453/R–94–046a, July 1994;

6. ''Medical Waste Incinerators—Background Information for Proposed Standards and Guidelines: Analysis of Economic Impacts for New Sources,'' EPA–453/R–94–047a, July 1994 (see also item 9 below);

7. ''Medical Waste Incinerators—Background Information for Proposed Standards and Guidelines: Analysis of Economic Impacts for Existing Sources,'' EPA–453/R–94–048a, July 1994 (see also item 9 below);

8. ''Medical Waste Incinerators—Background Information for Proposed Standards and Guidelines: Regulatory Impact Analysis for New and Existing Facilities, EPA–453/R–94–063a, July 1994 (see also item 9 below); and

9. B. Strong and S. Shoraka-Blair, MRI, to R. Copland, EPA/ESD. January 30, 1995. Regulatory Impacts of the Proposed New Source Performance Standard (NSPS) and Emission Guidelines (EG) for Medical Waste Incinerators (MWI's). Docket A–91–61, II–B–108.

An electronic copy of the items listed below are available from the EPA's TTN electronic bulletin board. The TTN is accessible 24 hours per day, 7 days per week, except Monday morning from 8:00 a.m. to 12:00 p.m. EST, when the system is updated. The TTN contains 12 electronic bulletin boards, and information relating to this proposal is contained in the Clean Air Act Amendments (CAAA) bulletin board. Instructions for accessing the TTN can be obtained by calling (919) 541–5384.

MWI Items in the Electronic Bulletin Board (TTN/CAAA)

1. Fact Sheet—Proposed subpart Ec Emission Standards for New MWI's.

2. Fact Sheet—Proposed subpart Cc Emission Guidelines for Existing MWI's.

3. This Federal Register notice (preamble).

4. Proposed subpart Ec Emission Standards.

5. Proposed subpart Cc Emission Guidelines.

Other technical documents, including the key documents listed under the **SUPPLEMENTARY INFORMATION** section, are contained in Docket No. A–91–61.

The following outline is provided to aid in locating information in this notice (the preamble to the proposed standards and guidelines):

I. Introduction

A. Overview of This Preamble

The 1990 Clean Air Act Amendments reflect growing public concern about the large volume of toxic air pollutants released from numerous categories of emission sources. Title III of the Amendments specifically enumerated 189 hazardous air pollutants and instructed EPA to protect public health by reducing emissions of these pollutants from the sources that release them. The EPA's standards are to be issued in two phases. The first phase standards are designed to bring all sources up to the level of emissions control achieved by those that are already well-controlled, using pollution prevention measures as well as ''end-of-pipe'' methods. The second phase standards, due approximately a decade later, are to require further emission reductions in any case in which the first phase measures were not by themselves sufficient to fully protect the public health.

In this context, the 1990 Amendments singled out waste incineration for special attention. Congress recognized both a high level of public concern about the incineration of municipal, medical and other wastes, and a number of special management concerns for these types of sources. Consequently, section 129 of the Act directs EPA to apply the two-phase control approach of Title III to various categories of waste incinerators, including medical waste

incinerators. Today's action proposes standards and guidelines for new and existing MWI's under section 129.

Current methods of medical waste incineration cause the release of a wide array of air pollutants, including several pollutants of particular public health concern. In September of 1994, EPA released a review draft of a report reassessing the health effects associated with dioxin, which suggests that dioxin exposure can result in a number of cancer and noncancer health effects in humans. In the report, MWI's are identified as the largest known source of dioxin emissions, emitting more than municipal waste combustors, hazardous waste incinerators, and cement kilns. Because of this, the reduction of dioxin emissions from all sources is one of the Administrator's highest air quality protection priorities. Consequently, the development of MWI regulations has received increased attention.

In addition to dioxin, MWI's also emit significant quantities of heavy metals including lead, cadmium, and mercury. Once again, MWI's have been identified as the largest known source of mercury emissions, emitting more than municipal waste combustors and coal-fired electric utility boilers. The MWI's also emit nitrogen oxides (a contributor to ozone smog), particulate matter, sulfur dioxide, and other acid gases.

Several States, including New York, California, and Texas, have adopted relatively stringent regulations in the past few years limiting emissions from MWI's. The implementation of these regulations has brought about very large reductions in MWI emissions and the associated risk to public health in those States. It has also significantly reshaped how medical waste is managed in those States. Many facilities have responded to the State regulations by switching to other medical waste treatment and disposal options to avoid the high cost of add-on air pollution control equipment. The two most commonly chosen alternatives have been off-site contract disposal in larger, commercial incinerators dedicated to medical waste, and on-site treatment by other means (e.g., steam autoclaving). Other alternatives include chemical treatment and microwave irradiation. The availability of alternatives to onsite incineration has mitigated the economic impacts that might have been associated with the State regulations.

Today EPA proposes nationally applicable emission standards and guidelines for MWI's that build on the experience of these leading States. Like the State regulations, the standards and guidelines proposed today are based on the use of add-on air pollution control systems.

These standards and guidelines will implement the first phase requirements of section 129, described above.

The commercial medical waste disposal industry has indicated that sufficient commercial medical waste disposal capacity is available to handle the amount of waste that would no longer be treated onsite. In addition, as mentioned earlier, onsite alternatives are available for facilities that choose to treat their medical waste onsite. In fact, even in the absence of Federal regulations, most facilities that generate medical waste do not operate onsite MWI's. This indicates that there currently are viable alternatives to onsite incineration.

As described in detail below, section 129, like section 112, of the Clean Air Act instructs the Agency to set performance standards that challenge industry to meet or exceed the pollution control standards established by better controlled similar facilities. In this way, the overall state of environmental practice is raised for large segments of industry, a basic level of health protection is provided to all communities, situations in which uncertainty about total risk and hazard result in no protection for the exposed public are avoided, and yet the cost of pollution control to industry is constrained to levels already absorbed by similar operations. Eight years later, in a second phase, EPA must evaluate whether the residual public health risk warrants additional control.

For new MWI's, the proposed emissions standards would reduce nationwide emissions of dioxins/furans by 99 percent; PM, CO, HCl, Pb, and Cd by greater than 95 percent; and Hg by 92 percent. In addition, the standards would achieve an emission reduction of about 25 percent for SO_2 and NO_x. Because wastewater, solid waste, and energy requirements associated with implementation of the proposed standards are not significant, adverse water, solid waste, or energy impacts are not anticipated.

The nationwide annual costs associated with the proposed standards for new MWI's will increase by approximately $74.5 million/yr from the regulatory baseline cost of $63.3 million/yr. This results in an increase in the cost of waste incineration per unit of waste treated of approximately $177/Mg ($161/ton) compared to the regulatory baseline cost of $150/Mg ($136/ton).

The results of the economic impacts analyses for new MWI's indicate that no medical waste-generating industry would need to be significantly reconstructed (e.g., through closures or consolidations) as a result of the proposed standards. The market price increase resulting from the standards is relatively small for each industry. The corresponding decreases in output, employment, and revenue were also low, never exceeding 0.05 percent.

With regard to existing MWI's, an estimated 3.4 million tons of waste are produced annually by medical waste generators in the United States. The EPA believes that approximately 3,700 MWI's are currently burning waste generated at health care facilities. The proposed guidelines for existing MWI's would reduce nationwide emissions of dioxins/furans and Pb by 99 percent; PM, CO, and HCl by 98 percent; Cd by 97 percent; and Hg by 94 percent. The guidelines would also achieve an overall emission reduction of 37 percent for both SO_2 and NO_x. Because wastewater, solid waste, and energy requirements associated with implementation of the proposed guidelines are not significant, adverse water, solid waste, or energy impacts are not anticipated.

The nationwide annual costs associated with the proposed guidelines for existing MWI's will increase by approximately $351 million/yr from the regulatory baseline cost of $265 million/yr. This results in an increase in the cost of waste incineration per unit of waste treated of approximately $245/Mg ($222/ton) compared to the regulatory baseline cost of $185/Mg ($168/ton).

The results of the economic impacts analyses for existing MWI's indicate that no medical waste-generating industry would need to be significantly restructured (e.g., through closures or consolidations) as a result of the proposed emission guidelines. The market price increase resulting from the emission guidelines is relatively small for each industry. The corresponding decreases in output, employment, and revenue were also low, never exceeding 1 percent.

Considering the benefits to be gained from the reduction of air pollution from MWI's along with the availability of alternative treatment methods and the clear Congressional intent, these proposed standards and guidelines are considered reasonable.

This preamble will:

1. Summarize the important features of the proposed standards and guidelines;

2. Describe the environmental, energy, and economic impacts of these standards and guidelines;

3. Present a rationale for each of the decisions made regarding the proposed standards and guidelines;

4. Request public comment on specific issues; and

5. Discuss administrative requirements relevant to this action.

B. New Source Performance Standards—General

The proposed new source performance standards (NSPS, or standard(s)) for MWI's would implement section 111(b) of the Act. The NSPS are issued for categories of sources that cause, or contribute significantly to, air pollution that may reasonably be anticipated to endanger public health or welfare. They apply to new stationary sources of emissions (i.e., sources whose construction or modification begins after a standard is proposed). An NSPS requires these sources to control emissions to the level achievable by the best system of continuous emission reduction, considering costs and other impacts.

C. NSPS Decision Scheme

An NSPS is the end product of a series of decisions related to certain key elements for the source category being considered for regulation. The elements in this decision are generally the following:

1. Source category to be regulated—usually an emission source category, but can be a process or group of processes within an industry.

2. Affected facility—the pieces or groups of equipment that comprise the sources to which the standards will apply.

3. Pollutants to be regulated—the particular substances emitted by the affected facility that the standards control.

4. Best system of continuous emission reduction—the technology on which the standards will be based, i.e., application of the best system of continuous emission reduction that (taking into consideration the cost of achieving such emission reduction and any nonair-quality health and environmental impacts and energy requirements) the Administrator determines has been adequately demonstrated (section 111(a)(1)).

5. Format for the standards—the form in which the standards are expressed, i.e., as pollutant concentration emission limits, as a percent reduction in emissions, or as equipment or work practice standards.

6. Actual standards—generally, emission limits based on the level of reduction that the best demonstrated technology (BDT) can achieve. Only in unusual cases do standards require that a specific technology be used. In general, the source owner or operator may select any method for complying with the standards.

7. Other considerations—(in addition to emission limits) NSPS usually include: standards for visible emissions, modification provisions, monitoring requirements, performance test methods and compliance procedures, and reporting and recordkeeping requirements.

D. Emission Guidelines—General Goals

The Act requires the promulgation of standards of performance under section 111(b) for categories of new sources that may contribute to the endangerment of public health or welfare. When standards of performance are promulgated under section 111(b) for a designated pollutant, the Act requires States under section 111(d) to submit plans that: (1) establish emission standards for this designated pollutant from existing sources and (2) provide for implementation and enforcement of these emission standards. In most cases, this means that control under section 111(d) is appropriate when the pollutant may cause or contribute to endangerment of public health or welfare but is not known to be ''hazardous'' within the meaning of section 112 and is not controlled under sections 108 through 110 because, for example, it is not emitted from ''numerous or diverse'' sources as required by section 108.

As specified in 40 CFR part 60.23, States are required to adopt and submit to the Administrator a plan implementing the section 111(d) guidelines within 1 year after the promulgation of the guidelines. The Act further requires that the procedure for State submission of a plan shall be similar to the procedure for submission of State implementation plans (SIP's) under section 110. The Act also provides that the EPA shall prescribe a plan according to procedures similar to those in section 110(c) if a State fails to submit a ''satisfactory plan.''

E. Additional Requirements Under Section 129

The Amendments of 1990 added section 129, which includes specific requirements for solid waste combustion units. Section 129 requires the EPA, under § 111(b), to establish new source performance standards (NSPS) for new MWI's and, under § 111(d), to establish emission guidelines for existing MWI's.

1. *New Sources* The NSPS must specify numerical emission limitations for the following: Particulate matter (PM), opacity, sulfur dioxide (SO_2), hydrogen chloride (HCl), oxides of nitrogen (NO_X), carbon monoxide (CO), lead (Pb), cadmium (Cd), mercury (Hg), and dioxins/furans (CDD/CDF). Section 129 also includes requirements for operator training as well as siting requirements for new MWI's.

Section 129 requires that emission standards reflect the maximum degree of reduction in air emissions that the Administrator, taking into consideration the cost of achieving such emission reduction, and any nonair-quality health and environmental impacts and energy requirements, determines is achievable. This requirement is referred to as maximum achievable control technology (MACT). The degree of reduction in emissions that is deemed achievable for new MWI's may not be less stringent than the emissions control that is achieved in practice by the best controlled similar unit. This requirement that the standards must be no less stringent than certain levels of emission control currently achieved is referred to as the ''MACT floor'' for new MWI's.

For NSPS, the control technology used to achieve the standards is not specified. Only the emission limits achievable by MACT are included in the standards. Any control technology that can comply with these emission limits may be used.

2. *Existing Sources* Notwithstanding the limitations of setting guidelines for existing sources under section 111(d), section 129 directs EPA to issue guidelines for existing MWI's that specify numerical emission limitations for the same pollutants listed above for new MWI's. Section 129 also includes requirements for operator training.

Section 129 provides that the State plan for existing MWI's be at least as protective as the guidelines.

Section 129 also provides that emission guidelines for existing MWI's reflect MACT, as described above. However, while the guidelines for existing MWI's may be less stringent than the standards for new MWI's, the guidelines may be no less stringent than the average emission limitation achieved by the best performing 12 percent of units in the category. This requirement that the guidelines must be no less stringent than certain levels of emission control currently achieved is referred to as the ''MACT floor'' for existing MWI's.

For emission guidelines (EG), the control technology used for compliance is not specified. Only the emission limits achievable by MACT are included in the guidelines. Any control

technology that can comply with these emission limits may be used.

Under section 129, States are required to submit to the Administrator a plan implementing the emission guidelines within 1 year after promulgation of the guidelines. Section 129 also requires that a State plan shall provide that each unit subject to the guidelines shall be in compliance with all requirements of the proposed guidelines within 3 years after the State plan is approved by the Administrator but in no case later that 5 years after promulgation of these guidelines. The compliance schedule in today's proposed emission guidelines would supersede and is more comprehensive than the compliance schedule and timetable specified in section 129.

The proposal requires that a State plan shall provide that each source subject to the guidelines shall be in compliance with all requirements of the guidelines within 1 year after the State plan is approved by the Administrator. The proposal allows two exceptions to this compliance schedule: extensions for facilities planning to install the necessary air pollution equipment and extensions under a petition process for other reasons. State plans that include such provisions may allow designated facilities up to 3 years after the State plan is approved by the Administrator (but no more than 5 years after promulgation of the guidelines) to achieve compliance. The only exception to these compliance times involves the operator training and qualification requirements and the maintenance inspection requirement. The proposed emission guidelines require that a State plan provide that each designated facility shall be in compliance with the operator training and qualification requirements and the maintenance inspection requirements within 1 year after the State plan is approved by the Administrator.

Section 129 specifies that the EPA, in reviewing State plans for any variation from the emission guidelines, must ensure that State plans and their resulting MWI control requirements are at least as protective as the EPA emission guidelines, including incorporation of the compliance schedule requirements established by the guidelines.

II. Summary of the Standards and Guidelines

A. Source Category To Be Regulated

The proposed standards for new MWI's would limit emissions of air pollutants from each MWI for which construction is commenced after today's date, or for which modification is commenced after the effective date of the standards. The effective date of the proposed standards is specified in the Act as the date 6 months after promulgation of the standards. The proposed guidelines for existing MWI's would require States to develop emission standards limiting emissions of air pollutants from each MWI for which construction was commenced on or before today's date. Changes made to an existing MWI solely for the purpose of complying with the emission guidelines would not bring an existing MWI under the NSPS for new MWI's.

The proposed standards and guidelines would require facilities that employ technologies such as pyrolysis/gasification in medical waste destruction to meet the emission limits and all other requirements in today's proposal. The pyrolysis/gasification industry does not object to be covered under today's proposed MWI standards and guidelines and believes that they can meet and exceed the proposed emission limitations. However, the pyrolysis/gasification industry believes that their process is unique enough to warrant a separate category for the purpose of regulations. The agency is requesting comment on whether these units should be regulated as MWI's or as a separate source category. Also, comment is requested on the definitions of medical waste incineration and medical waste pyrolysis/gasification that would differentiate these two categories of waste destruction for the purpose of regulation.

An MWI is defined as any device used to burn medical waste, with or without other fuels or types of waste, including the heat recovery device, if one is present. Medical waste is defined as any solid waste that is generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in production or testing of biologicals. Biologicals refer to preparations made from living organisms and their products, including vaccines, cultures, etc., intended for use in diagnosing, treating, or immunizing humans or animals or in research pertaining thereto. Medical waste includes materials such as sharps, fabrics, plastics, paper, waste chemicals/drugs that are not RCRA hazardous waste, and pathological waste. Medical waste does not include household waste, hazardous waste, or human and animal remains not generated as medical waste.

Most MWI's burn a diverse mixture of medical waste (referred to in this preamble as general medical waste), that may include some pathological waste (human and animal body parts and/or tissue). However, larger amounts of pathological waste require special operating conditions for combustion. Thus, some facilities maintain MWI's designed and operated to burn pathological waste exclusively.

The proposed standards and guidelines focus on regulating emissions from general medical waste incinerators and include very minor requirements for pathological MWI's. Under this proposal, pathological MWI's would only be required to submit quarterly reports of the amount and type of materials charged to the incinerator. Pathological MWI's will be considered in future regulatory action under section 129 in the source category of ''other solid waste incinerators.''

B. Pollutants To Be Regulated

Section 129 of the Act requires the EPA to establish numerical emission limits for PM, opacity, CO, CDD/CDF, HCl, SO_2, NO_x, Pb, Cd, and Hg. All pollutants to be regulated would be reported as concentrations and are corrected to 7 percent oxygen. Particulate matter and metals (Pb, Cd, and Hg) would be reported as milligrams per dry standard cubic meter (mg/dscm). For Hg, the proposed standards and guidelines would also establish an alternative percent reduction requirement. Carbon monoxide, HCl, SO_2, and NO_x would be reported as parts per million by volume (ppmv), dry basis. As an alternative, the proposed standards and guidelines for HCl would also establish a percent reduction requirement. Emissions of CDD/CDF would be reported in units of total nanograms per dry standard cubic meter (ng/dscm) or ng/dscm toxic equivalency (TEQ). Measurements of TEQ are determined by first measuring the total concentration of CDD/CDF congeners and adjusting the results to account for the varying toxicity of each congener. Opacity is reported on a percentage basis. The proposed standards and guidelines also establish fly ash/bottom ash fugitive emission limitations, reported on a percentage basis.

C. Affected Facility and Designated Facility

The affected facility to which the proposed standards applies is each individual MWI for which construction is commenced after today's date or for which modification is commenced after the effective date of these standards. The effective date of the proposed standards is specified in the Act as the date 6 months after promulgation of the standards.

The designated facility to which the proposed emission guidelines apply is each individual MWI for which construction is commenced on or before today's date.

D. Proposed Standards and Guidelines

Table 1 lists the emission limitations under the proposed standards and guidelines, Tables 2 and 3 list other requirements of the proposed standards and guidelines, and Tables 4 and 5 list the compliance times for the proposed standards and guidelines.

TABLE 1.—SUMMARY OF PROPOSED EMISSION LIMITS FOR NEW AND EXISTING MEDICAL WASTE INCINERATORS

Pollutant	Emissions limits
Particulate matter	30 mg/dscm (0.013 gr/dscf) 12-hour average.
Opacity	5 percent 6-minute average.
Carbon monoxide	50 ppmv 12-hour average.
Dioxins/furans	80 ng/dscm total CDD/CDF (35 gr/10^9 dscf) or 1.9 ng/dscm TEQ (0.83 gr/10^9 dscf) 12-hour average.
Hydrogen chloride	42 ppmv or 97% reduction 9-hour average.
Sulfur dioxide	45 ppmv 12-hour average.
Nitrogen oxides	210 ppmv 12-hour average.
Lead	0.10 mg/dscm (44 gr/10^6 dscf) 12-hour average.
Cadmium	0.05 mg/dscm (22 gr/10^9 dscf) 12-hour average.
Mercury	0.47 mg/dscm (210 gr/10^6 dscf) or 85% reduction 12-hour average.

NOTE: Tables 1 through 5 depict the major provisions of the proposed standards and guidelines and do not attempt to show all requirements. The full text of Subparts Ec and Cc should be relied upon for a full and comprehensive statement of the requirements of the proposed standards and guidelines.

TABLE 2.—SUMMARY OF ADDITIONAL REQUIREMENTS UNDER THE NSPS FOR NEW MEDICAL WASTE INCINERATORS

Additional Requirements
Operator Training and Qualification Requirements:
• Complete MWI operator training course.
• Qualify operators.
• Develop a site-specific operating manual and update annually.
Siting Requirements:
• Prepare a siting analysis.
• Conduct a public meeting at which comment is accepted on the siting analysis.
• Prepare responses to the comments and make them available to the public.
• Include in the initial notification to construct the results of siting analysis and a letter from the State air pollution control office approving the construction and operation of the affected facility.
Compliance and Performance Testing Requirements:
• Conduct an initial and annual performance test to determine compliance with the emission limitations for all pollutants and to establish operating parameters.
• Facilities may conduct performance tests for CDD/CDF, PM, Cd, Pb, and Hg every third year if the previous three MWI performance tests demonstrate that the facility is in compliance with the emission limits.
Continuously monitor emissions and measure and record operating parameters.
• Perform monthly fugitive testing.
Monitoring Requirements:
• Install and maintain equipment to continuously monitor emissions/operating parameters as appropriate.
• Obtain monitoring data at all times during MWI operation.
Reporting and Recordkeeping Requirements:
• Maintain for 5 years records of results from initial performance test and all subsequent performance tests, operating parameters, and any maintenance.
• Maintain for the life of the incinerator records of siting analysis and operator training and qualification.
• Submit the results of the initial performance test and all subsequent performance tests.
• Submit, within 30 days following the end of the quarter of occurrence, reports on emission rates or operating parameters that have not been recorded or that exceeded applicable limits.
• Provide notification of intent to construct, of planned initial start-up date, and of planned waste type(s) to be combusted.

NOTE: Tables 1 and 2 depict the major provisions of the NSPS and do not attempt to show all requirements. The regulatory text of Subpart Ec should be relied upon for a full and comprehensive statement of the requirements of the proposed NSPS.

TABLE 3.—SUMMARY OF ADDITIONAL REQUIREMENTS UNDER THE EG FOR EXISTING MEDICAL WASTE INCINERATORS

Additional Requirements
Operator Training and Qualification Requirements:
• Complete MWI operator training course.
• Qualify operators.
• Develop a site-specific operating manual and update annually.
Inspection Requirements:
• Provide for an annual equipment inspection by an MWI service technician not employed by the owner or operator of the affected facility until source demonstrates compliance with emission limits.
Compliance and Performance Testing Requirements:
• Conduct an initial and annual performance test to determine compliance with the emission limitations for all pollutants and to establish operating parameters.

TABLE 3.—SUMMARY OF ADDITIONAL REQUIREMENTS UNDER THE EG FOR EXISTING MEDICAL WASTE INCINERATORS—Continued

Additional Requirements
• Facilities may conduct performance tests for CDD/CDF, PM, Cd, Pb, and Hg every third year if the previous three performance tests demonstrate that the facility is in compliance with the emission limits. • Continuously monitor emissions and measure and record operating parameters. • Perform monthly fugitive testing. Monitoring Requirements: • Install and maintain equipment to continuously monitor emissions/operating parameters as appropriate. • Obtain monitoring data at all times during MWI operation. Reporting and Recordkeeping Requirements: • Maintain for 5 years records of: results from initial performance test and all subsequent performance tests, operating parameters, annual inspections, and any maintenance. • Maintain for the life of the incinerator records of operator training and qualification. • Submit the results of the initial performance test and all subsequent performance tests. • Submit, within 30 days following the end of the quarter of occurrence, reports on emission rates or operating parameters that have not been recorded or which exceeded applicable limits.

NOTE: Tables 1 and 3 depict the major provisions of the emission guidelines (EG) and do not attempt to show all requirements. The regulatory text of Subpart Cc should be relied upon for a full and comprehensive statement of the requirements of the proposed guidelines.

TABLE 4.—COMPLIANCE TIMES FOR NEW MWI'S NEW SOURCE PERFORMANCE STANDARDS

Requirement	Compliance Time
Effective date	6 months after promulgation of NSPS.
Operator training and qualification requirements.	On effective date or upon initial start up, whichever is later.
Initial compliance test	On effective date or within 180 days of initial start up, whichever is later.
Performance test	Within 12 months following initial compliance test and annually thereafter.
CEMS and parameter monitoring	Continuously, upon completion of initial compliance test.
Recordkeeping	Continuously, upon completion of initial compliance test.
Reporting	Quarterly, upon completion of initial compliance test.

TABLE 5.—COMPLIANCE TIMES FOR EXISTING MWI'S EMISSION GUIDELINES

Requirement	Compliance Time
State Plan submittal	Within 1 year after promulgation of EPA emission guidelines.
Effective date	Within 1 year after EPA approval of State Plan.
Operator training and qualification requirements.	Within 1 year after EPA approval of State Plan.
Recordkeeping	Continuously, upon completion of initial compliance test.
Initial compliance test	Within 1 year after EPA approval of State plan or up to 3 years after EPA approval of State plan if the source is granted an extension.
Performance test	Within 12 months following initial compliance test and annually thereafter.
CEMS and parameter monitoring	Continuously, upon completion of initial compliance test.
Inspection requirements	Within 1 year after EPA approval of State Plan.
Reporting	Quarterly, upon completion of initial compliance test.

A brief discussion of the emission limitations is presented below. Further discussion of the additional requirements can be found in sections II.E through II.L of this section.

1. *Numerical Emission Limits*

The numerical emission limits in this section are corrected to 7 percent O_2.

Particulate Matter—The proposed emission limitation for PM for both new and existing MWI's is 30 milligrams per dry standard cubic meter (mg/dscm).

Opacity—The proposed emission limitation for stack opacity for both new and existing MWI's is 5 percent (6-minute average).

Carbon Monoxide—The proposed emission limitation for CO for both new and existing MWI's is 50 parts per million by volume (ppmv), dry basis.

Dioxins/Furans—The proposed emission limitation for CDD/CDF for both new and existing MWI's is 80 ng/dscm total CDD/CDF or 1.9 ng/dscm TEQ. This limit would be measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans as determined by Reference Method 23 and converted to TEQ's using the toxic equivalency factors (TEF's) shown in Table 6.

TABLE 6.—TOXIC EQUIVALENCY FACTORS

CDD/CDF congener	Toxic equivalency factor
2,3,7,8-tetrachlorinated dibenzo-p-dioxin	1
1,2,3,7,8-pentachlorinated dibenzo-p-dioxin	0.5
1,2,3,4,7,8-hexachlorinated dibenzo-p-dioxin	0.1
1,2,3,7,8,9-hexachlorinated dibenzo-p-dioxin	0.1
1,2,3,6,7,8-hexachlorinated dibenzo-p-dioxin	0.1
1,2,3,4,6,7,8-heptachlorinated dibenzo-p-dioxin	0.01
octachlorinated dibenzo-p-dioxin	0.001

TABLE 6.—TOXIC EQUIVALENCY FACTORS—Continued

CDD/CDF congener	Toxic equivalency factor
2,3,7,8-tetrachlorinated dibenzofuran	0.1
2,3,4,7,8-pentachlorinated dibenzofuran	0.5
1,2,3,7,8-pentachlorinated dibenzofuran	0.05
1,2,3,4,7,8-hexachlorinated dibenzofuran	0.1
1,2,3,6,7,8-hexachlorinated dibenzofuran	0.1
1,2,3,7,8,9-hexachlorinated dibenzofuran	0.1
2,3,4,6,7,8-hexachlorinated dibenzofuran	0.1
1,2,3,4,6,7,8-heptachlorinated dibenzofuran	0.01
1,2,3,4,7,8,9-heptachlorinated dibenzofuran	0.01
octachlorinated dibenzofuran	0.001

Hydrogen Chloride—The proposed emission limitation for HCl for both new and existing MWI's is 42 ppmv, dry basis (or 97-percent reduction).

Sulfur Dioxide—The proposed emission limitation for SO_2 for both new and existing MWI's is 45 ppmv, dry basis.

Nitrogen Oxides—The proposed emission limitation for NO_X for both new and existing MWI's is 210 ppmv, dry basis.

Lead—The proposed emission limitation for Pb for both new and existing MWI's is 0.10 mg/dscm.

Cadmium—The proposed emission limitation for Cd for both new and existing MWI's is 0.05 mg/dscm.

Mercury—The proposed emission limitation for Hg for both new and existing MWI's is 0.47 mg/dscm (or 85-percent reduction).

2. *Fly Ash/Bottom Ash Emissions*

The proposed standards and guidelines would establish a limit of zero percent opacity of fly ash or bottom ash from any fly ash or bottom ash storage or handling area within the facility's property boundary.

E. Operator Training and Qualification Requirements

The proposed standards and guidelines include operator training and qualification requirements for each MWI operator. For new MWI's, these requirements would become effective six months after promulgation of the NSPS. For existing MWI's, these requirements would become effective one year after approval of the State plan. An acceptable training course would provide the operator with a minimum of: (1) 24 hours of classroom instruction, (2) 4 hours of hands-on training, (3) an examination developed and administered by the course instructor, and (4) a handbook or other documentation covering the subjects presented during the course. To be qualified, an operator must complete the training course and have either a minimum level of experience or satisfy comparable or more stringent criteria that are established by a national professional organization. The proposed standards and guidelines also would require that the owner or operator of the facility develop and annually update a site-specific operating manual. The manual would summarize State emissions regulations, operating procedures, and reporting and recordkeeping requirements in accordance with the proposed standards and guidelines.

F. Siting Requirements—New MWI's

Site selection criteria are being proposed for MWI's that commence construction after the date of promulgation of this rule. The proposed siting requirements would address the impact of the facility on ambient air quality, visibility, soils, vegetation, and other factors that may be relevant in determining that the benefits of the proposed facility significantly outweigh the environmental and social costs imposed as a result of its location and construction. A document presenting the results of the analyses would be prepared and submitted to EPA, State, and local officials and would be made available to the public. Provisions for a public meeting and the preparation of a comment and response document are also included in the proposed siting requirements.

G. Inspection Requirements—Existing MWI's

The proposed emission guidelines include a requirement for an initial equipment inspection of the designated facility. These requirements would become effective 1 year after the EPA approval of the State plan. The inspection must be performed by an MWI service technician not employed by the owner or operator of the designated facility. The proposed guidelines provide minimum requirements for inspection of the designated facility. Following the initial inspection and until compliance with the emission limitations has been demonstrated, facilities are required to conduct annual inspections of the MWI.

H. Compliance and Performance Test Methods and Monitoring Requirements

Testing and monitoring requirements are proposed to demonstrate compliance with the emission limits. The proposed standards and guidelines require that the owner or operator of the facility: (1) conduct initial and annual performance tests to demonstrate compliance with the emission limits and (2) demonstrate continuous compliance with the emission limits following the initial performance test.

The initial and annual performance tests would be conducted using the following EPA-approved methods:

1. Method 1 would be used to select the sampling site and number of traverse points;
2. Method 3 or 3A would be used for gas composition analysis, including measurement of oxygen;
3. Method 5 or Method 29 would be used to measure PM emissions;
4. A continuous emissions monitoring system (CEMS) would be used to measure opacity;
5. A CEMS would be used to measure CO emissions;
6. Method 23 would be used to measure CDD/CDF emissions;
7. Method 26 would be used to measure HCl emissions;
8. Method 29 would be used to measure Pb, Cd, and Hg emissions; and
9. Method 9 would be used to measure opacity of fugitive emissions.

The proposed standards and guidelines include provisions for less frequent testing if the facility consistently demonstrates compliance. These provisions are described in detail in section V of this preamble. Following the initial performance test, the owners or operators must demonstrate continuous compliance with the limits by monitoring the output of a CEMS, where a CEMS is required, and by monitoring site-specific operating parameters where a CEMS is not required. Facilities are required to:

1. Demonstrate continuous compliance with the CO emission limit based on the output from the CO CEMS;
2. Demonstrate continuous compliance with the opacity emission limit based on the output from the opacity CEMS; and
3. Demonstrate compliance with the fugitive emission limit by conducting a performance test using Method 9 at least once per calendar month when ash is removed from the incinerator and when ash is removed from the air pollution control device (APCD).

In addition, facilities equipped with a dry scrubber followed by a fabric filter are required to demonstrate compliance in the following ways:

1. Demonstrate compliance with the Hg emission limit by continuously monitoring the Hg sorbent flow rate (typically activated carbon) and continuously measuring the weight and time of each load of waste charged to the incinerator. The minimum Hg sorbent flow rate, the maximum charge weight, and the maximum hourly charge rate are to be established during the initial performance test to determine compliance with the Hg emission limit. Operation of the facility below the minimum sorbent flow rate, or above the maximum charge weight or maximum hourly charge rate would constitute a violation of the Hg emission limit.

2. Demonstrate compliance with the CDD/CDF emission limit by continuously monitoring the CDD/CDF sorbent flow rate (typically activated carbon) and the temperature measured at the inlet to the PM control device. The minimum CDD/CDF sorbent flow rate and the maximum PM control device inlet temperature are to be established during the initial performance test to determine compliance with the CDD/CDF emission limit. Operation of the facility below the minimum sorbent flow rate or above the maximum PM control device inlet temperature would constitute a violation of the CDD/CDF emission limit.

3. Demonstrate compliance with the HCl emission limit by continuously monitoring the HCl sorbent flow rate (typically hydrated lime) and continuously measuring the weight and time of each load of waste charged to the incinerator. The minimum HCl sorbent flow rate, the maximum charge weight, and the maximum hourly charge rate are to be established during the initial performance test to demonstrate compliance with the emission limit for HCl. Operation of the facility below the minimum sorbent flow rate, or above the maximum charge weight or maximum hourly charge rate would constitute a violation of the HCl emission limit.

The proposed standards and guidelines require the owner or operator of an MWI using a control device other than a dry scrubber followed by a fabric filter to petition the Administrator for other site-specific operating parameters to demonstrate continuous compliance with the emission limits for CDD/CDF, Hg, HCl, and/or opacity. These parameters would be established during the initial performance test for these pollutants and would be continuously monitored to demonstrate compliance with the emission limits. As discussed in section VI, the EPA requests comment on appropriate parameters for wet scrubbers and for other control systems that may be used to control emissions from MWI's.

I. Reporting and Recordkeeping—New MWI's

The proposed standards would require owners of affected facilities (i.e., new or modified MWI's) to submit notifications concerning construction and initial startup of the affected facility. Owners and operators are also required to maintain thorough records documenting the results of the initial and annual performance tests, records demonstrating continuous monitoring of site-specific operating parameters, and CEMS output data and quality assurance determinations. These records must be kept on file for at least 5 years.

Additional records must be kept on file for the life of the affected facility. These records are required to document compliance with the siting requirements and the operator training and qualification requirements. The records to be maintained include all documentation produced as a result of the siting requirements and records of the names of the persons who have completed the operator training requirements, the names of the persons who have been qualified as MWI operators, and the names of the persons who have completed review of the site-specific MWI operating manual. All records must also include dates associated with operator training and qualification, and dates associated with review of the operating manual.

Under the proposed standards, owners or operators of affected facilities are required to submit the results of the initial performance test and all subsequent performance tests. Also, reports on emission rates or operating parameters that have not been obtained or that exceed applicable limits must be submitted within 30 days after the end of the quarter of occurrence. If no exceedances occur during a quarter, the owner of the affected facility would be required to submit a letter stating so. All reports submitted to comply with the requirements of the proposed standards must be signed by the facilities manager.

J. Reporting and Recordkeeping—Existing MWI's

The proposed emission guidelines would require owners of designated facilities (i.e., existing MWI's) to maintain thorough records documenting the results of the initial and annual performance tests, records demonstrating continuous monitoring of site-specific operating parameters, CEMS output data and quality assurance determinations, and records of the initial and annual inspections. These records must be kept on file for at least 5 years.

Additional records must be kept on file for the life of the designated facility. These records are required to document compliance with the operator training and qualification requirements and include records of the names of the persons who have completed the operator training requirements, the names of the persons who have been qualified as MWI operators, and the names of the persons who have completed review of the site-specific MWI operating manual. All records must also include dates associated with operator training and qualification, and dates associated with review of the operating manual.

Under the proposed emission guidelines owners or operators are required to submit the results of the initial and annual maintenance inspections and the results of the initial performance test and all subsequent performance tests. Additionally, reports of data on emission rates or operating parameters that have not been obtained or that exceed applicable limits must be submitted within 30 days after the end of the quarter of occurrence. If no exceedances occur during a quarter, the owner of the designated facility would be required to submit a letter stating so. All reports submitted to comply with the requirements of the proposed emission guidelines must be signed by the facilities manager.

K. Compliance Times

1. New MWI's

The effective date of the standards for new MWI's is the date 6 months after promulgation of the standards.

2. Existing MWI's

In accordance with the proposed guidelines, for approval, a State plan must require that designated facilities comply with all requirements of the guidelines within 1 year after EPA approval of the State plan. The proposal allows two exceptions to this compliance schedule. First, State plans may allow facilities that are planning to install the necessary air pollution control equipment up to three years after EPA approval of the State plan to comply, provided the State plan specifies that the facility submit measurable and legally enforceable incremental steps of progress that will be taken to comply with the State plan. Second, State plans may include provisions for a petition process through which designated facilities could

request an extension for other reasons. The proposed guidelines specify minimum requirements to be included in State plans with such provisions. If an extension is granted, compliance must be required within 3 years after EPA approval of the State plan.

Regardless of the status of the State plans, all designated facilities must be in compliance within 5 years after promulgation of the emission guidelines. The proposed emission guidelines require the EPA to develop, implement, and enforce a plan for any State that has not submitted an approvable plan within 2 years after promulgation of the emission guidelines.

The proposed emission guidelines also require that, for approval, a State plan provide that each designated facility must be in compliance with the operator training and qualification requirements and the inspection requirements within 1 year after EPA approval of the State plan. No extension is available for training, qualification, or inspection.

L. Permit Requirements

The proposed standards and guidelines include a requirement that facilities operate pursuant to permits issued under the EPA-approved State operating permit program. Permits would be required beginning 36 months after the date of promulgation of the standards and guidelines, or on the effective date of an EPA-approved operating permit program in the State in which the facility is located, whichever date is later. The operating permit programs are developed under Title V of the Act and the implementing regulations under 40 CFR part 70.

III. Impacts of the Proposed Standards for New MWI's

This section presents a description of the air, water, solid waste, energy, control cost, and economic impacts of today's proposed standards for new MWI's. All of the impacts presented are nationwide impacts that are expected to result from the implementation of the NSPS in the fifth year after adoption. As discussed below, it is expected that as many as 80 percent of the projected number of new MWI's will not be constructed to avoid the increased costs associated with installation of control equipment. Therefore, impacts are presented assuming 80 percent of projected new MWI's are not constructed, with the waste being disposed of by other means (i.e., the ''switching scenario'').

Based on historic sales to date, in the absence of regulation, an estimated 700 new MWI's are expected to be installed over the next 5 years. However, onsite incineration is only one of several medical waste treatment and disposal options. For some MWI's, the equipment necessary to comply with the proposed regulations will make onsite incineration more expensive than other waste treatment and disposal options. Consequently, many facilities that would have chosen onsite incineration are likely to consider less expensive methods of treatment and disposal. The EPA expects that as many as 80 percent of the projected number of new MWI's will not be constructed if the standards are promulgated as proposed. This is referred to in this notice as the ''switching scenario'' because of the expectation that potential owners of MWI's will switch to another method of waste treatment and disposal.

Recent experience at the State level confirms that switching to lower cost alternatives is a likely impact of the implementation of MWI regulations that require add-on air pollution control. For example, recent regulations adopted by the State of New York require the use of add-on acid gas scrubber systems. As a result, the State estimates that as many as 90 percent of previously existing MWI's in New York have ceased operation. New York's regulations are similar to the proposed EPA standards in that they require the use of add-on air pollution control systems or use of an alternative waste disposal approach. While these State regulations have increased the cost of waste disposal, it appears that the availability of alternatives to onsite incineration has mitigated the economic impacts that might have been associated with the State regulations.

One concern that has recently been raised related to switching away from onsite incineration is the availability of alternatives to onsite incineration. Two common alternatives are offsite contract disposal (most commonly commercial medical waste incineration) and onsite autoclaving (steam treatment). Other less common alternatives include onsite chemical treatment and onsite microwave irradiation. The commercial medical waste disposal industry believes that there presently exists sufficient offsite capacity to treat the waste that would no longer be treated onsite. In addition, autoclaves and other onsite waste disposal options are available. In fact, even today in the absence of Federal regulations, most facilities that generate medical waste do not operate onsite MWI's. This indicates that there currently are viable alternatives to onsite incineration.

A second concern regrading a shift away from onsite incineration is the increased transportation and handling of untreated medical waste. However, the Department of Transportation (DOT) has promulgated regulations (49 CFR parts 171, 172, and 173) that address the safe transportation and handling of medical waste. The DOT regulations include provisions for packaging and labeling of medical waste. Also, the Occupational Safety and Health Administration (OSHA) promulgated regulations on December 5, 1991 (29 CFR part 1910) that address occupational exposure to bloodborne pathogens. Using a combination of engineering and work practice controls, personal protective clothing and equipment, training, medical follow-up of exposure incidents, vaccinations (where appropriate) and other provisions, the OSHA regulations minimize or eliminate health risk as a result of occupational exposure to bloodborne pathogens. The Agency believes these DOT and OSHA regulations will provide sufficient protection from potential increases in exposure to these wastes.

A. Air Impacts

As discussed earlier, impacts are presented assuming the more likely ''switching scenario.'' Baseline emissions and emissions under the proposed NSPS based on the switching scenario are presented in Tables 7a and 7b.

TABLE 7a.—BASELINE EMISSIONS COMPARED WITH EMISSIONS AFTER NSPS (WITH SWITCHING)

[Metric Units]

Pollutant	Units	Baseline	After NSPS with switching
PM	Mg/yr	1,670	81.7
CO	Mg/yr	1,630	61.7
CDD/CDF	kg/yr	21.7	0.032
HCl	Mg/yr	10,000	230
SO_2	Mg/yr	192	144
NO_X	Mg/yr	1,240	944
Pb	Mg/yr	19.2	0.29
Cd	Mg/yr	1.38	0.042
Hg	Mg/yr	14.5	1.10

TABLE 7b.—BASELINE EMISSIONS COMPARED WITH EMISSIONS AFTER NSPS (WITH SWITCHING)

[English Units]

Pollutant	Units	Baseline	After NSPS with switching
PM	Tons/yr ...	1,850	90.0
CO	Tons/yr ...	1,790	68.0
CDD/CDF.	Lb/yr	47.9	0.070
HCl	Tons/yr ...	11,100	254
SO_2 ...	Tons/yr ...	212	159
NO_X ..	Tons/yr ...	1,370	1,040
Pb	Tons/yr ...	21.2	0.32
Cd	Tons/yr ...	1.52	0.046
Hg	Tons/yr ...	16.0	1.21

The proposed standards would reduce nationwide emissions of PM by 1,590 megagrams per year (Mg/yr) (1,750 tons per year (tons/yr)) from estimated emission levels under the typical existing control or the ''regulatory baseline'' of 1,670 Mg/yr (1,850 tons/yr). This reduction represents a decrease of about 95 percent from baseline PM emission levels in the absence of the proposed standards.

Nationwide emissions of CO would be reduced by 1,570 Mg/yr (1,730 tons/yr) from estimated emission levels under the regulatory baseline of 1,630 Mg/yr (1,790 tons/yr). This reduction equates to an overall control level of about 96 percent for CO emissions.

As a result of today's proposal, nationwide emissions of CDD/CDF would be reduced by 21.70 kilograms per year (kg/yr) (47.8 pounds per year (lb/yr)) from estimated emission levels under the regulatory baseline of 21.73 kg/yr (47.9 lb/yr). The CDD/CDF emissions would be reduced by over 99 percent from the regulatory baseline.

The proposed standards would reduce nationwide emissions of HCl by 9,820 Mg/yr (10,800 tons/yr) from estimated emission levels under the regulatory baseline of 10,000 Mg/yr (11,100 tons/yr). This reduction represents a decrease of about 98 percent in HCl emissions.

Nationwide emissions of SO_2 and NO_X would be reduced by 48.1 Mg/yr (53.0 tons/yr) and 300 Mg/yr (331 tons/yr), respectively, from estimated emission levels under the regulatory baseline of 192 Mg/yr (212 tons/yr) for SO_2 and 1,240 Mg/yr (1,370 tons/yr) for NO_X. These reductions equate to an overall emissions decrease of about 25 percent for SO_2 and about 24 percent for NO_X.

As a result of today's proposal, the nationwide emissions of Pb, Cd, and Hg would be reduced by 18.9 Mg/yr (20.9 tons/yr), 1.34 Mg/yr (1.47 tons/yr), and 13.4 Mg/yr (14.8 tons/yr), respectively, from estimated emission levels under the regulatory baseline of 19.2 Mg/yr (21.2 tons/yr) for Pb, 1.38 Mg/yr (1.52 tons/yr) for Cd, and 14.5 Mg/yr (16.0 tons/yr) for Hg. These reductions equate to overall control levels of about 98 percent for Pb, 97 percent for Cd, and 92 percent for Hg.

B. Water and Solid Waste Impacts

Under the proposed NSPS, no significant water pollution impacts are projected because the emission control technologies on which the emission limits are based do not produce a wastewater stream. However, to the extent that wet scrubber systems could be used to comply with the proposed emission limitations, water pollution impacts could be more significant. As discussed in section VI of this preamble, the Agency solicits information regarding water pollution impacts associated with the use of wet scrubber systems.

With regard to solid waste impacts, about 421,000 Mg (464,000 tons) of medical waste are projected to be burned annually in new MWI's in the fifth year after adoption of the NSPS in the absence of Federal regulations (i.e., at the regulatory baseline). This quantity of waste burned would result in about 42,100 Mg/yr (46,400 tons/yr) of solid waste (bottom ash) disposed of in landfills. The addition of acid gas control using dry lime injection, and CDD/CDF and Hg control using activated carbon injection, would increase the quantity of solid waste for final disposal by adding baghouse ash to the amount of bottom ash already generated under the regulatory baseline. In addition, switching to onsite alternatives to incineration will result in an increase in solid waste for final disposal because the nonincineration treatment methods do not reduce the volume of waste as much as incineration.

Under the switching scenario, the amount of solid waste ultimately sent to landfills would increase by about 135,000 Mg/yr (149,000 tons/yr). This includes the increase in ash from the air pollution control devices (APCD's) and the increase in waste that is treated and landfilled without being incinerated. Compared to municipal waste, which is disposed in landfills at an annual rate of over 91 million Mg/yr (100 million tons/yr), the increase in solid waste from the implementation of the MWI standards is insignificant. Therefore, no adverse solid waste impacts are anticipated under the proposed standards.

C. Energy Impacts

The emission control technologies upon which the emission limits are based would require additional energy consumption for all new MWI's. Under the switching scenario, it is not clear whether energy consumption will increase, decrease, or remain the same. Alternatives to incineration require energy to operate. However, information is not available to estimate whether alternatives use more or less energy than MWI's. It is expected that the increase in energy consumption resulting from the switching scenario will be less than the increase under the no-switching scenario.

The estimates of energy impacts assuming all new MWI's are constructed and install air pollution control (no-switching scenario) include additional auxiliary fuel (natural gas) for combustion controls and additional electrical energy for operation of the add-on control devices. In the fifth year after adoption, the proposed standards would increase total national usage of natural gas by about 25 million cubic meters per year (MMm^3/yr) (895 million cubic feet per year (10^6 ft^3/yr)) compared to fuel consumption determined from the regulatory baseline. Total national usage of electrical energy would increase by about 41,400 megawatt hours per year (MW-hr/yr) (141 billion British thermal units per year (10^9 Btu/yr)) of electricity compared to electrical energy consumption determined from the regulatory baseline.

D. Control Cost Impacts

The control cost impacts on individual facilities will vary depending on the cost of compliance with the regulation; the cost of alternative treatment and disposal methods; and other factors such as proximity to an offsite contract disposal facility, liability issues related to the transportation and final disposal of the waste, and State and local medical waste treatment and disposal requirements. In general, facilities requiring a smaller waste treatment capacity will have a greater incentive to use a less expensive treatment and disposal option because their onsite incineration cost (per ton of waste burned) will be higher. Facilities with larger amounts of waste to be treated may have some cost advantages if they use lower cost alternatives, but these advantages are not as significant due to economies of scale.

Under the switching scenario, the nationwide annual costs associated with the NSPS will increase by about 74.5 million/yr (from a baseline cost of 63.3

million/yr). The nationwide annualized cost of waste disposal per unit of medical waste treated would increase by $177/Mg ($161/ton) from the estimated nationwide annualized cost of $150/Mg ($136/ton) under the regulatory baseline.

E. Economic Impacts

The goal of the economic impact analysis was to estimate the market response to the NSPS and to determine whether there would be adverse impacts associated with the proposed standards. The proposed standards would affect five major industry sectors (hospitals, nursing homes, veterinary facilities, commercial research laboratories, and commercial medical waste incineration facilities) within which some facilities operate an onsite MWI. In addition, the proposed standards would affect a number of other industry sectors in which facilities do not typically operate an onsite MWI (e.g., blood banks). The economic impact analysis for new MWI's examined each of these sectors as a whole to determine industrywide impacts.

To assess the industrywide impacts of control costs, the market price increase resulting from the proposed standards was estimated for each regulated industry. The market price increases, presented in Table 8, may be thought of as an average price increase across each industry required to recover control costs within each industry. Table 8 reflects the more likely switching scenario. For example, under the switching scenario, the hospital industry would have to raise prices by an average of about 0.03 percent (over current revenues of about $224 billion/yr) to cover the increased cost of waste disposal. This table shows that the price increase is relatively small for each industry. This result is mainly due to the projection that most facilities do not (or will not, within the next 5 years after adoption of the standards) operate an onsite incinerator.

TABLE 8.—MARKET PRICE INCREASES IN THE MAJOR INDUSTRY SECTORS UNDER THE NSPS—SWITCHING SCENARIO

Industry	Price increase, percent
Hospitals	0.03
Nursing Homes	0.01
Veterinary Facilities	0.01
Commercial Research Laboratories	0.03
Physicians' Offices	0
Dentists' Offices	0
Freestanding Bloodbanks	0.02
Commercial Medical Waste Incineration Facilities	[a] N/A

[a] Industrywide impacts were not calculated for commercial medical waste incineration facilities because estimates of the change in demand for commercial medical waste incineration were not available. However, this industry is expected to be able to recoup all control cost increases through price increases.

Output, employment, and revenue impacts were also estimated. As a result of the low market price increases and/or relatively inelastic demand, the corresponding decreases in output, employment, and revenue were also low, never exceeding 0.05 percent under the more likely switching scenario. This result implies that no medical waste-generating industry would need to be significantly reconstructed (e.g., through closures or consolidations) as a result of the proposed standards.

IV. Impacts of the Proposed Guidelines for Existing MWI's

This section presents a description of the air, water, solid waste, energy, control cost, and economic impacts of today's proposed guidelines. All impacts are nationwide impacts that are expected to result from the implementation of the emission guidelines. As discussed below, it is expected that as many as 80 percent of existing facilities currently using onsite incineration will switch to an alternative method of treatment and disposal to avoid the increased cost of installing air pollution control equipment. Therefore, impacts are presented assuming 80 percent of existing facilities using onsite MWI's will switch to a lower cost alternative treatment and disposal methods (i.e., the ''switching scenario'').

Onsite incineration is only one of several medical waste treatment and disposal options, and for some MWI's, the cost of the equipment necessary to comply with the proposed emission guidelines will make onsite incineration more expensive than other treatment and disposal options. Consequently, many facilities that currently operate onsite MWI's are likely to switch to a less expensive method of treatment and disposal. The EPA expects that as many as 80 percent of the existing facilities currently using onsite MWI's will switch to a lower cost alternative method of treatment and disposal if the guidelines are promulgated as proposed. This is referred to in this notice as the ''switching scenario'' because of the expectation that owners of MWI's will switch to another method of waste treatment and disposal.

Recent experience at the State level confirms that switching to lower cost alternatives is a likely impact of the implementation of MWI regulations that require add-on air pollution control. For example, recent regulations adopted by the State of New York require the use of add-on acid gas scrubber systems. As a result, the State estimates that as many as 90 percent of previously existing MWI's in New York have ceased operation. New York's regulations are similar to the proposed EPA guidelines in that they require the use of add-on air pollution control systems or use of an alternative waste disposal approach. While these State regulations have increased the cost of waste disposal, it appears that the availability of alternatives to onsite incineration has mitigated the economic impacts that might have been associated with the State regulations.

One concern that has recently been raised related to switching away from onsite incineration is the availability of alternatives to onsite incineration. Two common alternatives are offsite contract disposal (most commonly commercial medical waste incineration) and onsite autoclaving (steam treatment). Other less common alternatives include onsite chemical treatment and onsite microwave irradiation. The commercial medical waste disposal industry believes that there presently exists sufficient offsite capacity to treat the waste that would no longer be treated onsite. In addition, autoclaves and other onsite waste disposal options are available. In fact, even today in the absence of Federal regulation, most facilities that generate medical waste do not operate onsite MWI's. This indicates that there currently are viable alternatives to onsite incineration.

A second concern regarding a shift away from onsite incineration is the increased transportation and handling of untreated medical waste. However, the Department of Transportation (DOT) has promulgated regulations (49 CFR parts 171, 172, and 173) that address the safe transportation and handling of medical waste. The DOT regulations include provisions for packaging and labeling of medical waste. Also, the Occupational Safety and Health Administration (OSHA) has promulgated regulations on December 5, 1991 (29 CFR part 1910) that address occupational exposure to bloodborne

pathogens. Using a combination of engineering and work practice controls, personal protective clothing and equipment, training, medical follow-up of exposure incidents, vaccinations (where appropriate) and other provisions, the OSHA regulations minimize or eliminate health risk as a result of occupational exposure to bloodborne pathogens. The EPA believes these DOT and OSHA regulations will provide sufficient protection from potential increases in exposure to those wastes.

A. Air Impacts

As discussed earlier, impacts are presented assuming the more likely ''switching scenario.'' Baseline emissions and emissions under the proposed EG based on the switching scenario are presented in Tables 9a and 9b.

TABLE 9a.—BASELINE EMISSIONS COMPARED WITH EMISSIONS AFTER IMPLEMENTATION OF THE EMISSION GUIDELINES (WITH SWITCHING)

[Metric Units]

Pollutant	Units	Baseline	After EG with switching
PM	Mg/yr ...	11,300	272
CO	Mg/yr ...	13,100	207
CDD/CDF.	kg/yr	285	0.11
HC1	Mg/yr ...	41,200	777
SO_2	Mg/yr ...	766	479
No_x	Mg/yr ...	5,040	3,160
Pb	Mg/yr ...	77.5	0.97
Cd	Mg/yr ...	5.62	0.14
Hg	Mg/yr ...	58.6	3.67

TABLE 9b.—BASELINE EMISSIONS COMPARED WITH EMISSIONS AFTER IMPLEMENTATION OF THE EMISSION GUIDELINES (WITH SWITCHING)

[English Units]

Pollut-ant	Units	Baseline	After EG with switching
PM	Tons/yr ...	12,400	300
CO	Tons/yr ...	14,500	228
CDD/CDF.	Lb/yr	628	0.23
HC1 ..	Tons/yr ...	45,400	857
SO_2 ...	Tons/yr ...	844	528
NO_x ...	Tons/yr ...	5,560	3,490
Pb	Tons/yr ...	85.5	1.07
Cd	Tons/yr ...	6.20	0.16
Hg	Tons/yr ...	64.6	4.05

The proposed guidelines would reduce nationwide emissions of PM by 11,000 megagrams per year (Mg/yr) (12,100 tons per year (tons/yr)) from the estimated emission levels under the typical existing control or the ''regulatory baseline'' of 11,300 Mg/yr (12,400 tons/yr). This reduction represents an overall decrease of about 98 percent of baseline PM emission levels in the absence of the proposed emission guidelines.

Nationwide emissions of CO would be reduced by 12,900 Mg/yr (14,200 tons/yr) from the estimated emission levels under the regulatory baseline of 13,100 Mg/yr (14,500 tons/yr). This reduction represents an overall control level of about 98 percent for CO emissions.

The proposed guidelines would reduce nationwide emissions of dioxins/furans by 284.8 kilograms per year (kg/yr) (627.9 pounds per year (lb/yr)) from the estimated emission levels under the regulatory baseline of 284.9 kg/yr (628.1 lb/yr). Dioxin/furan emissions would be reduced by over 99 percent from the regulatory baseline.

Nationwide emissions of HCl would be reduced by 40,400 Mg/yr (44,600 tons/yr) from the estimated emission levels under the regulatory baseline of 41,200 Mg/yr (45,400 tons/yr). This reduction represents a decrease of about 98 percent in HCl emissions from the regulatory baseline.

Nationwide emissions of SO_2 and NO_X would be reduced by 287 Mg/yr (316 tons/yr) and 1,880 Mg/yr (2,070 tons/yr), respectively, from the estimated emission levels under the regulatory baseline of 766 Mg/yr (844 tons/yr) for SO_2 and 5,040 Mg/yr (5,560 tons/yr) for NO_X. These reductions equate to an overall emissions decrease of about 37 percent for both SO_2 and NO_X.

As a result of today's proposal, nationwide emissions of Pb, Cd, and Hg would be reduced by 76.6 Mg/yr (84.4 tons/yr), 5.48 Mg/yr (6.04 tons/yr), and 54.9 Mg/yr (60.5 tons/yr), respectively, from the estimated emission levels under the regulatory baseline of 77.5 Mg/yr (85.5 tons/yr) for Pb, 5.62 Mg/yr (6.20 tons/yr) for Cd, and 58.6 Mg/yr (64.6 tons/yr) for Hg. These reductions equate to overall control levels of about 99 percent for Pb, 97 percent for Cd, and 94 percent for Hg.

B. Water and Solid Waste Impacts

Under the proposed guidelines, no significant water pollution impacts are projected because the emission control technologies upon which the emission limits are based do not produce a wastewater stream. However, to the extent that wet scrubber systems could be used to comply with the proposed emission limitations, water pollution impacts could be more significant. As discussed in section VI of this notice, the Agency solicits information regarding water pollution impacts associated with the use of wet scrubber systems.

With regard to solid waste impacts, about 1.43 million Mg (1.58 million tons) of medical waste are burned annually in existing MWI's producing about 143,000 Mg/yr (158,000 tons/yr) of solid waste (bottom ash) disposed of in landfills. The addition of acid gas control using dry lime injection, and CDD/CDF and Hg control using activated carbon injection, would increase the quantity of solid waste for final disposal by adding baghouse ash to the amount of bottom ash already generated under the regulatory baseline. In addition, switching to onsite alternatives to incineration would result in an increase in solid waste for final disposal because the nonincineration treatment methods do not reduce the volume of waste as much as incineration.

Under the switching scenario, the amount of solid waste ultimately sent to landfills would increase by about 631,000 Mg/yr (696,000 tons/yr). This quantity includes the increase in ash from the APCD's and the increase in waste that is treated and landfilled without being incinerated. Compared to municipal waste, which is disposed in landfills at a rate of over 91 million Mg/yr (100 million tons/yr), the increase in solid waste from the implementation of the MWI emissions guidelines is insignificant. Therefore, no adverse solid waste impacts are anticipated under the proposed guidelines.

C. Energy Impacts

The emission control technologies upon which the emission limits are based would require additional energy consumption for all existing MWI's. Under the switching scenario, it is not clear whether energy consumption will increase, decrease, or remain the same. Alternatives to incineration require energy to operate. However, information is not available to estimate whether alternatives use more or less energy than MWI's. It is expected that the increase in energy consumption resulting from the switching scenario will be less than the increase under the no-switching scenario.

The estimates of energy impacts assuming all existing MWI's install air pollution control (no-switching scenario) include additional auxiliary fuel for combustion controls and additional electrical energy for operation of the add-on control devices. The proposed guidelines would increase total national usage of natural gas for combustion controls by about 100 million cubic meters per year (MMm^3/

yr) (3,490 million cubic feet per year (10^6 ft^3/yr)) compared to fuel consumption determined from the regulatory baseline. Total national usage of electrical energy for the operation of add-on control devices would increase by about 175,000 megawatt hours per year (MW-hr/yr) (599 billion British thermal units per year (10^9 Btu/yr)) of electricity compared to energy consumption determined from the regulatory baseline.

D. Control Cost Impacts

The control cost impacts on individual facilities will vary depending on the cost of compliance with the guidelines; the cost of alternative treatment and disposal methods; and other factors such as proximity to an offsite contract disposal facility, liability issues related to the transportation and final disposal of the waste, and State and local medical waste treatment and disposal requirements. In general, facilities requiring a smaller waste treatment capacity will have a greater incentive to use a less expensive treatment and disposal option because their onsite incineration cost (per ton of waste burned) will be higher. Facilities with larger amounts of waste to be treated may have some cost advantages if they use a lower cost alternative, but these advantages are not as significant due to economies of scale.

Under the switching scenario, the nationwide annual costs associated with the proposed emission guidelines will increase by about $351 million/yr. The nationwide annual cost of waste disposal per unit of medical waste treated would increase by $245/Mg ($222/ton) to a total cost of $430/Mg ($390/ton) from the estimated nationwide annualized cost of $185/Mg ($168/ton) under the regulatory baseline.

E. Economic Impacts

The goal of the economic impact analysis was to estimate the market response to the emission guidelines and determine whether there would be adverse impacts associated with the proposed guidelines. The proposed guidelines would affect five major industry sectors (hospitals, nursing homes, veterinary facilities, commercial research laboratories, and commercial medical waste incineration facilities) within which some facilities operate an onsite MWI. In addition, the proposed guidelines would affect a number of other industry sectors in which facilities do not typically operate an onsite MWI (e.g., bloodbanks). The economic impact analysis for existing MWI's examined each of these sectors as a whole to determine industry wide impacts.

To assess the industrywide impacts of control costs, the market price increase resulting from the proposed guidelines was estimated for each regulated industry. The market price increases, presented in Table 10, may be thought of as an average price increase across each industry required to recover control costs within each industry. Table 10 reflects the more likely switching scenario. For example, under the switching scenario, the hospital industry would have to raise prices by an average of about 0.1 percent (over current revenues of about $224 billion/year) to cover the increased cost of waste disposal. This table shows that the price increase is relatively small for each industry. This result is mainly due to the fact that the majority of the facilities in each industry sector do not operate an onsite incinerator.

TABLE 10.—MARKET PRICE INCREASED IN THE MAJOR INDUSTRY SECTORS UNDER THE EMISSION GUIDELINES—SWITCHING SCENARIO

Industry	Price increase, percent
Hospitals	0.1
Nursing Homes	0.1
Veterinary Facilities	0.6
Commercial Research Laboratories	0.4
Physicians' Offices	0
Dentists' Offices	0
Freestanding Bloodbanks	0.1
Commercial Medical Waste Incineration Facilities	[9] N/A

[9] Industrywide impacts were not calculated for commercial medical waste incineration facilities because estimates of the change in demand for commercial medical waste incineration were not available. However, this industry is expected to be able to recoup all control cost increases through price increases.

Output, employment, and revenue impacts were also estimated. As a result of the low market price increases and/or relatively inelastic demand, the corresponding decreases in output, employment, and revenue were also low, never exceeding 1 percent under the more likely switching scenario. This result implies that no medical waste-generating industry would need to be significantly restructured (e.g., through closures or consolidations) as a result of the proposed emission guidelines.

V. Rationale for the Proposed Standards and Guidelines

A. Background

An estimated 3.4 million tons of waste are produced annually by medical waste generators in the United States. Hospitals are the single largest generator of medical waste, producing over 70 percent of the annual total. Approximately 5,000 MWI's are believed to exist nationwide (3,700 burning general medical waste and 1,300 burning pathological waste). Over 60 percent of these MWI's are found at hospitals. Medical waste incinerators are also found at commercial medical waste disposal facilities, research laboratories, nursing homes, and veterinary facilities. Based on historic sales data, an estimated 700 new MWI's will be installed over the next 5 years.

Medical waste incinerators are subject to State and local regulations that vary widely both in format and scope. A survey in April 1990 showed that in 38 States, regulations or permit guidelines specific to MWI's were either in place or were in the planning stages. The remainder of the States regulate MWI's under general incinerator requirements, which typically are less stringent that those specific to MWI's. The most common State requirements for MWI's are limits for PM, HCl, and secondary chamber temperature and residence time. Some States also regulate metals, CDD/CDF, and CO. About one third of the States require operator training.

On November 1, 1988, the Medical Waste Tracking Act (MWTA) was signed by Congress. The MWTA required EPA to establish a 2-year demonstration program to track medical waste from its origin to its disposal. In early 1989, EPA established this program in 40 CFR 259. The program was in effect from June 22, 1989, to June 22, 1991, and applied to the States of New York, New Jersey, Connecticut, and Rhode Island, and to Puerto Rico. The MWTA required EPA to prepare a series of Reports to Congress on medical waste and the demonstration program. Now that the demonstration program has concluded, Congress will decide if a medical waste tracking program should be implemented nationwide.

The current air emissions standards development effort for MWI's was initiated in 1989. The data-gathering effort was designed to take advantage of information gathered under the auspices of the MWTA. Also, in 1989, an MWI operator training course and manual were developed with recommendations on the proper operation and maintenance of MWI's.

The Amendments of 1990 added section 129 to the Act. Section 129 specifically addresses development of standards for MWI's. Section 129 requires EPA to establish an NSPS for new MWI's and emission guidelines for existing MWI's that combust hospital

waste, medical waste, and infectious waste. The standards and guidelines must specify numerical emission limitations for the following: PM, opacity, SO_2, HCl, NO_X, CO, Pb, Cd, Hg, and CDD/CDF. Section 129 also includes requirements for operator training as well as siting requirements for new MWI's.

The standards and guidelines must reflect MACT ''* * * the maximum degree of reduction in emissions of air pollutants * * * that the Administrator, taking into consideration the cost of achieving such emission reduction, any nonair quality health and environmental impacts and energy requirements, determines is achievable * * *'' Section 129 states that ''The degree of reduction in emissions that is deemed achievable for new units in a category shall not be less stringent than the emissions control that is achieved in practice by the best-controlled similar unit * * *'' Also section 129 requires that ''Emissions standards for existing units in a category may be less stringent than standards for new units in the same category but shall not be less stringent than the average emissions limitation achieved by the best performing 12 percent of units in the category * * *'' The standards and guidelines must be no less stringent than these levels of emission control currently achieved. These levels are referred to as the MACT floor.

B. Selection of Source Category

Section 129 of the Act directs the EPA to issue standards and guidelines pursuant to section 111 for solid waste incineration units combusting hospital waste, medical waste, and infectious waste (i.e., MWI's). An MWI is defined as any device that burns medical waste, with or without other types of waste (e.g., municipal solid waste [MSW]) and with or without heat recovery.

Medical waste is defined pursuant to the Solid Waste Disposal Act as codified in 40 CFR 259 subpart B as any solid waste that is generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals. Medical waste consists of, but is not limited to, the following types of materials:

1. Sharps (e.g., hypodermic and suture needles, scalpel blades, syringes, pipettes, vials, other types of broken or unbroken glassware, etc.);

2. Fabrics (e.g., gauze, garments, bandages, swabs, etc.);

3. Plastics (e.g., trash bags, sharps containers, IV bags, tubes, specimen cups, etc.);

4. Paper (e.g., disposable gowns, sheets, etc.; premoistened towels; paper towels; etc.);

5. Waste chemicals/drugs that are not RCRA hazardous waste (e.g., lab chemicals, leftover and out-of-date drugs, disinfectants, etc.); and

6. Pathological waste (e.g., human and animal body parts and tissue).

Medical waste does not include any hazardous waste identified or listed under 40 CFR 261, or any household waste as defined in 40 CFR 261.4(b)(1). On the other hand, mixtures of medical waste with hazardous waste or household waste would be considered medical waste for the purposes of these proposed standards and guidelines. The definition of household waste includes waste generated at single and multiple residences. Nursing homes or retirement homes with a health care facility could be considered multiple residences. For the purpose of the proposed standards and guidelines, the definition of medical waste includes waste materials that meet the definition of medical waste and are generated by retirement homes/nursing homes.

Medical waste also does not include human and animal remains that are not generated as medical waste. A device that burns solely human or animal remains (and the caskets or containers carrying the remains, or the bedding included with the animal remains) for the purpose of cremation is not an MWI and, therefore, is not subject to the requirements of the standards and guidelines. For example, a facility that burns the remains of animals that have been euthanized at animal shelters and animal hospitals is not an MWI because the remains are not considered medical waste. On the other hand, a facility that burns human and/or animal remains that are generated as medical waste or a facility that burns general medical waste in addition to human and/or animal remains is an MWI and is subject to the standards and guidelines. For example, a facility that burns the remains of research laboratory rats is an MWI because the remains are considered medical waste (they are generated in research pertaining to the diagnosis, treatment, or immunization of human beings or animals or in the production or testing of biologicals).

The range of waste types included in this definition is broader than that defined in the now expired Medical Waste Tracking Act (40 CFR part 259) as Regulated Medical Waste. Regulated Medical Waste consisted of seven categories of medical waste based on potential for infection or aesthetic concerns. The definition of medical waste in this proposal classifies medical waste more broadly based on materials' composition. Consequently, the estimated amount of waste generated by medical waste generators (3.4 million tons/yr) and the estimated amount of waste burned in medical waste incinerators (1.8 million tons/yr) is greater than the Medical Waste Tracking Act estimated amount of Regulated Medical Waste generated (922,000 tons/yr). It has been suggested that EPA's definition of medical waste in this proposal is inappropriate. The EPA specifically requests comment on the definition of medical waste as applied to the regulation of medical waste incinerators.

Most MWI's burn a diverse mixture of medical waste (referred to in this preamble as general medical waste), which may include some pathological waste (human and animal body parts and/or tissue). Most of the materials that make up the general medical waste stream burn readily, and given the proper conditions, will continue to burn once they are ignited. Metal and glass sharps do not burn but also do not greatly impede combustion of other materials. Pathological waste has a very high moisture content and will not support self-sustained combustion but will burn if adequate heat is applied to drive off excess moisture. As a result, larger amounts of pathological waste require special operating conditions for combustion. Thus, some facilities maintain MWI's designed and operated to burn pathological waste exclusively.

Because of differences in waste composition and the combustion process, uncontrolled emissions from pathological MWI's contain significantly lower levels of the pollutants of concern for this source category than uncontrolled emissions from general medical waste incinerators. General medical waste typically contains more metals and chlorine than does pathological waste, resulting in higher emissions of metals and HCl from general medical waste incinerators than from pathological incinerators. For example, typical uncontrolled Hg emissions are about 3.1 mg/dscm for general medical waste incinerators and about 0.05 mg/dscm for pathological MWI's. Overall pollutant emissions from pathological MWI's represent less than 3 percent of the uncontrolled nationwide emissions from MWI's burning general medical waste.

Additionally, onsite alternatives to incineration are available for the treatment of general medical waste, while most of these technologies are not applicable to the treatment of purely pathological waste. As a result, pathological MWI's are more likely to

face adverse economic impacts associated with installation of pollution control equipment, while general medical waste incinerators could use available alternatives to incineration. For these reasons, the proposed standards and guidelines focus on regulating emissions from general medical waste incinerators and include very minor requirements for pathological MWI's. Under the proposed standards and guidelines, pathological MWI's would only be required to submit quarterly reports of the amount and type of materials charged to the incinerator.

Finally, in addition to developing standards and guidelines for medical waste incinerators, section 129 of the Act directs the EPA to develop standards and guidelines for municipal waste incinerators, commercial or industrial waste incinerators, and other categories of solid waste incinerators. The Agency intends to consider pathological incinerators (along with crematory incinerators) when evaluating the category of other solid waste incinerators for regulation.

C. Modification of Existing MWI's

Previously, the terms ''modification'' and ''reconstruction'' were defined under sections 60.14 and 60.15 of subpart A of part 60. Section 129 of the Act has specified a new definition of ''modified'' that combines and revises the previous definitions of ''modification'' and ''reconstruction.'' Specifically, ''modified'' refers to:

(1) modifications for which the

* * * cumulative costs of the modifications, over the life of the unit, exceed 50 per centum of the original cost of the construction and installation of the unit (not including the cost of any land purchased in connection with such construction or installation) updated to current costs * * *

or (2) modification involving

* * * a physical change in or change in the method of operation of the unit which increases the amount of any air pollutant emitted by the unit for which standards have been established under [section 129] or sections 111 * * *.

A special provision has been included in the proposed NSPS and emission guidelines to address certain modifications to existing facilities. This provision states that if an existing MWI is modified for the purpose of meeting the requirements of the proposed guidelines for existing MWI's or State regulations developed to implement these guidelines, then the MWI would not be considered a ''modified'' MWI and would not be subject to the NSPS (40 CFR part 60, subpart Ec).

On the other hand, if the existing facility is modified in ways not required to meet the emission guidelines, then the facility could be considered a ''modified'' MWI and could become subject to the NSPS. For example, if an existing pathological MWI, which was not originally designed to accommodate general medical waste, begins burning general medical waste, then that MWI may be considered a modified MWI and, as a result, will be subject to the NSPS.

D. Selection of Pollutants

Section 129 of the Act requires that the standards and guidelines promulgated under sections 111 and 129 and applicable to all solid waste incineration units shall specify numerical emission limitations for the following substances or mixtures: PM (total and fine), opacity, SO_2, HCl, NO_X, CO, Pb, Cd, Hg, and CDD/CDF. For this reason, the MWI standards and guidelines specify numerical emission limits for these pollutants.

E. Selection of Affected and Designated Facilities

As required by section 129 of the Act, the affected facility to which the proposed new source performance standards apply is each individual MWI for which construction is commenced after today's date or for which modification is commenced after the effective date of these standards. The designated facility to which the proposed emission guidelines apply is each existing MWI for which construction commenced on or before today's date. A facility that burns both municipal waste and medical waste could be subject to both the municipal waste combustor standards and guidelines and the medical waste incinerator standards and guidelines.

F. Selection of Format for the Proposed Standards and Emission Guidelines

The format selected for the proposed standards and guidelines is a combination of emission limitations and percent reductions to ensure control of emissions. The specific format of the proposed standards and guidelines and the reasons for selection are discussed below.

As required by section 129 of the Act, the proposed standards and guidelines would establish numerical emission limitations for PM, CO, CDD/CDF, HCl, SO_2, NO_X, Pb, Cd, and Hg. For the purpose of regulating PM and metals (Pb, Cd, and Hg) the format selected is a numerical concentration limit in units of mg/dscm corrected to 7 percent oxygen. For the purpose of regulating Hg an alternative percent reduction is also proposed. The numerical Hg emission limit reflects the emission level that can be achieved based on a fabric filter (FF) system with activated carbon injection. Emissions of Hg can be highly variable and depend on the Hg input level. In cases where Hg levels are temporarily elevated due to variability in the waste feed, the numerical emission limit may not be consistently achievable. However, the control device is capable of achieving 85 percent reduction of elevated Hg levels.

Under the proposed standards and guidelines, CDD/CDF emissions are measured in units of total ng/dscm or ng/dscm toxic equivalency (TEQ). To arrive at the TEQ, measured emissions of each tetra- through octa-CDD and CDF congener are multiplied by the corresponding toxic equivalency factor (TEF) specified in the standards and guidelines (see Table 6). The products are then added to obtain the total concentration of CDD/CDF emitted in terms of TEQ.

For CO, SO_2, NO_X, and HCl, the proposed standards and guidelines are volume concentrations corrected to 7 percent oxygen. For HCl, an alternative percent reduction is also proposed. A percent reduction is generally appropriate for acid gases emissions from MWI's. However, in cases where inlet levels are very low and the specified percent reduction would result in concentrations below the specified volume concentration (42 ppmv, which is a 97 percent reduction from typical uncontrolled emissions), these percent reductions may not be achievable. Therefore, the proposed HCl emission limits would require either a 97 percent reduction or a 42 ppmv HCl outlet concentration, which is based on reduction from typical uncontrolled emission levels, whichever is less stringent. An alternative percent reduction is not proposed for emissions of SO_2 because at the low inlet levels associated with medical waste, EPA emission test data shows that acid gases controls are not effective in reducing SO_2 emissions and as a result, SO_2 limits are based on uncontrolled emissions.

Under the proposed standards and guidelines, emission limits for Hg and HCl include stack concentrations as well as percent reductions. The EPA is requesting comments on the appropriateness of including a percent reduction along with a stack concentration limit in the standards and guidelines for these two pollutants.

G. Selection of Classes, Types, and Sizes

Section 129 states that the Administrator may distinguish among

classes, types, and sizes of units within a category in establishing the standards and guidelines. In other words, EPA may subcategorize the MWI source category in establishing standards and guidelines. After reviewing the population of MWI's, the EPA believes that, for the purpose of regulatory development and of determining MACT, the MWI population should be divided into three subcategories: (1) continuous MWI's, (2) intermittent MWI's, and (3) batch MWI's. These three subcategories are based on differences in the design of the MWI's as discussed in the following paragraphs.

In each of the design systems, sequential combustion operations typically are carried out in two separate chambers: primary and secondary. In the primary chamber, the waste is loaded and ignited, the volatile organic components driven off, and the nonvolatile materials combusted to ash. The volatile organic components released from the primary chamber are combusted in the secondary chamber. Newer MWI's are typically designed with 1-second (1-sec) residence time secondary chambers; older MWI's were designed with smaller, 0.25-second (0.25 sec) residence time secondary chambers.

While there are similarities in the three design types of MWI's, there are also key design differences that make each type unique. The primary differences between the three design types of MWI's are the methods of charging waste to and removing ash from the primary chamber. These differences cause variations in the way the waste is burned and in the pollutant emission profile for each MWI design type.

Continuous units, which are the largest of the three types, have mechanical ram feeders and continuous ash removal systems. These features allow the unit to operate 24 hours per day for many days at a time. Continuous MWI's achieve steady-state operation in the beginning of their operating cycle and maintain this mode of operation throughout the remainder of the cycle. Waste is charged and ash is removed simultaneously (i.e., on a continuous basis). During operation, waste is burned at the same rate as it is charged into the unit, and pollutant emission rates and primary and secondary chamber temperatures tend to be relatively constant.

Most intermittent MWI's also have mechanical ram feeders that charge waste into the primary chamber at about 5- to 10-minute intervals. However, because there is no means for ash removal during the burning phase of the operating cycle, the unit can only be operated for a limited number of hours before the accumulation of ash in the primary chamber requires the unit to be shut down for ash removal. Intermittent units, which are usually much smaller than continuous units, typically operate on a daily burn cycle of 10 to 14 hours. While these units tend to approach steady-state operation during the middle of their operating cycle, waste is normally being charged faster than it is being burned. Primary chamber temperatures tend to climb throughout the operating cycle until waste is no longer charged into the unit. Because there is a significant accumulation of unburned material in the primary chamber at the end of the charging period, these units are designed with a burndown/cooldown phase. Generally, pollutant emissions continue through this phase, which can continue for several hours after charging has ceased.

The batch operating cycle consists of three phases: low-air, high-air, and cooldown. All of the waste to be burned during a complete cycle is loaded into the primary chamber before the unit begins operation. Once the unit is filled with waste and the burning cycle begins, the charging door is not opened again until the cycle is complete and the unit is cool. This cycle normally takes 1 or 2 days, depending on the size of the unit and the amount of waste charged. During the low-air phase, temperatures in the primary chamber rise slowly because combustion is occurring only on the surface of the waste pile and because combustion air is restricted. When the high-air phase begins, the temperatures climb more rapidly, more volatiles are exposed to the flame front, and the combustion process quickens. Batch MWI's tend to approach steady-state operation at the end of the low-air phase, when the primary chamber temperature reaches the design operating range. Pollutant emission rates also tend to increase in the second half of the low-air phase, then level off, and continue steadily during the high-air and cooldown phases. Pollutant concentrations during the high-air phase of batch MWI's are similar to concentrations during the charging period for continuous and intermittent units.

The differences in typical hours of operation, discussed above, affect the potential for total emissions (on a mass basis) from each MWI type. Continuous MWI's, which can accommodate waste charging for an unrestricted length of time, will have the greatest potential emissions because waste burning and subsequent emissions can occur continuously. Intermittent MWI's, designed to accept waste charges at periodic intervals for between 8 and 14 hours, will be limited in potential emissions by periods of shutdown required to remove ash from the incinerator. The hours of operation, limited by the time required to remove ash, result in less potential emissions from intermittent MWI's than from continuous MWI's. Batch MWI's are designed to burn only one load of waste at a time. The operating cycle normally takes 1 or 2 days, depending on the size of the unit and the amount of waste charged. Potential emissions from batch MWI's are lower than continuous and intermittent MWI's because of the significant difference in the total amount of waste burned over a given period of time.

Typical uncontrolled emission levels for each of the three subcategories are presented in Tables 11a and 11b. Table 11a shows uncontrolled emissions from new MWI's, while Table 11b shows uncontrolled emissions from existing MWI's. These emission levels reflect concentrations when the MWI is operating at steady-state conditions, which include the high-air phase for the batch MWI and the charging period for continuous and intermittent MWI's. As noted elsewhere, the EPA specifically solicits comment on the determination to distinguish between continuous, intermittent, and batch units.

TABLE 11a.—TYPICAL UNCONTROLLED EMISSIONS FROM NEW MWI'S

Pollutant	Continuous	Intermittent	Batch
PM, mg/dscm	300	300	300
CO, ppmv	300	300	300
CDD/CDF, ng/dscm	6,600	6,600	6,600
HCl, ppmv	1,400	1,400	1,400
SO_2, ppmv	16	16	16
NO_X, ppmv	140	140	140

TABLE 11a.—TYPICAL UNCONTROLLED EMISSIONS FROM NEW MWI'S—Continued

Pollutant	Continuous	Intermittent	Batch
Pb, mg/dscm	4.2	4.2	4.2
Cd, mg/dscm	0.29	0.29	0.29
Hg, mg/dscm	3.1	3.1	3.1

TABLE 11b.—TYPICAL UNCONTROLLED EMISSIONS FROM EXISTING MWI'S

Pollutant	Continuous (0.25-sec)	Continuous (1-sec)	Intermittent	Batch
PM, mg/dscm	570	300	570	570
CO, ppmv	690	300	690	690
CDD/CDF, ng/dscm	25,000	6,600	25,000	25,000
HCl, ppmv	1,400	1,400	1,400	1,400
SO_2, ppmv	16	16	16	16
NO_X, ppmv	140	140	140	140
Pb, mg/dscm	4.2	4.2	4.2	4.2
Cd, mg/dscm	0.29	0.29	0.29	0.29
Hg, mg/dscm	3.1	3.1	3.1	3.1

One specific approach which EPA is considering and on which EPA requests comment is that of further subcategorizing batch and intermittent MWI's by size or capacity to burn medical waste. Some have suggested, for example, that EPA examine alternatives, such as subcategorizing these categories into incinerators with capacities of 50 pounds per hour or less, 100 pounds per hour or less, 200 pounds per hour or less, etc. A number of States have already established subcategories based on size which exempt the smallest incinerators or impose less stringent requirements on such incinerators. Current State regulations, therefore, may provide a basis for further subcategorizing the categories of batch and intermittent MWI's.

To fully consider subcategorization by size within the batch and intermittent categories, however, a mechanism must be available to accurately and consistently determine the capacity of an MWI. Only if such a mechanism exists, will enforcement personnel, as well as owners and operators of MWI's, be assured that MWI's are subject to a consistent set of requirements.

The EPA believes this may be a serious problem. It appears there is no common or widely used mechanism or ''standard'' within the MWI industry for sizing or determining the capacity of an incinerator to burn medical waste. As a result, it seems that one vendor's 50 pound per hour capacity incinerator can be another vendor's 100 pound per hour capacity incinerator. It also appears the same vendor may sell one customer a 50 pound per hour capacity MWI and then sell another customer the same incinerator as a 100 pound per hour MWI. The EPA believes that a manufacturer's or vendor's ''nameplate capacity'' is not an accurate and reliable means for determining the size or capacity of an MWI.

The EPA recognizes that the composition of medical waste changes across generators, over time, and in response to changes in waste handling or recycling practices in a way that may affect the amount of medical waste a specific incinerator is able to burn. For the purposes of enforcing regulations that may vary by size or capacity, a common mechanism or ''standard'' to measure or determine the capacity of MWI's is necessary.

Consequently, EPA specifically requests comments on a mechanism or ''standard'' for accurately and consistently determining the capacity of MWI's in the enforcement of whatever regulation might be adopted. For example, the comments might outline the mechanisms or approaches used by States to ensure all MWI's of the same capacity are subject to the same requirements. Or, the comments may offer alternative measures of capacity that serve as a better basis for identifying small intermittent and/or small batch MWI's. Finally, the manufacturers may choose to develop a voluntary approach providing a consistent measure of rated capacity.

H. Performance of Technology

Medical waste incinerator emissions are mixtures of pollutants including acid gases (HCl and SO_2), NO_X, CO, PM, CDD/CDF, and metals (Pb, Cd, and Hg). There are basically two approaches to controlling these emissions: combustion control and add-on air pollution control. These approaches will be discussed in sections 1. and 2. below.

The first approach, combustion control, can be broken down into three levels that are based on the flue gas residence time in the secondary chamber. These three levels are 0.25-sec combustion, 1-sec combustion, and 2-sec combustion.

The second approach can be further broken down into various add-on control systems, including wet systems, fabric filter systems without activated carbon injection, and fabric filter systems with activated carbon injection. The control of NO_X will also be discussed under add-on control systems.

One additional area that has been suggested for consideration is waste segregation. This topic will be discussed in paragraph 3. of this section.

1. Combustion Control

Combustion control includes the proper design, construction, operation, and maintenance of an MWI to destroy or prevent the formation of air pollutants prior to their release to the atmosphere. Test data indicate that as secondary chamber residence time and temperature increase, emissions decrease. Combustion control is most effective in reducing CDD/CDF, PM, and CO emissions.

The 0.25-sec combustion level includes a minimum secondary chamber temperature of 927 °C (1700 °F) and a 0.25-sec secondary chamber residence time. These combustion conditions are typical of older MWI's.

The 1-sec combustion level includes a minimum secondary chamber temperature of 927°C (1700°F) and residence time of 1-sec. These combustion conditions are typical of newer MWI's. Compared to 0.25-sec combustion, 1-sec combustion will achieve substantial reductions in CDD/CDF and CO emissions, and will

provide some control of PM, but will not reduce emissions of acid gases (HCl and SO_2), NO_X, or metals (Pb, Cd, and Hg).

The 2-sec combustion level includes a minimum secondary chamber temperature of 1800°F and residence time of 2-sec. These combustion conditions will provide additional control of CDD/CDF, CO, and PM, but will not reduce emissions of acid gases (HCl and SO_2), NO_X, or metals (Pb, Cd, and Hg). The 2-sec combustion conditions are considered to be the best level of combustion control that is applied to MWI's.

2. Add-On Control

Add-on control refers to various add-on air pollution control systems used in addition to 2-sec combustion to capture pollutants as they leave the incinerator. Add-on controls include wet systems, fabric filter systems without activated carbon injection, and fabric filter systems with activated carbon injection. Because Pb and Cd are associated with PM in the flue gas and are removed by PM control devices, these three pollutants are considered as a group when evaluating MACT. Similarly, SO_2 and HCl are considered together because generally, they are both reduced using acid gas controls.

a. *Wet systems.* Wet systems include scrubbing systems such as a venturi scrubber (VS) or a venturi scrubber followed by a packed-bed absorber (VS/PB). Compared to combustion control, wet systems achieve substantial reductions in HCl emissions, provide some control of Pb and Cd, and further reduce PM and CDD/CDF emissions, but do not add to the control of NO_X, CO, or Hg. However, at the low SO_2 levels associated with MWI's, wet systems are not, in EPA's experience, effective in reducing SO_2 emissions. As discussed in section VI, EPA requests comment on the performance and costs of wet scrubber systems.

b. *Fabric filter systems without carbon injection.* Fabric filter systems include a fabric filter followed by a packed bed absorber (FF/PB), dry sorbent injection followed by a fabric filter (DI/FF), or a spray dryer followed by a fabric filter (SD/FF). The SD/FF and the DI/FF systems have the same performance based on EPA MWI test data. The fabric filter alone was not examined because wet systems achieve greater overall emission reduction at a lower cost.

Compared to wet systems, fabric filter systems generally provide additional control of PM, Pb, and Cd, but do not add to the control of acid gases, NO_X, CO, or Hg. The performance of the three fabric filter systems in reducing CDD/CDF emissions varies significantly. Compared to combustion control, the DI/FF and SD/FF systems provide no additional control of CDD/CDF, while formation of CDD/CDF is a potential problem with the FF/PB system.

Formation of CDD/CDF occurs when there is intimate contact between a gas stream containing CDD/CDF precursors and fly ash, which acts as a catalyst for CDD/CDF formation. The optimum temperature window for fly ash catalyzed CDD/CDF formation is between 300° and 600°F. The formation of CDD/CDF is minimized when using combustion control or wet systems because these options provide: (1) rapid cooling of the gas stream through the temperature window; and/or (2) quick dispersion (or removal in the case of wet systems) of CDD/CDF precursors and fly ash. In DI/FF and SD/FF systems, the presence of an acid gas sorbent (lime, for example) also limits the formation of CDD/CDF. The fabric filter in a FF/PB system, on the other hand, can provide those conditions conducive to CDD/CDF formation. In fact, test data have shown CDD/CDF formation in the FF/PB system.

c. *Fabric filter systems with carbon injection.* Data from a DI/FF system and a SD/FF system show that the injection of activated carbon upstream of the fabric filter results in significant reductions in CDD/CDF and Hg emissions, compared to wet systems and FF systems without carbon. Because no data are available from a FF/PB system with carbon injection, and because CDD/CDF formation occurred in a FF/PB system, it is not known exactly what CDD/CDF emission reductions can be achieved with this system. However, it is expected that the injection of carbon will improve the performance of a FF/PB system in reducing CDD/CDF emissions.

d. *Nitrogen oxides control.* During combustion, NO_X is formed through oxidation of fuel-bound nitrogen (N_2) contained in the medical waste and oxidation of atmospheric N_2 (from the combustion air). Selective noncatalytic reduction (SNCR) add-on technology has been used to control NO_X emissions from municipal waste combustors (MWC's) by reducing NO_X to N_2 without the use of catalysts. Techniques include Thermal DeNO$_X$™, which injects ammonia into the combustor as a reducing agent; the NO$_X$OUT™ process, which injects urea with chemical additives; and a two-stage urea/methanol injection process. Maximum emissions reduction occurs when the reducing agents are injected into a gas stream within a narrow temperature range and the gas is maintained in that range for a sufficient length of time.

A discussion of SNCR NO_X control was presented in the recent proposal preamble for the MWC NSPS (59 FR 181 page 48228). The use of SNCR at MWC's results in NO_X emission reductions of about 45 percent.

There are some concerns about the applicability of SNCR to MWI's. The SNCR technology has never been applied to MWI's, and several factors may complicate the use of SNCR and may reduce its performance level. The periodic charging of waste may cause corresponding temperature fluctuations, and the varying moisture and nonhomogeneous nature of the waste burned. When the temperature rises above the required injection temperature window, the reducing agent is oxidized to NO_X, and NO_X emissions can increase. In the event of low temperatures, unreacted ammonia (NH_3) emissions can occur.

Furthermore, uncertainties exist regarding the injection pattern necessary to achieve adequate mixing and residence time in the operating temperature window and in the design and engineering work necessary to develop equipment that could be used in applications with much smaller gas flow rates than those for MWC's. Consequently, SNCR is not considered a demonstrated control technology for MWI's.

Although SNCR is not considered a demonstrated control technology for MWI's, the EPA specifically solicits comments on the technical feasibility of applying NO_X control to MWI's. Specifically, the EPA solicits information on the performance, including control device inlet and outlet emissions data, costs, applicability, and operating experience associated with specific NO_X control technologies for MWI's.

3. *Waste segregation.* One area that has been suggested for consideration is waste segregation. It has been suggested that removal of batteries would reduce Hg emissions and that removal of chlorinated plastics would result in reductions in HCl and CDD/CDF. The EPA data indicate that these emissions vary from facility to facility which could be a result of differences in the amount of Hg and chlorine found in the waste stream. The types of materials that are sent to the incinerator will vary from facility to facility depending on facility operating practices, which are defined by purchasing decisions, waste handling procedures, and other practices that affect the types of materials incinerated. The EPA has no data on the effect of waste handling practices on emissions

of various pollutants and is requesting comments on the extent to which operating practices could influence emissions. To evaluate the effectiveness of waste segregation programs, the EPA is specifically soliciting detailed descriptions of the programs and results of performance tests conducted to demonstrate pollutant emission levels from the MWI prior to implementation of the program and subsequent to implementation of the program. This information is critical to a thorough evaluation of the effectiveness of the program. In addition, the EPA solicits comments on how such a program could be incorporated into the MWI regulations. Whenever information is submitted relative to Hg emissions, the EPA requests that, if available, Hg emissions data be broken out by various species emitted (for example mercury chloride or elemental mercury).

I. MACT Floor and MACT for New MWI's

Section 129 of the Clean Air Act requires that emission standards reflect MACT. According to section 129, the degree of reduction in emissions that is deemed achievable for new MWI's may not be less stringent than the emissions control that is achieved in practice by the best controlled similar unit. As a result, the emission limits selected to reflect MACT for new MWI's must, at a minimum, be as stringent as the emission levels achieved by the best controlled similar unit. This minimum performance level is known as the MACT floor. Beyond the MACT floor, in determining what performance level should be adopted in the standards as MACT, the Administrator is to consider the costs, any nonair-quality health and environmental impacts and energy requirements associated with such emission limits.

The basis for MACT determinations are presented for each subcategory in paragraphs I1, I2, and I3 of this section. The EPA solicits comments on whether test data are available from MWI's that are achieving better control than the systems used as the basis for the MACT determinations. If submitting Hg data, EPA specifically requests that, if available, Hg emission data be broken down by various species emitted (for example, mercury chloride and elemental mercury).

While the paragraphs that follow focus on specific control technologies in determining the MACT floor and MACT for new MWI's, the standards do not require the use of any specific technology. The Agency's assessment of the performance of specific technologies is used to develop emission limitations, which appear in the regulation. Any control technology that can comply with the emission limitations may be used.

1. MACT Floor and MACT for New Continuous MWI's

As discussed in section VI, the discussion that follows is based in part on limited test data on wet scrubber systems. The EPA requests comment on the performance and costs of wet scrubber systems.

The MACT floor for continuous MWI's consists of the emission levels that are achievable with DI/FF with carbon injection. The MACT floor is based on these emission levels because DI/FF with carbon injection achieves the lowest emission levels for all pollutants, and it is used to control emissions from at least one existing continuous MWI. While the lowest emission levels for most of the pollutants are achieved by several different control technologies (including DI/FF with carbon injection), the lowest Hg and CDD/CDF emission levels for continuous MWI's are achieved only with DI/FF with carbon injection.

Because the MACT floor is the most effective level of control for continuous units, there are no alternatives beyond the MACT floor to consider. The level of emission control achieved by a DI/FF system with carbon injection is considered MACT for continuous MWI's.

As discussed earlier, NO_X control has not been demonstrated on MWI's and acid gas controls are not effective in reducing SO_2 emissions from MWI's. Therefore, MACT reflects no control of NO_X and SO_2. However, because the Act requires EPA to set numerical emission limits for NO_X and SO_2, the limits are proposed at 210 ppmv for NO_X and 45 ppmv for SO_2, the highest uncontrolled NO_X and SO_2 emission rates measured during the EPA test program. The EPA specifically solicits comments on the emission limits of 45 ppmv set for SO_2 and 210 ppmv set for NO_X and whether these levels accurately reflect uncontrolled emissions of NO_X and SO_2 at MWI's.

2. MACT Floor and MACT for New Intermittent MWI's

As discussed in section VI, the discussion that follows is based in part on limited test data on wet scrubber systems. The EPA requests comment on the performance and costs of wet scrubber systems.

The MACT floor for intermittent MWI's is based on the emission levels that are achievable with a combination of two control technologies. The VS/PB and DI/FF without carbon injection technologies are each used to control emissions from at least one intermittent MWI. The MACT floor is based on both of these technologies because VS/PB achieves the lowest CDD/CDF emissions, but DI/FF without carbon injection achieves the lowest PM, Pb, and Cd emissions. The MACT floor emission levels for the other pollutants can be achieved with either technology. Therefore, one way to achieve all of the MACT floor emission levels for intermittent MWI's would be to use a combination of both VS/PB and DI/FF without carbon injection.

Another approach, which is less complex and less costly than the above combination of controls, could also be used to achieve the MACT floor emission levels. As noted in the discussion of the MACT floor for continuous MWI's, the CDD/CDF emission levels achievable with the DI/FF with carbon injection are even lower than those achievable with the VS/PB system. Even though this technology is not known to be used with existing intermittent MWI's, it could achieve better performance for a much lower cost than the combination of controls described above, and therefore the MACT floor for new intermittent MWI's is based on these emission levels.

Because the MACT floor is the most effective level of control for intermittent units, there are no alternatives beyond the MACT floor to consider. The level of emission control achieved by a DI/FF system with carbon injection is considered MACT for intermittent MWI's.

As discussed earlier, NO_X control has not been demonstrated on MWI's and acid gas controls are not effective in reducing SO_2 emissions from MWI's. Therefore, MACT reflects no control of NO_X and SO_2. However, because the Act requires EPA to set numerical emission limits for NO_X and SO_2, the limits are proposed at 210 ppmv for NO_X and 45 ppmv for SO_2, the highest uncontrolled NO_X and SO_2 emission rates measured during the EPA test program. The EPA specifically solicits comments on the emission limits of 45 ppmv set for SO_2 and 210 ppmv set for NO_X and whether these levels accurately reflect uncontrolled emissions of NO_X and SO_2 at MWI's.

3. MACT Floor and MACT for New Batch MWI's

As discussed in section VI, the discussion that follows is based in part on limited test data on wet scrubber systems. The EPA requests comment on the performance and costs of wet scrubber systems.

Like the MACT floor for intermittent MWI's, the MACT floor for new batch MWI's consists of the emission levels that are achieved with a combination of two control technologies. The 2-sec combustion control is used to control emissions from many existing batch MWI's, and FF/PB is used to control emissions from at least one batch MWI; no other add-on control technologies have been identified on batch units. The FF/PB achieves lower PM, Pb, Cd, and HCl emissions than 2-sec combustion control, but because CDD/CDF formation can occur in a FF/PB system, 2-sec combustion control alone achieves lower CDD/CDF emissions. Equivalent emission levels for other pollutants are achieved with both technologies. The MACT floor for all pollutants can be achieved with the use of another technology: DI/FF without carbon injection. Except for CDD/CDF, this technology achieves the same emission levels as FF/PB, and the CDD/CDF emissions are the same as those for 2-sec combustion control alone. Therefore, the MACT floor for new batch MWI's consists of the emission levels that are achievable with DI/FF without carbon injection.

Unlike continuous and intermittent MWI's, there is a level of control more effective than the MACT floor for batch MWI's. This level of control is achieved by adding carbon to the DI/FF system. The result is further reduction in CDD/CDF emissions along with significant Hg control. The incremental national annual cost of this option is about $740,000, or about $170/ton of waste burned nationwide. The national annual costs increase by only about 3 percent. Therefore, the level of control achieved by the DI/FF system with carbon injection is considered MACT for batch MWI's.

As discussed earlier, NO_X control has not been demonstrated on MWI's and acid gas controls are not effective in reducing SO_2 emissions from MWI's. Therefore, MACT reflects no control of NO_X and SO_2. However, because the Act requires EPA to set numerical emission limits for NO_X and SO_2, the limits are proposed at 210 ppmv for NO_X and 45 ppmv for SO_2, the highest uncontrolled NO_X and SO_2 emission rates measured during the EPA test program. The EPA specifically solicits comments on the emission limits of 45 ppmv set for SO_2 and 210 ppmv set for NO_X and whether these levels accurately reflect uncontrolled emissions of NO_X and SO_2 at MWI's.

J. MACT Floor and MACT for Existing MWI's

1. MACT Floor for Existing MWI's

Section 129 of the Act requires that emission guidelines reflect MACT. According to section 129, the degree of reduction in emissions that is deemed achievable for existing MWI's must not be less stringent than the average emission limitation achieved by the best performing 12 percent of units in the category. In setting MACT standards, the EPA must establish the MACT floor for a source category because the Act specifies that each standard must be at least as stringent as the floor for the relevant source category. For the MWI source category, the EPA did not have sufficient emissions data to determine the MACT floor. Data was only available from 7 MWI facilities (8 emissions tests), to represent 3,700 existing MWI's. As a result, the EPA examined air quality permits and State regulations to determine the emission limitations achieved by the best-performing 12 percent of units in each subcategory.

Emission limitations were determined for the estimated total MWI population by examining air quality permits where available and by assuming that the estimated population of MWI's for which permits were not available are subject to emission limitations specified by State regulations. It was assumed that all MWI's are either achieving their permit limits or are achieving their State regulatory emission limits.

For each subcategory, the emission limitations for each pollutant were ranked from most stringent to least stringent and the MACT floors for each pollutant were determined by averaging the emission limitations of the top 12 percent of units in that subcategory. In some cases, the number of MWI's subject to specific emission limitations did not comprise 12 percent of the population in a subcategory. Where this occurred, numerical emission limits were established for the MACT floor by including uncontrolled emission values for the additional number of MWI's necessary to make up 12 percent of the existing population.

The MACT floors define the minimum level of emissions control. Beyond these levels, in determining what performance levels should be adopted in the guidelines as MACT, the Administrator is to consider the costs, any nonair-quality health and environmental impacts, and energy requirements associated with such emission limits.

An estimated 338 continuous, 3,018 intermittent, and 336 batch MWI's exist nationwide. For each of these subcategories, the MACT floor emission levels for each pollutant are calculated as the averages of the emission limitations reported by the top 12 percent of units in that subcategory. The top 12 percent of units in each subcategory is represented by the 41 continuous, 363 intermittent, and 41 batch MWI's with the most stringent permit or state regulation limitations. The MACT floor emission levels for each pollutant in each subcategory are presented in Table 12.

TABLE 12.—MACT FLOOR EMISSION LEVELS FOR EXISTING MWI'S

Pollutant	MWI type		
	Continuous	Intermittent	Batch
PM, mg/dscm	46	69	69
CO, ppmv	76	90	91
CDD/CDF, ng/dscm	1,619	12,906	14,606
HC1, ppmv	43	115	911
SO_2, ppmv	284	414	1,166
NO_X, ppmv	257	216	220
Pb, mg/dscm	8.7	11.8	23.1
Cd, mg/dscm	0.56	1.8	3.4
Hg, mg/dscm	4.0	15.6	18.5

As noted above, EPA is also considering further subcategorizing batch and intermittent MWI's by size or capacity to burn medical waste. Specifically, some have suggested EPA consider alternatives, such as subcategorizing these categories into incinerators with capacities of 50 pounds per hour or less, 100 pounds per hour or less, 200 pounds per hour or less, etc. A number of States have regulations which exempt the smallest medical waste incinerators or impose less stringent requirements on such incinerators.

Subcategorization of the batch and intermittent MWI categories could find that the MACT floor for small intermittent and/or small batch incinerators is less stringent than the MACT floor for larger incinerators in these categories. The MACT floor for small intermittent and/or small batch MWI's within these categories, for example, could be much less stringent than the MACT floor of 69 mg/dscm identified above for both batch and intermittent incinerators.

2. MACT for Existing Continuous MWI's

As discussed in section VI, the discussion that follows is based on limited test data on wet scrubber systems. The EPA requests comment on the performance and costs of wet scrubber systems. Also, while the paragraphs that follow focus on specific control technologies in determining MACT for existing continuous MWI's, the guidelines do not require the use of any specific technology. The Agency's assessment of the performance of specific technologies is used to develop emission limitations, which appear in the guidelines. Any control technology that can comply with the emission limitations may be used.

a. *MACT for PM, Pb, and Cd.* Uncontrolled PM emissions typically are 570 mg/dscm for MWI's with 0.25-sec combustion and 300 mg/dscm for MWI's with 1-sec combustion. The MACT floor for PM is 46 mg/dscm. A fabric filter system is necessary to meet the MACT floor level. The FF system is capable of achieving PM emission levels of as low as 30 mg/dscm.

Typical uncontrolled Pb and Cd emission are 4.2 mg/dscm and 0.29 mg/dscm, respectively. The MACT floors for Pb and Cd are 8.65 mg/dscm and 0.56 mg/dscm, respectively. Although no control is necessary to achieve the MACT floor levels for Pb and Cd, the fabric filter system that would be needed to meet the MACT floor emission level for PM, would reduce Pb and Cd emissions to 0.10 mg/dscm and 0.05 mg/dscm, respectively. Because this system is already necessary to meet the MACT floor level for PM, there is no cost associated with reducing emissions of Pb and Cd from the uncontrolled MACT floor levels to the level of control achieved by the FF system. Additional control beyond the FF system has not been demonstrated for any of these pollutants. As a result, the proposed MACT for PM, Pb, and Cd for continuous MWI's are the levels achievable with the FF system: 30 mg/dscm for PM, 0.10 mg/dscm for Pb, and 0.05 mg/dscm for Cd.

b. *MACT for Carbon Monoxide.* Typical uncontrolled emissions of CO at continuous MWI's are 690 ppmv for units with 0.25-sec combustion and 300 ppmv for units with 1-sec combustion. As discussed earlier, the MACT floor for CO is 76 ppmv. Two-second combustion control is necessary to meet the MACT floor level for CO and is capable of achieving CO levels as low as 50 ppmv at no additional cost. Further reduction of CO emissions has not been demonstrated. Therefore, the proposed MACT for CO is 50 ppmv, the level achievable by 2-sec combustion.

c. *MACT for Dioxins and Furans.* Typical uncontrolled emissions of dioxins and furans (CDD/CDF) are 25,000 ng/dscm for MWI's with 0.25-sec combustion and 6,600 ng/dscm for MWI's with 1-sec combustion. The MACT floor for CDD/CDF is 1,619 ng/dscm. Two-second combustion control is necessary to meet the MACT floor level for CDD/CDF and is capable of achieving CDD/CDF levels of 1,500 ng/dscm, at no additional cost.

As discussed earlier, an FF system is needed to achieve the MACT floor for PM. Control of CDD/CDF beyond the level of emissions achievable with 2-sec combustion control can be attained either by adding a wet system or by injecting activated carbon into the FF system. Although the wet system is capable of reducing CDD/CDF emissions, the less expensive approach would be to inject carbon into the FF system because the FF system is already needed to meet the MACT floor level for PM. By injecting carbon into the FF system, CDD/CDF emissions could be reduced to about 80 ng/dscm and Hg emissions could substantially be reduced. The nationwide incremental annual cost of carbon injection is about $9.4 million/yr, or about $12/ton of waste burned in continuous MWI's. This incremental cost represents an increase of only about 5.8 percent over the cost of the FF system without carbon injection. As a result, MACT for CDD/CDF is the level of control achievable with an FF system with carbon injection, 80 ng/dscm total CDD/CDF, or 1.9 ng/dscm TEQ. To arrive at the TEQ, measured emissions of each tetra- through octa- CDD and CDF congener are multiplied by the corresponding toxic equivalency factor (TEF) specified in § 60.36c of the proposed emission guidelines. The products are then added to obtain the concentration of CDD/CDF emitted in terms of TEQ.

d. *MACT for Mercury.* Typical uncontrolled Hg emissions are 3.1 mg/dscm. The MACT floor for Hg is 4.04 mg/dscm. No control of Hg is necessary to meet the MACT floor emission level.

The only control system capable of consistently reducing Hg emissions is the FF system with carbon injection, which can achieve emissions of 0.47 mg/dscm Hg or 85 percent reduction from uncontrolled emissions. The FF system without carbon injection is necessary to meet the MACT floor for PM and the injection of carbon is necessary to meet the proposed MACT emission level for CDD/CDF. As mentioned above in the discussion on CDD/CDF, the nationwide incremental annual cost of injecting carbon is about $9.4 million/yr, or about $12/ton of waste burned. This additional cost represents an increase of only about 5.8 percent over the cost of the FF system without carbon injection. Therefore, the proposed MACT for Hg is 0.47 mg/dscm or 85 percent reduction.

e. *MACT for acid gases (HCl and SO_2).* Typical uncontrolled emissions of HCl and SO_2 from continuous MWI's are 1,400 ppmv for HCl and 16 ppmv for SO_2. In general, acid gases controls are capable of reducing emissions of both HCl and SO_2. However, in EPA's experience, acid gases controls are not effective in reducing emissions of SO_2 from MWI's because of the low SO_2 inlet levels associated with the incineration of medical waste. The emissions of HCl from MWI's, on the other hand, are reduced by acid gas controls. As discussed earlier, the MACT floor for HCl is 43 ppmv. A reduction of 97 percent from uncontrolled levels is necessary to achieve the MACT floor for HCl. Wet systems and FF systems are each capable of reducing HCl emissions to 42 ppmv or by 97 percent from uncontrolled levels. Therefore, MACT for HCl is 42 ppmv or 97 percent reduction.

Typical uncontrolled emissions of SO_2 are 16 ppmv, but can range as high as 45 ppmv. The MACT floor for SO_2 is 284 ppmv, and can be achieved at uncontrolled levels. Consequently, the MACT floor requires no control of SO_2. As discussed earlier, acid gas controls are not effective in reducing SO_2 emissions from MWI's. Therefore, MACT also reflects no control of SO_2.

However, because the Act requires the EPA to set a numerical emission limit for SO_2, the limit is proposed at 45 ppmv, the highest SO_2 emission rate measured during the EPA test program. The EPA specifically solicits comments on the emission limit of 45 ppmv set for SO_2 and whether this level accurately reflects uncontrolled emissions of SO_2 at MWI's.

f. *MACT for Nitrogen Oxides.* Typical uncontrolled emissions of NO_X are 140 ppmv but range as high as 210 ppmv. The MACT floor for NO_X is 257 ppmv, and can be achieved at uncontrolled levels. As discussed earlier, NO_X control has not been demonstrated on MWI's. Therefore, MACT also reflects no control of NO_X. However, because the Act requires the EPA to establish a numerical emission limit for NO_X, the limit is proposed as 210 ppmv, the highest NO_X emission rate measured during the EPA test program. The EPA specifically solicits comments on the emission limit of 210 ppmv set for NO_X and whether this level accurately reflects uncontrolled emissions of NO_X at MWI's.

3. MACT for Existing Intermittent MWI's

As discussed in section VI, the discussion that follows is based on limited test data on wet scrubber systems. The EPA requests comment on the performance and costs of wet scrubber systems. Also, while the paragraphs that follow focus on specific control technologies in determining MACT for existing intermittent MWI's, the guidelines do not require the use of any specific technology. The Agency's assessment of the performance of specific technologies is used to develop emission limitations, which appear in the guidelines. Any control technology that can comply with the emission limitations may be used.

a. *MACT for PM, Pb, and Cd.* Typical uncontrolled emissions of PM from intermittent MWI's are about 570 mg/dscm. The MACT floor for PM emissions from intermittent MWI's is 69 mg/dscm. A fabric filter system is necessary to meet the MACT floor level. In fact, the FF system can reduce PM emissions even further, to 30 mg/dscm, at no additional cost.

Uncontrolled emissions of Pb and Cd are 4.2 mg/dscm and 0.29 mg/dscm, respectively. The MACT floors for Pb and Cd are 11.78 mg/dscm and 1.76 mg/dscm, respectively. Although no control is necessary to achieve the MACT floor levels for Pb and Cd, the FF system necessary to meet the MACT floor level for PM would also reduce emissions of Pb and Cd to 0.10 mg/dscm and 0.05 mg/dscm, respectively. Because this system is already necessary to meet the MACT floor level for PM, there is no cost associated with reducing emissions of Pb and Cd from the uncontrolled MACT floor levels to the level of control achieved by the FF system. Further reduction of Pb and Cd has not been demonstrated. Therefore, the proposed MACT for intermittent MWI's is the level of control achievable with the FF system: 30 mg/dscm for PM, 0.10 mg/dscm for Pb, and 0.05 mg/dscm for Cd.

b. *MACT for Carbon Monoxide.* Typical uncontrolled emissions of CO at intermittent MWI's are about 690 ppmv. The MACT floor is 90 ppmv. Two-second combustion control is necessary to meet the MACT floor level and is capable of achieving CO levels as low as 50 ppmv at no additional cost. Further reduction of CO emissions has not been demonstrated. Therefore, the proposed MACT for CO is 50 ppmv, the level achievable with 2-sec combustion.

c. *MACT for Dioxins and Furans.* Uncontrolled levels of dioxins and furans (CDD/CDF) are typically about 25,000 ng/dscm. The MACT floor for CDD/CDF is 12,906 ng/dscm. One-second combustion control is necessary to achieve the MACT floor emission level and is capable of reducing CDD/CDF emissions to 7,000 ng/dscm. However, 2-second combustion control is already needed to achieve the MACT floor emission level for CO and would reduce CDD/CDF emissions even further, to about 1,500 ng/dscm, at no additional cost.

The level of control associated with the FF system is already needed to meet the MACT floor for PM. Further reduction in CDD/CDF emissions beyond the level of emissions achievable with 2-sec combustion control can be attained either by adding a wet system or by injecting carbon into the FF system. Although the wet system is capable of reducing CDD/CDF emissions, the less expensive approach would be to inject carbon into the FF system that is already needed to meet the MACT floor level for PM. An FF system with carbon injection can reduce CDD/CDF emissions to about 80 ng/dscm and can substantially reduce Hg emissions. The nationwide incremental annual cost of carbon injection is about $24.4 million/yr, or about $31/ton of waste burned in intermittent MWI's. This incremental cost represents an increase of only about 3.6 percent over the cost of the FF system without carbon injection. As a result, MACT for CDD/CDF is the level of control achievable with an FF system with carbon injection, 80 ng/dscm total CDD/CDF, or 1.9 ng/dscm TEQ.

d. *MACT for Mercury.* Typical uncontrolled Hg emissions are about 3.1 mg/dscm. The MACT floor for Hg is 15.56 mg/dscm, and can be achieved at uncontrolled levels. The only control system capable of consistently reducing Hg emissions is the FF system with activated carbon injection, which can achieve emissions of 0.47 mg/dscm Hg or 85 percent reduction from uncontrolled emissions. The FF system without carbon injection is necessary to meet the MACT floor emission level for PM and the injection of carbon is necessary to meet the proposed MACT emission level for CDD/CDF. As mentioned above in the discussion on CDD/CDF, the nationwide incremental annual cost of injecting carbon is about $24.4 million, or about $31/ton of waste burned. This additional cost represents an increase of only about 3.6 percent over the cost of the FF system without carbon injection. Therefore, the proposed MACT for Hg is 0.47 mg/dscm or 85 percent reduction.

e. *MACT for Acid Gases (HCl and SO_2).* Uncontrolled levels of HCl and SO_2 from MWI's are 1,400 ppmv and 16 ppmv, respectively. As discussed previously, acid gases controls are not effective in reducing emissions of SO_2 from MWI's. The MACT floor for HCl is 115 ppmv and requires a reduction of 92 percent from uncontrolled levels. Wet systems and FF systems are each capable of reducing HCl emissions to 42 ppmv or by 97 percent from uncontrolled levels. The FF system is already needed to meet the MACT floor emission levels for PM. The costs associated with reducing emissions of HCl from the MACT floor level (92 percent reduction) to the level of control achievable with the FF system (97 percent reduction) include costs for additional lime and ash disposal costs. These additional costs are negligible compared to the total cost of the system. Therefore, the proposed MACT for HCl is 42 ppmv or 97 percent reduction.

The MACT floor for SO_2 is 414 ppmv and can be achieved at uncontrolled emission levels. As discussed earlier, no controls have been demonstrated to consistently reduce SO_2 emissions from MWI's. Therefore, the proposed MACT for SO_2 is also based on uncontrolled emissions. Analyses of test data from MWI's show that typical uncontrolled emissions of SO_2 are about 16 ppmv, but can range as high as 45 ppmv. Because the Act requires the EPA to set numerical emission limit for SO_2, MACT for SO_2 is set at 45 ppmv, the highest SO_2 emission rate measured during the EPA test program. The EPA specifically solicits comments on the emission limit of 45 ppmv set for SO_2

and whether this level accurately reflects uncontrolled emissions of SO_2 at MWI's.

f. *MACT for Nitrogen Oxides.* Typical uncontrolled emissions of NO_X are 140 ppmv but range as high as 210 ppmv. The MACT floor for NO_X is 216 ppmv and requires no control of NO_X. As discussed earlier, NO_X control has not been demonstrated on MWI's. Therefore, MACT is also based on no control. However, because the Act requires the EPA to set a numerical emission limit for NO_X, the NO_X limit is proposed to be 210 ppmv, the highest uncontrolled NO_X level measured during the EPA test program. The EPA specifically solicits comments on the emission limit of 210 ppmv set for NO_X and whether this level accurately reflects uncontrolled emissions of NO_X at MWI's.

4. MACT for Existing Batch MWI's

As discussed in section VI, the discussion that follows is based on limited test data on wet scrubber systems. The EPA requests comment on the performance and costs of wet scrubber systems. Also, while the paragraphs that follow focus on specific control technologies in determining MACT for existing batch MWI's, the guidelines do not require the use of any specific technology. The Agency's assessment of the performance of specific technologies is used to develop emission limitations, which appear in the guidelines. Any control technology that can comply with the emission limitations may be used.

a. *MACT for PM, Pb, and Cd.* Typical uncontrolled PM emissions from batch MWI's are about 570 mg/dscm. The MACT floor for PM emissions from batch MWI's is 69 mg/dscm. A fabric filter system is necessary to meet the MACT floor level. In fact, the FF system can reduce PM emissions even further, to 30 mg/dscm, at no additional cost.

Uncontrolled emissions of Pb and Cd from batch MWI's are about 4.2 mg/dscm and 0.29 mg/dscm, respectively. The MACT floor emission levels for Pb and Cd are 23.10 mg/dscm and 3.44 mg/dscm, respectively. Although no control is necessary to achieve the MACT floor levels for Pb and Cd, the FF system necessary to meet the MACT floor level for PM would also reduce emissions of Pb and Cd to 0.10 mg/dscm and 0.05 mg/dscm, respectively. Because this system is already necessary to meet the MACT floor level for PM, there is no cost associated with reducing emissions of Pb and Cd from the uncontrolled MACT floor levels to the level of control achieved by the FF system. Further reduction of Pb and Cd has not been demonstrated. Therefore, the proposed MACT for batch MWI's is the level of control achievable with the FF system: 30 mg/dscm for PM, 0.10 mg/dscm for Pb, and 0.05 mg/dscm for Cd.

b. *MACT for Carbon Monoxide.* Typical uncontrolled emissions of CO at batch MWI's are about 690 ppmv. The MACT floor is 91 ppmv. Two-second combustion control is necessary to meet the MACT floor level and is capable of achieving CO levels as low as 50 ppmv at no additional cost. Further reduction of CO emissions has not been demonstrated. Therefore, the proposed MACT for CO is 50 ppmv, the level achievable with 2-sec combustion.

c. *MACT for Dioxins and Furans.* Uncontrolled levels of dioxins and furans (CDD/CDF) are typically about 25,000 ng/dscm. The MACT floor for CDD/CDF is 14,606 ng/dscm. One-second combustion control is necessary to achieve the MACT floor emission level and is capable of reducing CDD/CDF emissions to 7,000 ng/dscm. However, 2-second combustion control is already needed to achieve the MACT floor emission level for CO and would reduce CDD/CDF emissions even further, to about 1,500 ng/dscm, at no additional cost.

The level of control associated with the FF system is already needed to meet the MACT floor for PM. Further reduction in CDD/CDF emissions beyond the level of emissions achievable with 2-sec combustion control can be attained either by adding a wet system or by injecting carbon into the FF system. Although the wet system is capable of reducing CDD/CDF emissions, the less expensive approach would be to inject carbon into the FF system that is already needed to meet the MACT floor level for PM. An FF system with carbon injection can reduce CDD/CDF emissions to about 80 ng/dscm and can substantially reduce Hg emissions. The nationwide incremental annual cost of carbon injection is about $1.5 million/yr, or about $170/ton of waste burned in batch MWI's. This incremental cost represents an increase of only about 2.7 percent over the cost of the FF system without carbon injection. As a result, MACT for CDD/CDF is the level of control achievable with an FF system with carbon injection, 80 ng/dscm, or 1.9 ng/dscm TEQ.

d. *MACT for Mercury.* Typical uncontrolled Hg emissions are about 3.1 mg/dscm. The MACT floor for Hg is 18.54 mg/dscm, and can be achieved at uncontrolled levels. The only control system capable of consistently reducing Hg emissions is the FF system with carbon injection, which can achieve emissions of 0.47 mg/dscm Hg or 85 percent reduction from uncontrolled emissions. The FF system without carbon injection is necessary to meet the MACT floor emission level for PM and the injection of carbon is necessary to meet the proposed MACT emission level for CDD/CDF. As mentioned above in the discussion on CDD/CDF, the nationwide incremental annual cost of injecting carbon is about $1.5 million/yr, or about $170/ton of waste burned. This additional cost represents an increase of only about 2.7 percent over the cost of the FF system without carbon injection. Therefore, the proposed MACT for Hg is 0.47 mg/dscm or 85 percent reduction.

e. *MACT for Acid Gases (HCl and SO_2).* Uncontrolled levels of HCl and SO_2 from MWI's are 1,400 ppmv and 16 ppmv, respectively. As discussed earlier, acid gases controls are not effective in reducing emissions of SO_2 from MWI's. The MACT floor for HCl is 911 ppmv and requires a reduction of 35 percent from uncontrolled levels. Wet systems and FF systems are each capable of reducing HCl emissions to 42 ppmv or by 97 percent from uncontrolled levels. The FF system is already needed to meet the MACT floor emission levels for PM. The costs associated with reducing emissions of HCl from the MACT floor level (35 percent reduction) to the level of control achievable with the FF system (97 percent reduction) include costs for additional lime and ash disposal costs. These additional costs are negligible compared to the total cost of the system. Therefore, the proposed MACT for HCl is 42 ppmv or 97 percent reduction.

The MACT floor for SO_2 is 1,166 ppmv and can be achieved at uncontrolled emission levels. As discussed earlier, no controls have been demonstrated to consistently reduce SO_2 emissions from MWI's. Therefore, the proposed MACT for SO_2 is also based on uncontrolled emissions. Analyses of test data from MWI's show that typical uncontrolled emissions of SO_2 are about 16 ppmv, but can range as high as 45 ppmv. Because the Act requires the EPA to set numerical emission limit for SO_2, MACT for SO_2 is set at 45 ppmv, the highest SO_2 emission rate measured during the EPA test program. The EPA specifically solicits comments on the emission limit of 45 ppmv set for SO_2 and whether this level accurately reflects uncontrolled emissions of SO_2 at MWI's.

f. *MACT for Nitrogen Oxides.* Typical uncontrolled emissions of NO_X are 140 ppmv but range as high as 210 ppmv. The MACT floor for NO_X is 220 ppmv and can be achieved at uncontrolled

emission levels. As discussed earlier, NO_X control has not been demonstrated on MWI's. Therefore, MACT is also based on no control. However, because the Act requires the EPA to set a numerical emission limit for NO_X, the NO_X limit is proposed to be 210 ppmv, the highest uncontrolled NO_X level measured during the EPA test program. The EPA specifically solicits comments on the emission limit of 210 ppmv set for NO_X and whether this level accurately reflects uncontrolled emissions of NO_X at MWI's.

K. Selection of Fugitive Fly Ash/Bottom Ash Standards and Guidelines

Combusting medical waste in an incinerator creates noncombustible ash in the primary chamber of the incinerator. This ''bottom'' ash is removed from the primary chamber either periodically (intermittent and batch MWI's) or continuously (continuous MWI's). While removing ash, airborne fugitive emissions may be created.

Another potential source of fugitive emissions from MWI's is the collected fly ash that is removed from the exhaust gas stream by fabric filters. Facilities that use fabric filters as part of an air pollution control system must remove the collected fly ash periodically. Fugitive emissions of this fly ash can occur during the removal and disposal process.

While there is a potential for fugitive emissions from MWI's, precautions can be taken that virtually eliminate these emissions. The proposed 0 percent opacity limit can be achieved by employing measures such as wetting or covering the dry ash, providing covers for ash containers, and providing wind screens around outdoor sites. The following sections describe the different types of MWI operations that may release fugitive emissions.

1. *Continuous MWI's.* For an MWI to operate continuously, the combustor must be designed so that accumulated bottom ash can be removed while the unit operates. All designs incorporate a stepped, solid grate with internal ash rams or a moving hearth to move ash toward the discharge point at the end of the primary chamber opposite the waste charging door. At the discharge point, the ash falls off the hearth into a wet sump or a dry collection hopper. Because these units either quench the bottom ash (in a wet sump) or confine the ash in a close-fitting hopper (dry collection), there is virtually no potential for fugitive emissions during normal operation. With the wet sump arrangement, there are no fugitive emissions when the ash is conveyed to the disposal container, usually a dumpster. With dry ash, the transfer from the collection hopper to the dumpster may be a source of fugitive emissions, but normal precautions such as covering the ash or wetting it down can effectively eliminate fugitive emissions.

2. *Intermittent and Batch MWI's.* Intermittent and batch MWI's are allowed to cool before the bottom ash is removed, usually on a daily basis. Few of these units use any automated mechanism to assist in the removal of bottom ash. The ash is simply shoveled or raked from the primary chamber manually through the ash door.

Some larger units have an ash ram that is used to push bottom ash toward the ash door. With this type of system, the ash may be allowed to fall from the primary chamber into a collection bin as the ram pushes it out of the unit. Mechanical rams are usually somewhat ineffective at removing the ash because the ram face is considerably narrower than the primary chamber. Ash that is not in the path of the ram must be raked or shoveled out manually.

Removing the bottom ash from these MWI's is a potential source of fugitive emissions. Applying a water spray to the ash as it is removed from the MWI, reducing the distance the ash falls or is conveyed, and providing wind screens for outdoor sites are ways in which fugitive emissions may be eliminated.

3. *Collected Fly Ash from Control Devices.* Facilities utilizing fabric filters as part of their air pollution control system must use precautions to avoid fugitive emissions resulting from the removal of collected fly ash from the fabric filter collection hopper. In most cases, the collection hopper discharges from the bottom directly into a disposal bin. By including a flexible ''sleeve'' to connect the collection hopper to the disposal bin (often a 55-gallon drum) and a close-fitting cover over the disposal bin, fugitive emissions can be eliminated. Likewise, a wind screen around this operation is helpful for outdoor installations. Once the disposal bin is filled, it should be sealed for transport to the ultimate disposal site. If the disposal bin is emptied onsite into a dumpster, the transfer must be performed in a manner to avoid creating fugitive emissions. Wetting the fly ash in the disposal bin prior to dumping it or performing the transfer in a covered enclosure are effective ways to eliminate fugitive emissions.

L. Operator Training and Qualification Requirements

Section 129 of the Act requires the EPA to develop and promote a model program for the training and qualification of MWI operators. Section 129 specifies that ''any person with control over processes affecting emissions from a unit * * *'' must successfully complete an acceptable training program. For new MWI's, the proposed standards require that an affected facility be operated by a trained and qualified operator or by an individual under the direct supervision of a trained and qualified operator. For existing MWI's, the proposed emission guidelines would require that 1 year after approval of the State plan, designated facilities be operated by a trained and qualified operator or by an individual under the direct supervision of a trained and qualified operator. The 3-year option for complying with all other requirements of the emission guidelines is not provided for the training and qualification requirements. The accelerated compliance schedule proposed for the operator training and qualification requirements will assist in preparing the operators to properly operate the MWI and associated air pollution control equipment before the initial compliance test.

The proposed standards and guidelines also would require that each owner or operator of an MWI develop and update, on an annual basis, a site-specific operating manual to be reviewed by all qualified operators annually. The standards and guidelines include minimum criteria for the training course, the qualification program, and the contents of the manual.

1. Training Requirements

The owner or operator of an MWI would be responsible for ensuring that one or more operators receive training by an instructor not employed by the owner or operator that provides, at a minimum, the following: (1) 24 hours of classroom instruction, (2) 4 hours of hands-on training, (3) an examination developed and administered by the course instructor, and (4) a handbook or other documentation covering the subjects presented during the course.

The classroom training would be required to cover, at a minimum, the following subjects:

1. Environmental concerns, including pathogen destruction and types of emissions;

2. Basic combustion principles, including products of combustion;

3. Types of incinerator designs and components of MWI's;

4. Incinerator operation, including startup and shutdown procedures;

5. Combustion controls and monitoring;

6. Types of air pollution control equipment;
7. Operation of air pollution control equipment and factors affecting performance;
8. Methods to monitor pollutants (CEM's) and equipment calibration procedures;
9. Inspection and maintenance of the MWI, APCD, and CEM's;
10. Actions to correct malfunctions or upsets;
11. Bottom and fly ash characteristics and handling procedures;
12. Applicable Federal, State, and local regulations; and
13. Work safety procedures.

Hands-on training would be required on either an intermittent or continuous MWI that is similar, but not necessarily identical, to the unit(s) that the operator(s) would be operating. The MWI used in hands-on training also must have an APCD. Material to be covered during the hands-on training must include: (1) prestartup inspections, (2) proper startup, waste charging, and shutdown procedures; (3) monitoring operating conditions (visually and with automated equipment), (4) responses to upset conditions, and (5) recordkeeping. The instruction also must identify differences between the MWI used for the hands-on training and other types of MWI's (i.e., batch, intermittent, and continuous) and APCD's (i.e., wet scrubbers and dry scrubbers).

An examination would be required for the operator to demonstrate an understanding of the material presented. A handbook covering the subjects discussed during the course would give the operator a reference to supplement more detailed literature from the manufacturer that is specific for the equipment being operated at the facility.

2. Qualification Procedures

The owner or operator of an MWI would be responsible for ensuring that one or more operators at the facility are qualified. Under the proposed standards and guidelines, operators would be qualified by one of two methods, designated option 1 and option 2.

a. *Option 1.* To be qualified under option 1, operators would be required to complete a training course that satisfies the criteria described above and have one of the following levels of experience: (1) at least 6 months experience (1,040 hours) as an MWI operator, (2) at least 6 months experience as the direct supervisor of MWI operators, or (3) experience performing a minimum of two burn cycles under the observation of two qualified operators. The experience must be on either the MWI at the operator's facility or an MWI of the same type (i.e., batch, intermittent, or continuous).

Qualification would be valid from the date the training examination is passed or the date on which the experience requirements are met, whichever is later. The owner or operator of the MWI would be required to demonstrate to enforcement personnel that the operator has the necessary training and experience.

To maintain qualification, the operator would be required to complete an annual review or refresher course administered by an instructor not employed by the owner or operator and pass the examination administered by the instructor at the end of the course. An acceptable review course would provide at least 4 hours of classroom training and cover, at a minimum, the following subjects: (1) update of regulations; (2) incinerator operation, including startup and shutdown procedures; (3) inspection and maintenance; (4) responses to upset conditions; and (5) discussion of operating problems encountered by the attendees.

A lapsed qualification may be renewed by one of two methods, depending on the length of the lapse. For a lapse of less than 3 years, the operator would be required to complete and pass a standard review course, as described above in this section. For a lapse of 3 years or more, the operator would be required to complete and pass a training course that meets the criteria described earlier.

b. *Option 2.* Option 2 would allow qualification by national professional organizations. The same initial and annual training described under option 1 would be required. National organizations would be able to specify criteria that are at least as stringent as those under option 1. Qualification programs developed by national organizations also would specify procedures to maintain and renew qualifications.

3. Operating Manual

The proposed standards and guidelines also would require that each owner or operator of an MWI develop and update, on an annual basis, a site-specific operating manual to be reviewed by all qualified operators annually. The manual would summarize State regulations, operating procedures, and reporting and recordkeeping requirements in accordance with the proposed standards and guidelines.

4. Request for Comments

The EPA solicits comments on whether and to what extent EPA should allow States or certain specific national professional organizations (e.g., the American Hospital Association or the American Society of Mechanical Engineers) to pre-approve training courses and qualification programs that meet the above criteria. Commenters should identify by name any national organizations that they believe should be granted this authority.

An advantage of allowing States or national organizations to preapprove courses is that the burden of demonstrating that the course is in compliance with the criteria would be removed from the owner or operator. An additional advantage of allowing national organizations to pre-approve courses is that the training would be valid in all States, whereas a State-approved course would only be valid in the State that approved it. As a result, all operators in a company with facilities in several States could take the same course, and operators would not need to take another training course if they move from one State to another.

M. Siting Requirements—New MWI's

Section 129 of the Act states that performance standards for MWI's must incorporate siting requirements that minimize, on a site-specific basis and to the maximum extent practicable, potential risks to public health or the environment. In accordance with section 129, site selection criteria are being proposed for MWI's that commence construction after the date of promulgation of this rule. The siting requirements would not apply to existing or modified MWI's.

1. Options Considered for Siting Requirements

The EPA considered three approaches in the development of proposed siting requirements. These approaches are summarized below.

The first approach would be a regulatory review approach. Under this approach, the MWI owner/operator would prepare a document listing all current Federal, State, and local regulatory requirements and permit conditions that apply to the proposed MWI, along with a discussion of the equipment, construction practices, operating practices, and other conditions used to comply with each requirement. The document would be submitted to the EPA and to State and local officials and would be made available to the public. This approach also includes provisions for a public

meeting and the preparation of a comment/response document that would be made available to the public. This approach addresses relevant siting issues and would not require duplicate analyses of health or environmental impacts that may already be required under other authorities (e.g., New Source Review (NSR) air permits; National Pollution Discharge Elimination System [NPDES] water discharge permits; stormwater permits; wetland permits; State solid waste permits; or local zoning permits).

The second approach would require that an environmental assessment (EA) be conducted, patterned after requirements under the National Environmental Policy Act (NEPA). This approach would require an examination of impacts in all media (i.e., air, water, solid waste, energy, and land use). Also, a description of alternatives to the proposed project, including alternative sites, technologies, or designs necessary to determine a finding of no significant impact (FNSI) would be required. The EA and the description of alternatives to the proposed project would be documented and submitted to the EPA and to State and local officials and would be made available to the public.

The third approach sets forth general siting requirements patterned after the Prevention of Significant Deterioration (PSD) requirements within the New Source Review (NSR) program. This approach requires comprehensive air quality analyses in regard to National Ambient Air Quality Standards (NAAQS) and PSD increments. An impacts analysis, which studies the potential effect of air, solid waste, and water pollution on visibility, soils, and vegetation also would be required. This approach also includes provisions for a public meeting and the preparation of a comment/response document that would be made available to the public.

2. Proposed Siting Requirements

The third approach is being proposed as the basis for the siting requirements for MWI's. Under the proposed approach, MWI owners would be required to conduct analyses of the impacts of the proposed facility on ambient air quality, visibility, soils, and vegetation. A document presenting the results of the analyses would be prepared and submitted to the EPA and State and local officials. This document would also be made available to the public. The proposed siting requirements include provisions for a public meeting (chaired by EPA or a delegated enforcement agency) where comments on the proposed MWI siting analyses would be accepted. At least 30 days prior to the public meeting, the owner of the affected facility is required to announce the public meeting in newspapers of general circulation that serve the communities located within the area where the affected facility is to be located. The public meeting would be conducted in the county in which the affected facility is to be located and would be scheduled to occur 30 days or more after making the siting analyses available to the public. A comment/response document, summarizing and responding to the comments received at the public meeting, would then be prepared and would be made available to attendees of the public meeting, the State air pollution control board, and the EPA.

The siting requirements would apply to any MWI that commences construction after the date of promulgation of this rule. The siting requirements would not apply to existing or modified MWI's. The siting information required above would be submitted to EPA sufficiently in advance of the intent to commence construction of the facility. Construction would be allowed to commence only after approval by EPA and the appropriate State/local agency. The Agency invites comments regarding the proposed siting requirements, including suggestions of alternative approaches.

N. Inspection Requirements—Existing MWI's

The proposed emission guidelines include a requirement for an initial equipment inspection of the designated facility. The purpose of the equipment inspection is to ensure that the MWI is in good working order until emission control equipment is installed and compliance with emission limits is demonstrated. A poorly maintained MWI will likely have higher emissions than a well-maintained MWI.

These requirements would become effective 1 year after approval of the State plan. Installation of air pollution control equipment may take up to 3 years (as discussed elsewhere in today's notice). Until the time that the source demonstrates compliance with the emission limits, the facility would be required to perform the equipment inspection annually. The inspection service would have to be performed by an MWI service technician not employed by the owner or operator of the designated facility.

The minimum requirements for an inspection include:

1. Inspecting all burners, pilot assemblies, and pilot sensing devices for proper operation and cleaning as necessary;

2. Adjusting primary and secondary chamber combustion air;

3. Inspecting hinges and door latches;

4. Inspecting dampers, fans, and blowers for proper operation;

5. Inspecting door and door gaskets for proper sealing;

6. Inspecting motors for proper operation;

7. Inspecting primary chamber refractory lining and cleaning/repairing as necessary;

8. Inspecting incinerator shell for corrosion and/or hot spots;

9. Inspecting secondary/tertiary chamber and stack and cleaning as necessary;

10. Inspecting mechanical loader, if applicable;

11. Visually inspecting waste bed, as appropriate;

12. Test burning the incinerator with typical waste to make any necessary adjustments;

13. Inspecting air pollution control devices for proper operation, if applicable; and

14. Generally ensuring that the equipment is maintained in proper operating condition.

If any problems that affect emissions are uncovered during the inspection, the owner or operator of the designated facility would be required to take corrective action within 10 operating days. All records of any inspection services and any subsequent maintenance services would have to be maintained at the facility for a period of at least 5 years.

O. Compliance and Performance Test Methods and Monitoring Requirements

Section 129(c) of the Act requires the Administrator to promulgate regulations that include monitoring requirements as necessary to protect public health and the environment. The regulations must also include provisions for recordkeeping and reporting of such monitoring. This section discusses the proposed requirements to satisfy section 129(c).

As discussed in section VI, the requirements of the proposed standards and guidelines are based primarily on the use of dry scrubber systems to comply with the proposed emission limitations. As a result, the proposed testing and monitoring requirements discussed below are structured around the use of dry scrubber systems. To accommodate MWI's using an APCD other than a dry scrubber system, the proposed standards and guidelines include provisions for petitioning the Administrator to allow monitoring of alternative operating parameters to demonstrate continuous compliance

with the emission limits. Petitions for alternative operating parameter monitoring would be approved on a case-by-case basis. This procedure could become an awkward and lengthy one. To the extent that wet scrubber systems could be used to comply with the proposed emission limitations, the Agency is soliciting information from wet scrubber vendors regarding the operation of wet scrubber systems. Specifically, the Agency solicits information on a set of operating parameters that could be included as a means of demonstrating continuous compliance with the emission limitations for PM, CDD/CDF, HCl, opacity, and metals, including information on how the proposed parameters to be monitored would be established. The EPA envisions the final standards and guidelines would be structured in such a way to provide specific operating parameter monitoring requirements for wet scrubber systems as well as for dry scrubber systems directly in the regulation. To accommodate MWI's using an APCD other than a dry scrubber system or a wet scrubber system, provisions would be included for petitioning the Administrator to allow monitoring of alternative operating parameters to demonstrate continuous compliance with the emission limits.

The performance testing and monitoring requirements included in the proposed standards and guidelines would apply to all MWI's subject to the standards and guidelines. As stated in the part 60 general provisions (40 CFR 60.8), performance tests must, unless otherwise specified in the regulation, consist of three separate valid runs using the applicable test method, and the arithmetic mean of the three runs shall be used to determine compliance. All emission limits for MWI's are corrected to 7 percent oxygen (dry basis).

Testing and monitoring requirements are proposed to demonstrate compliance with the emission limits. The proposed standards and guidelines require that the owner or operator of an MWI conduct initial and annual performance tests to demonstrate compliance with the emission limits. Also, following the initial performance test, the owner or operator of each MWI is required to demonstrate continuous compliance with the emission limits.

1. Initial and Annual Performance Testing

To demonstrate initial compliance with the emission limits for each pollutant, all facilities must conduct an initial performance test. Except as noted below, the minimum sample time for each test run would be 4 hours. This minimum time is required to allow enough sample to be collected and to account for the heterogeneity of medical waste. The following test methods and procedures would be used to measure pollutant emissions.

Particulate Matter—The performance test for PM would be conducted in accordance with Method 5. Method 1 would be used to determine the number and location of sampling points. Method 3 or 3A would be used simultaneously with each Method 5 run for flue gas analysis.

Opacity—A CEMS would be used to measure opacity;

Carbon Monoxide—A CEMS would be used to measure CO emissions;

Dioxins/Furans—Method 23 would be used to measure dioxin/furan emissions;

Hydrogen Chloride—Method 26 would be used to measure HCl emissions;

Metals (lead, cadmium, and mercury)—The performance test to determine compliance with the emission limits for Pb, Cd, and Hg would be conducted in accordance with Method 29. Method 3 or 3A would be used simultaneously with each Method 5 run for flue gas analysis.

Fugitive emissions—Method 9 would be used to measure the opacity of fugitive emissions.

Following the initial performance tests for all pollutants, subsequent annual performance tests would be required to demonstrate compliance with the emission limits. The test methods and procedures used for the annual testing are identical to those proposed for the initial tests.

Under the proposed standards and guidelines, if three consecutive annual compliance tests indicate compliance with the emission limit for a pollutant, the owner of the MWI would be allowed to wait 3 years before retesting for that pollutant. If the next test conducted in the third year shows compliance with the emission limit for the pollutant, then the facility could again wait 3 years to test for that pollutant. If noncompliance with the emission limit for the pollutant occurs, corrective action would be required and the annual testing requirement would resume until 3 consecutive years of compliance with the emission limit is demonstrated. At a minimum, performance tests for all pollutants must be conducted once every 3 years (no more than 36 months following the date of the previous performance test). This provision is included to minimize costs while still retaining periodic testing to ensure compliance.

2. Methods to Demonstrate Continuous Compliance

Following the initial performance test, the owners or operators of MWI's are required to demonstrate continuous compliance with the emission limitations. Section 702(b) of the Clean Air Act Amendments of 1990 added section 114(a)(3) to the Act, which states:

> The Administrator shall in the case of any person which is the owner or operator of a major stationary source, and may, in the case of any other person, require enhanced monitoring and submission of compliance certifications. Compliance certifications shall include (A) identification of the applicable requirement that is the basis of the certification, (B) the method used for determining the compliance status of the source, (C) the compliance status, (D) whether compliance is continuous or intermittent, (E) such other facts as the Administrator may require. Compliance certifications and monitoring data shall be subject to subsection (c) of this section. Submission of a compliance certification shall in no way limit the Administrator's authorities to investigate or otherwise implement this Act.

Section 114(a)(3) requires enhanced monitoring and compliance certifications of all major stationary sources. The annual compliance certifications must state whether compliance has been continuous or intermittent. Enhanced monitoring shall be capable of detecting deviations from each applicable emissions limitation or standard with sufficient representativeness, accuracy, precision, reliability, frequency, and timeliness to determine if compliance is continuous during a reporting period. The monitoring requirements in these proposed standards and guidelines satisfy the requirements of enhanced monitoring, except as noted below.

The most direct means of ensuring compliance with the emission limits on a continuous basis is the use of a CEMS to measure emissions of each pollutant. However, a CEMS for specific pollutants is not always available because of technology constraints. Where a CEMS for specific pollutants is not available, the next best option is to use a CEMS to measure surrogate pollutants whose emission profiles closely parallel those of the pollutants of concern. Continuous emissions monitoring systems for surrogate pollutants are also not always available. Where a CEMS is not available for surrogate pollutants, the next best option is to monitor MWI and/or APCD operating parameters that affect emissions of the pollutants of concern.

Where a CEMS is not available and a correlation has been demonstrated

between MWI and/or APCD operating parameters and emissions, the proposed standards and guidelines include MWI and/or APCD operating parameters to be monitored. Maximum or, in some cases, minimum values for these parameters are established during the initial performance test to demonstrate compliance with the emission limits. Once these values are established, a facility operating outside of these values is considered to be in violation of the emission limits. The following paragraphs discuss methods available to demonstrate continuous compliance with emission limits for each pollutant.

a. *HCl, CO, Opacity.* Continuous emission monitoring systems measuring HCl, CO, and opacity are available to determine continuous compliance with the emission limits for these pollutants. Opacity and CO CEMS's are widely used. On the other hand, a CEMS for HCl is not widely used and has not been commercially proven to be economically and technically feasible for MWI's. Also, Federal performance specifications for a HCl CEMS have not been established to date. The EPA test data from facilities equipped with a dry scrubber system followed by a fabric filter show a direct relationship between HCl sorbent (lime) flow rate and HCl removal efficiency. A decrease in the sorbent flow rate results in a decrease in HCl removal efficiency and therefore higher HCl emissions. Also, for a given amount of chlorine content in the waste stream, the amount of waste charged to the incinerator could be directly related to the amount of HCl emitted. An increase in the amount of waste charged would result in higher HCl emissions. For facilities equipped with a dry scrubber followed by a fabric filter, the minimum HCl sorbent flow rate, the maximum charge weight, and the maximum hourly charge rate would be established during the initial performance test for HCl and would be monitored to demonstrate continuous compliance with the emission limit for HCl.

While the proposed standards and guidelines do not require a CEMS for monitoring HCl emissions, the EPA specifically solicits further information on the availability, reliability, accuracy, status of development, and costs for continuous HCl monitors.

b. *Dioxins and Furans.* Currently CDD/CDF emissions cannot be measured using a CEMS. While CO is occasionally mentioned as a surrogate for CDD/CDF emissions, it is not a precise indicator of CDD/CDF emissions. However, good combustion conditions minimize CDD/CDF formation and lower CO emissions indicate that good combustion is occurring. Therefore, continuous compliance with the emission limit for CO based on the CO CEMS output would ensure good combustion conditions and minimized CDD/CDF formation.

As discussed elsewhere, the proposed standards and guidelines for CDD/CDF are based on add-on air pollution control, which reduces CDD/CDF emissions even more than good combustion. Air pollution control system operating parameters have been correlated with CDD/CDF emissions. For MWI's using a dry scrubber system followed by a fabric filter, the operating parameters correlated with CDD/CDF emissions are CDD/CDF sorbent flow rate and temperature measured at the inlet to the PM control device. The EPA test data on a DI/FF system with carbon injection show a direct relationship between carbon flow rate and CDD/CDF removal efficiency. A decrease in the sorbent flow rate results in a decrease in CDD/CDF removal efficiency and therefore higher CDD/CDF emissions. It has been shown that the optimum temperature window for fly ash catalyzed CDD/CDF formation is between 300° and 600°F. Available data indicate that cooling flue gases and operating the PM control device below the temperature window where formation may occur minimizes formation of CDD/CDF in the flue gas. A minimum value for the CDD/CDF sorbent flow rate and a maximum value for the temperature measured at the inlet to the PM control device would be established during the initial performance test for CDD/CDF and would be monitored to demonstrate continuous compliance with the emission limit for CDD/CDF.

c. *Mercury.* Mercury emissions cannot be measured using a CEMS. The EPA test data from facilities equipped with a dry scrubber followed by a fabric filter show a direct relationship between Hg sorbent (activated carbon) flow rate and Hg removal efficiency. A decrease in the sorbent flow rate results in a decrease in Hg removal efficiency and therefore higher Hg emissions. Also, depending on the presence of Hg in the waste stream, the amount of waste charged could be directly related to the amount of Hg emitted. An increase in the amount of waste charged could result in higher Hg emissions. For facilities equipped with a dry scrubber followed by a fabric filter, the minimum Hg sorbent flow rate, the maximum charge weight, and the maximum hourly charge rate would be established during the initial performance test for Hg and monitored to demonstrate continuous compliance with the emission limit for Hg.

While the proposed standards and guidelines do not require a CEMS for monitoring Hg emissions, the EPA specifically solicits further information on the availability, reliability, accuracy, status of development, and costs for continuous Hg monitors. The EPA is requesting data that could be used to determine whether Hg monitors measure all Hg or just certain species of Hg and if only certain species of Hg are measured, how such a monitor could be used in determining compliance with the Hg emission limit.

d. *PM, Pb, and Cd.* Particulate matter, Pb, and Cd emissions cannot currently be measured using a CEMS. The EPA has not, to date, identified surrogate pollutants or MWI/APCD operating parameters that could be monitored to measure compliance. The Agency is currently working to develop applicable MWI/APCD operating parameters for lead, cadmium, and PM that are sufficiently representative, accurate, precise, reliable, frequent, and timely to determine whether a deviation from the proposed emission limits has occurred, thus enabling owners and operators to certify whether compliance with the proposed emission limits is continuous or intermittent. The Agency will include operating parameters for the pollutants lead, cadmium, and PM in the final rule. Today the Agency is requesting comment on appropriate operating parameters for lead, cadmium, and PM that will satisfy the requirements of enhanced monitoring and also requests any associated supporting data.

e. SO_2 and NO_X. No monitoring requirements are proposed for SO_2 and NO_X because the emission limits are based on uncontrolled emission levels.

f. *Fugitive Emissions.* Continuous compliance with the emission limits for fugitive emissions would be demonstrated by conducting a performance test using Method 9 at least once per month when bottom ash is removed from the incinerator and when fly ash is removed from the add-on air pollution control device.

g. *Other Air Pollution Control Systems.* To accommodate MWI's using an APCD other than a dry scrubber followed by a fabric filter, provisions are included in the standards and guidelines for petitioning the Administrator to allow monitoring of alternative operating parameters to demonstrate continuous compliance with the emission limits for CDD/CDF, Hg, HCl, and/or opacity. The petition must include a discussion illustrating the relationship between the alternative operating parameters and emissions of

CDD/CDF, Hg, HCl, and/or opacity. The petition must also describe by what means and how often the parameters would be monitored and must specify the recommended minimum/maximum values of the parameters that are not to be exceeded. Petitions for alternative operating parameter monitoring would be approved on a case-by-case basis.

3. Continuous Compliance Requirements

To demonstrate continuous compliance following the initial performance test, facilities are required to:

a. Demonstrate compliance with the CO emission limit based on the output from the CO CEMS;

b. Demonstrate compliance with the opacity emission limit based on the output from the opacity CEMS; and

c. Demonstrate compliance with the fugitive emission limit by conducting a performance test using Method 9 at least once per calendar month when ash is removed from the incinerator and when ash is removed from the APCD.

In addition, facilities equipped with a dry scrubber followed by a fabric filter are required to:

d. Demonstrate compliance with the Hg emission limit by continuously monitoring the Hg sorbent flow rate, the charge weight, and the hourly charge rate. The minimum Hg sorbent flow rate, the maximum charge weight, and the maximum hourly charge rate are to be established during the initial performance test to determine compliance with the Hg emission limit. Operation of the MWI below the minimum sorbent flow rate, or above the maximum charge weight or maximum hourly charge rate would constitute a violation of the Hg emission limit.

e. Demonstrate compliance with the CDD/CDF emission limit by continuously monitoring the CDD/CDF sorbent flow rate and the temperature measured at the inlet to the PM control device. The minimum CDD/CDF sorbent flow rate and the maximum PM control device inlet temperature are to be established during the initial performance test to determine compliance with the CDD/CDF emission limit. Operation of the MWI below the minimum sorbent flow rate or above the maximum PM control device inlet temperature would constitute a violation of the CDD/CDF emission limit.

f. Demonstrate compliance with the HCl emission limit by continuously monitoring the HCl sorbent flow rate and continuously measuring the weight and time of each load of waste charged to the incinerator. The minimum HCl sorbent flow rate, the maximum charge weight, and the maximum hourly charge rate are to be established during the initial performance test to demonstrate compliance with the emission limit for HCl. Operation of the MWI below the minimum sorbent flow rate, or above the maximum charge weight or maximum hourly charge rate would constitute a violation of the HCl emission limit.

The proposed standards and guidelines require the owner or operator of an MWI using a control device other than a dry scrubber followed by a fabric filter to petition the Administrator for other site-specific operating parameters to demonstrate continuous compliance with the emission limits for CDD/CDF, Hg, HCl, and/or opacity. These parameters would be established during the initial performance test for these pollutants and would be continuously monitored to demonstrate compliance with the emission limits.

P. Reporting and Recordkeeping—New MWI's

The proposed standards would require owners of affected facilities to submit notifications concerning construction and initial startup of the affected facility. The information to be submitted includes: (1) a statement of intent to construct along with the date of commencement of construction, (2) the anticipated date of startup, (3) a statement of the type of waste to be burned, (4) the letter from the State air pollution agency approving the construction and operation of the affected facility, and (5) all documentation produced as a result of the siting requirements.

The proposed standards also require that the owner or operator of an affected facility maintain the following information for a period of at least 5 years: (1) the results of the initial, annual, and any subsequent performance tests; (2) data demonstrating continuous monitoring of site-specific operating parameters; (3) CEMS output data; and (4) results of CEMS quality assurance determinations.

Additional records must be kept on file for the life of the facility. These records include: (1) all documentation produced as a result of the siting requirements, (2) the letter from the State air pollution agency approving the construction and operation of the affected facility, (3) records showing the names of the persons who have completed the requirements for MWI operator training and dates of training (along with documentation of the training program completed), (4) records showing the names of those who have completed review of the site-specific MWI operating manual and dates of review, and (5) records showing the names of the qualified MWI operators and dates of qualification.

The proposed standards require that certain documentation be submitted to the Administrator. Owners or operators are required to submit the results of the initial performance test and all subsequent performance tests. Also, reports on emission rates or operating parameters that have not been obtained or that exceed applicable limits must be submitted within 30 days after the end of the quarter of occurrence. If no exceedances occur during a quarter, the owner of the affected facility is required to submit a letter stating so. All reports submitted to comply with the requirements of the proposed standards must be signed by the facilities manager—the individual responsible for purchasing, maintaining, and, in many cases, operating the MWI. This individual is likely to have different titles at different facilities, for example, director of facilities or vice president of support services.

The reporting and recordkeeping requirements in the proposed standards are necessary to inform enforcement personnel of the compliance status of new MWI's. In addition, they would provide the data and information necessary to ensure continued compliance of these MWI's with the proposed standards. At the same time, these requirements would not impose an unreasonable burden on MWI owners or operators.

Q. Reporting and Recordkeeping—Existing MWI's

The proposed emission guidelines would require owners or operators of MWI's to maintain the following information for a period of at least 5 years: (1) the results of the initial and annual performance tests, (2) data demonstrating continuous monitoring of site-specific operating parameters, (3) CEMS output data, (4) results of CEMS quality assurance determinations, and (5) results of the initial and annual inspections.

Additional records must be kept on file for the life of the facility. These records include: (1) records showing the names of the persons who have completed the requirements for MWI operator training and dates of training (along with documentation that the training program was completed), (2) records showing the names of those who have completed review of the site-specific MWI operating manual and dates of review, and (3) records showing

the names of the qualified MWI operators and dates of qualification.

Under the proposed emission guidelines owners or operators are required to submit the results of the initial maintenance inspection and any subsequent inspections completed prior to demonstrating initial compliance with the emission limits. This documentation must include a discussion of any repairs performed in response to the inspection and when the repairs occurred. Additionally, MWI owners or operators are required to submit to the Administrator the results of the initial performance test and all subsequent performance tests. Also, reports on emission rates or operating parameters that have not been obtained or that exceed applicable limits must be submitted within 30 days after the end of the quarter of occurrence. If no exceedances occur during a quarter, the owner of the designated facility is required to submit a letter stating so. All reports submitted to comply with the requirements of the emission guidelines must be signed by the facilities manager—the individual responsible for purchasing, maintaining, and, in many cases, operating the MWI. This individual is likely to have different titles at different facilities, for example, director of facilities or vice president of support services.

The reporting and recordkeeping requirements in the proposed guidelines are necessary to inform enforcement personnel of the compliance status of existing MWI's. In addition, they would provide the data and information necessary to ensure continued compliance of these MWI's with the proposed guidelines. At the same time, these requirements would not impose an unreasonable burden on MWI owners or operators.

R. Compliance Times

1. New MWI's

As stated in section 129, the effective date of standards for new MWI's is to be the date 6 months after promulgation of the standards. Consequently, while any MWI for which construction is commenced after today's date will be subject to the standards, they will not be subject to the standards until the effective date of the standards.

2. Existing MWI's

Under section 129, States are required to submit to the Administrator a plan implementing the emission guidelines within 1 year after promulgation of the guidelines. Section 129 also requires that a State plan shall provide that each unit subject to the guidelines shall be in compliance with all requirements of the proposed guidelines within 3 years after the State plan is approved by the EPA but in no case later than 5 years after promulgation of the emission guidelines. The compliance schedule in today's proposal would supersede and is more comprehensive than the compliance schedule specified in section 129.

The proposal requires that a State plan shall provide that each source subject to the emission guidelines shall be in compliance with all requirements of the guidelines within 1 year after EPA approval of the State plan. The proposal allows two exceptions to this compliance schedule. First, State plans may allow facilities that are planning to install the necessary air pollution control equipment up to three years after EPA approval of the State plan (but not later than 5 years after promulgation of the guidelines) to comply if the State plan specifies that the facility submit measurable and legally enforceable incremental steps of progress towards compliance. Suggested incremental steps of progress to be included in the State plans are specified in the emission guidelines.

Second, State plans may include provisions allowing designated facilities to petition the State for extensions for compliance. Under the proposed emission guidelines, State plans that include such provisions must require that the designated facility requesting an extension submit information to assist the State in deciding whether to grant or deny the extension. The schedule for submittal of this information must allow the State sufficient time to grant or deny the extension within one year after EPA approval of the State plan.

This information must include documentation of the analyses undertaken to support the need for an extension, including an explanation of why up to 3 years after EPA approval of the State plan is sufficient time to comply with the State plan while one year after EPA approval of the State plan is not sufficient time to comply. The documentation must also include an evaluation of the option to send the waste offsite to a commercial medical waste treatment and disposal facility, either in the interim, while the facility is taking steps towards achieving compliance, or on a permanent basis.

State plans that allow extensions must also include procedures for granting or denying an extension. Under the proposed guidelines, if an extension is granted, compliance shall be required within 3 years after EPA approval of the State plan, but not later than 5 years after the date of promulgation of the emission guidelines.

While the EPA expects that States will grant extensions for facilities planning to install the necessary air pollution control equipment, the Agency does not expect many extensions will be granted for facilities planning to switch to an alternative method of treatment and disposal. Alternatives to onsite incineration include either offsite contract treatment and disposal or onsite alternative treatment technologies, such as autoclaves.

It is expected that facilities choosing to switch to an alternative could do so within the 1 year following EPA approval of the State plan. The commercial waste disposal industry has indicated that sufficient excess capacity currently exists to handle the amount of waste that would no longer be treated onsite and that commercial facilities are located such that most areas could be served by this excess capacity. Also, they have indicated that short term contracts are available.

As a result, if a facility chooses to install an alternative onsite treatment technology and the installation takes longer than the time allowed for compliance, offsite contract disposal could be used as a temporary means of compliance while the alternative technology is installed and made operational. The provision for extensions is included only to address cases where absolutely no other options are available and is not intended to allow up to three years for any facility that requests an extension.

Regardless of the status of the State plans, all designated facilities must be in compliance within 5 years after promulgation of the emission guidelines. To ensure that each designated facility is in compliance with the provisions of the emission guidelines within 5 years, the EPA will develop, implement, and enforce a plan for any State that has not submitted an approvable plan within 2 years after promulgation of the emission guidelines.

The proposed emission guidelines also require that, for approval, a State plan provide that each designated facility must be in compliance with the operator training and qualification requirements and the inspection requirements within 1 year after EPA approval of the State plan. The rationale for not granting extensions for these requirements is presented in sections V.L and V.N.

S. Permit Requirements

Section 129 of the Act requires MWI's subject to the standards and guidelines

to be operated pursuant to a permit issued under the EPA-approved State operating permit program. In accordance with section 129, under the proposed standards and guidelines, a permit would be required on the date 36 months after the date of promulgation, or on the effective date of an EPA-approved operating permit program in the State in which the facility is located, whichever date is later. The operating permit programs are developed under Title V of the Act and the implementing regulations under 40 CFR part 70.

VI. Request for Comment

This section is included in this notice to request public comment on certain issues raised during the development of these proposed standards and guidelines. As mentioned at the beginning of this notice, the EPA seeks full public participation in arriving at its final decisions and strongly encourages comments on all aspects of this proposal from all interested parties.

A. Procedure To Determine MACT

Section 129 of the Act establishes specific criteria that must be analyzed in developing standards and guidelines for solid waste combustion units. In general, this involves: (1) determining appropriate subcategories within a source category; (2) determining the MACT ''floor'' for each subcategory; (3) assessing available air pollution control technology with regard to achievable emission limitations and costs; and (4) examining the cost, nonair-quality health and environmental impacts, and energy requirements associated with standards and guidelines more stringent than the MACT floor. The details of how this process was applied to the MWI source category are described in section V.

In the process of developing the proposed standards and guidelines, the EPA met with representatives from environmental groups, States, MWI and air pollution control equipment vendors, commercial waste disposal companies, and trade associations that represent owners or operators of MWI's to discuss the proposed standards and guidelines. During these discussions, various groups have called into question some of the conclusions reached in developing the proposed standards and guidelines.

Specifically, questions were raised about: (1) appropriate methods for subcategorizing the source category, (2) information and assumptions used in determining the MACT floor, (3) conclusions drawn regarding the performance of air pollution control technology, and (4) decisions made regarding MACT for MWI's. This section describes the regulatory development process in general terms and requests public comments on the information used and assumptions made in drawing conclusions. Following proposal, a reassessment of the four criteria listed above will be made that may result in the establishment of standards and guidelines that are different from this proposal.

1. Subcategorization

Section 129 of the Act enables EPA to distinguish among classes, types, and sizes within categories of new and existing sources in establishing standards and guidelines. The Agency has determined that subcategorizing the source category by type of unit is appropriate because of distinct technical differences among three types of MWI's. Therefore, three subcategories based on MWI type have been identified for the purpose of regulating MWI's: batch, intermittent, and continuous. While these subcategories were selected because of technical differences between the three types of units, as described in section V.G, they also generally follow differences in size within the source category. Typically, continuous units are large capacity MWI's and batch units are small capacity MWI's. Intermittent units tend to fall between the continuous and batch units in size. The EPA specifically solicits comment on its determination to distinguish between continuous, intermittent, and batch units.

It has been suggested that subcategories could have been identified according to size or capacity: small capacity, medium capacity, and large capacity, or that EPA might establish a subcategory of small intermittent and/or small batch MWI's in addition to establishing subcategories on the basis of continuous, intermittent, and batch units. Such a distinction by size, or tiering, is currently used by many State air pollution control agencies. Current State regulations, therefore, may provide a basis for subcategorization by size in establishing the standards and guidelines. The Agency is considering subcategorization by size and specifically solicits comment on the basis for subcategorization by size.

The EPA recognizes that there may be a relatively large number of very small incinerators within the categories of batch and intermittent. If so, further subcategorizing batch and intermittent incinerators by size or capacity could provide an alternative for consideration which might significantly reduce the cost of today's proposed standards and guidelines. If the MACT floor is less stringent for small intermittent and or small batch MWI's, the EPA could consider less stringent requirements for these incinerators. Also, if these incinerators contribute little to total national medical waste incineration capacity, adoption of less stringent requirements for them could result in little loss in the environmental benefits associated with today's proposal. This alternative, therefore, could have substantial merit and the EPA requests comment on such an approach.

To fully consider subcategorization by size, however, a mechanism must be available to accurately and consistently determine the capacity of an MWI. Only if such a mechanism exists, will enforcement personnel, as well as owners and operators of MWI's, be assured that MWI's are subject to a consistent set of requirements.

The EPA believes this may be a serious problem. It appears there is no common or widely used mechanism or ''standard'' within the MWI industry for sizing or determining the capacity of an incinerator to burn medical waste. As a result, it seems that one vendor's 50 pound per hour capacity incinerator can be another vendor's 100 pound per hour capacity incinerator. It also appears the same vendor may sell one customer a 50 pound per hour capacity MWI and then sell another customer the same incinerator as a 100 pound per hour MWI. The EPA believes that a manufacturer's or vendor's ''nameplate capacity'' is not an accurate and reliable means for determining the size or capacity of an MWI.

The EPA recognizes that the composition of medical waste changes across generators, over time, and in response to changes in waste handling or recycling practices in a way that may affect the amount of medical waste a specific incinerator is able to burn. For the purposes of enforcing regulations that may vary by size or capacity, a common mechanism or ''standard'' to measure or determine the capacity of MWI's is necessary.

Consequently, EPA specifically requests comments on a mechanism or ''standard'' for accurately and consistently determining the capacity of MWI's in the enforcement of whatever regulation might be adopted. For example, the comments might outline the mechanisms or approaches used by States to ensure all MWI's of the same capacity are subject to the same requirements. Or, the comments may offer alternative measures of capacity that serve as a better basis for identifying small intermittent and/or small batch MWI's. Finally, the

manufacturers may choose to develop a voluntary approach providing a consistent measure of rated capacity.

It has also been suggested that subcategories could be identified according to the geographic location of the MWI. Facilities located in isolated, rural areas may be different than facilities located in urban areas based on their economic environment. For example, alternatives to onsite incineration (e.g., commercial medical waste treatment services) may be more limited and/or more expensive in isolated locations. The Agency specifically solicits comment on the advantages and disadvantages of subcategorizing by geographic location.

2. MACT Floor

The MACT floor refers to the minimum level of control required by the Act. For new units, the standards must not be less stringent than the emissions control that is achieved in practice by the best controlled similar unit. The MACT floors for the proposed standards were determined by evaluating the performance of control technologies and identifying MWI's that currently use what is considered to be the best control technology for each pollutant within each subcategory, as described in section V.I. Comments are requested on the Agency's conclusions regarding the MACT floors for new MWI's in each subcategory.

For existing units, the guidelines must not be less stringent than the average emission limitation achieved by the best performing 12 percent of units. The MACT floors for the proposed guidelines were determined by examining emission limitations found in air quality permits and State regulations, as described in section V.J. Because of widely varying formats used from State to State to regulate MWI's, many assumptions are necessary to standardize the regulations to a common basis. As a result, State regulations are subject to different interpretations depending on the assumptions made in standardizing them for comparison. Comments are requested on the basis for the Agency's conclusions on the MACT floors for existing MWI's in each subcategory.

Subcategorization based on size rather than, or in addition to, MWI type (as discussed above) could result in different MACT floors. For example, the MACT floor level for particulate matter emissions for a subcategory including small intermittent and/or small batch MWI's may be much less stringent than the 69 mg/dscm MACT floor identified above for intermittent and batch MWI's. If the MACT floors are found to be significantly different than those under today's proposal, the Agency will determine if MACT levels more stringent than the MACT floors are achievable considering cost, any nonair quality health and environmental impacts, and energy requirements. The MACT floors will be reassessed following proposal.

3. Performance of Technology

While the standards and guidelines are required to reflect MACT, the Agency establishes emission limitations, rather than equipment specifications, to encourage competition and further the development of technology. Individual facilities have the flexibility of selecting the method of control used to comply with the established pollutant emission limitations. The benefits of this approach include increased competition among vendors of control devices, further development and refinement of control technologies, and lower costs, as competing control device vendors strive to meet or exceed the required performance levels at lower costs than their competitors. Competition among vendors of air pollution control equipment will ensure that the benefits of emission reduction are realized at the lowest possible costs to MWI users and to society.

In developing the proposed standards and guidelines, the EPA concluded that dry scrubbers are the only technology capable of achieving the MACT floor levels. Consequently, the proposed emission limitations have been established at levels reflecting dry scrubber performance. Once again, this does not mean that MWI's are required to use dry scrubbers. Any technology that can achieve the emission limitations may be used. On the other hand, the EPA conclusion about the performance capabilities of wet scrubbers is based on emissions data from only one MWI facility using a wet scrubber system. Vendors of wet scrubber systems believe that the wet scrubber tested by EPA is not reflective of current wet scrubber technology. They believe that current wet scrubber technologies are not only capable of achieving the MACT floor levels, but may also be capable of achieving the proposed emission limitations for all pollutants. As a result, while the preamble assumes the use of a dry scrubber system to comply with the proposed emission limits, it appears that high efficiency wet scrubber systems as well as dry scrubber systems may be capable of achieving the proposed emission limits.

In addition, vendors of wet scrubber systems believe that wet scrubber systems are able to achieve the proposed emission limitations at about half the estimated total annual costs of dry scrubber systems. Wet scrubber vendors also claim that wet scrubber systems currently not capable of complying with the proposed emission limitations could be retrofitted to do so at a reasonable cost. Users of MWI's that have already installed less efficient wet scrubber systems to comply with State and/or local regulations may be able to upgrade their existing wet scrubber system to comply with the proposed emission limits. The Agency is interested in this alternative in part because a number of facilities have installed wet scrubber controls in recent years in an effort to meet State standards. If the alternative is not available, these facilities may have to remove their wet scrubbers and replace them with more expensive dry scrubbers. The Agency is interested in data on the number of facilities that have installed wet scrubbers and the likely cost of replacing the wet scrubbers with dry scrubber technology.

While upgrading an existing wet scrubber system may result in lower total annual costs than installing a new dry scrubber system, most facilities may still find that alternative disposal options, such as offsite contract disposal or onsite autoclaving, are less expensive. Consequently, the EPA believes that the use of wet scrubber systems to comply with the proposed standards and guidelines will have essentially the same impact on shifts away from onsite incineration as the use of dry scrubber systems. In fact, the use of any add-on control system will increase the costs of onsite incineration such that alternatives to onsite incineration become more economical.

Because the issue of wet scrubber performance is important to MWI users, EPA specifically solicits further information on wet scrubber systems. The EPA is requesting emissions data that could be used to evaluate the performance of wet scrubber systems and to determine the capability of these systems in achieving the MACT floor levels and/or the proposed emission limitations. Sufficient data are available on emissions of CO, opacity, NO_X, SO_2, and HCl for use in developing the proposed standards and guidelines. The Agency specifically solicits data on PM, Pb, Cd, Hg, and CDD/CDF emissions.

If new data on wet scrubber performance shows that wet scrubbers are capable of achieving the MACT floor levels, then EPA would have to review the decision to base the emission limitations on dry scrubbers by examining the additional costs and emission reductions achieved by dry

scrubbers relative to wet scrubbers. In this case, the EPA may conclude that the additional costs associated with dry scrubber limits are unreasonable relative to the emission reductions achieved. On the other hand, if new data on wet scrubber performance shows that wet scrubbers are capable of achieving the proposed emission limitations, then it is likely that the emission limitations will remain unchanged. In this case, the emission limitations would reflect the use of either wet scrubbers or dry scrubbers.

The performance of air pollution control equipment can best be established when both APCD inlet and APCD outlet concentration data are measured and compared. Several pollutants are waste related. The EPA test program identified significant variations in the uncontrolled concentrations of these pollutants from source to source, which could be a result of differences in the types and amounts of various materials included in the waste stream. Therefore, the Agency solicits APCD inlet concentration data, to the extent available, wherever outlet concentration data are provided.

Additionally, the Agency solicits comments on the technical feasibility of injecting activated carbon into wet scrubber systems to control CDD/CDF and Hg emissions. Specifically, the Agency is requesting information on whether carbon injection is necessary to reduce CDD/CDF and Hg using wet scrubbers and if so, what problems are associated with the injection of carbon into a wet system or what other means of using the carbon adsorption mechanism are available to reduce emissions of these pollutants. If carbon injection is not necessary to reduce emissions of CDD/CDF and Hg, the EPA is soliciting information on what wet scrubber mechanisms reduce emissions of CDD/CDF and Hg. The EPA specifically requests that, if available, Hg emissions data be broken down by various species emitted (e.g., Hg chloride versus elemental Hg).

In addition to performance data, the EPA is requesting information on the costs associated with the installation of new higher efficiency wet scrubber systems and with the retrofit of existing wet scrubber systems to achieve the same performance capabilities of the higher efficiency wet scrubber systems. The Agency also solicits information on the performance and cost of dry scrubber systems, as well as information on whether there are technical limitations associated with the application of air pollution control systems to various sizes and types of MWI's.

There is some concern about the impacts on other media from the use of wet scrubber systems—specifically, the fate of metals transferred from the stack gas to the scrubber water with subsequent disposal to a sewer system. Wastewater pretreatment may be necessary to remove these metals. As a result, the Agency is soliciting information on pretreatment techniques that are, or could be, used to remove metals from the scrubber effluent prior to discharge to a sewer system and on the costs associated with these techniques. The additional costs of scrubber effluent pretreatment may increase the total annual costs associated with wet scrubber systems to a level that is more comparable to the use of a dry scrubber system. Because the Act directs the Agency to consider all media in developing regulations, the final standards and guidelines may include requirements that address the pretreatment of MWI wastewater to ensure that water quality is not compromised.

4. Determining MACT for MWI's

While section 129 of the Act requires that the standards and guidelines be no *less* stringent than the MACT floor, it does provide EPA with the authority to establish emission limitations that are *more* restrictive than the MACT floor. In deciding whether the standards and guidelines should be more restrictive than the MACT floor, section 129 requires the Administrator to consider the cost, any nonair quality health and environmental impacts, and energy requirements associated with the more restrictive standards and guidelines.

As described in section V of this notice, EPA has concluded that dry scrubbers are the only technology available to meet the MACT floor. Furthermore, dry scrubbers achieve substantially lower emissions than the MACT floor for little, if any, additional cost. Consequently, EPA was faced with two options: (1) propose more restrictive emission limitations that reflect the performance of the technology needed to meet the MACT floor (i.e., scrubber limits); or (2) propose less restrictive emission limitations that reflect the MACT floor (i.e., floor limits). On one hand, there is essentially no cost associated with the scrubber limits relative to the floor limits because the dry scrubber would be installed to meet the floor limits. On the other hand, the installation of a dry scrubber will result in the lower emissions associated with a dry scrubber. Therefore, it can be argued that there is also no environmental benefit associated with the more restrictive emission limits.

The EPA specifically requests comment on the advantages and disadvantages of MACT floor-based emission limits versus dry scrubber-based emission limits. The Agency has chosen the more restrictive dry scrubber-based emission limits for the following reasons. First, as discussed above, the EPA believes that a dry scrubber is the only technology capable of meeting the MACT floor. In addition, activated carbon can be injected into a dry scrubber to further reduce dioxin and Hg emissions for a relatively small cost. Other technologies have not been identified that are able to incorporate carbon injection for dioxin and Hg removal. Incineration of medical waste has been identified as the largest known source of dioxin and Hg emissions. The additional reduction of dioxin and Hg emissions achieved by the injection of activated carbon is discussed earlier in this preamble. The EPA believes that the benefits of activated carbon injection outweigh the costs.

Secondly, by setting emission limitations rather than control equipment specifications, EPA encourages and promotes the development of new emission control technologies that can meet the emission limits at lower costs. If the Agency proposes the MACT floor emission limits, it will promote new technologies that are only capable of meeting the floor. In this case, the use of new technologies capable of meeting the MACT floor may result in higher emissions than current technologies (i.e., dry scrubbers). The Agency believes that new technologies should be promoted and encouraged, but that the dry scrubber based emission limits are the more appropriate target for these new technologies. Therefore, today's proposal has set dry scrubber emission limits as the target for new technologies. The Agency specifically requests comment on the appropriate target emission limits for developing technologies.

As noted above, however, vendors of wet scrubbers believe that current wet scrubber technologies are not only capable of achieving the MACT floor levels, but may also be capable of achieving more stringent control levels. If EPA receives additional data that confirms this level of performance, then EPA would have to review the decision to base the emission limits on dry scrubbers. Thus, EPA would consider the potential incremental emission reductions and the potential gains from technology development with the

differential retrofit costs of these two alternative control technologies.

In addition, as noted above, EPA is considering further subcategorization by size. If EPA decides to establish a subcategory of ''very small MWI's'' in the final rule, it is possible that one or more additional control approaches (in addition to fabric filters) would be able to achieve (or exceed) the MACT floor levels for this subcategory. The Agency would then undertake a careful review of the alternative control approaches available for this category of ''very small MWI's'' by considering the incremental emission reductions of the more stringent control options with the differences in retrofit cost across alternatives.

The Agency requests comment on the appropriate emission limits under these alternative options.

B. Alternatives to Onsite Incineration

As discussed in sections III and IV of this notice, in evaluating costs associated with MACT for each MWI, it was determined that many facilities would have the option of using an alternative method of treatment and disposal that would be less expensive than onsite incineration under the proposed standards and guidelines. The most common alternatives to onsite incineration are offsite contract disposal (most commonly commercial medical waste incineration) and onsite autoclaving. While data are available to estimate costs for these two alternatives and to estimate emissions from commercial medical waste incineration, data are not available to quantify emissions or energy requirements from onsite autoclaving of medical waste. The EPA solicits emissions data, energy use data, and cost information on the use of autoclaves and other nonincineration methods to treat and dispose of medical waste.

Several concerns related to the use of alternatives to onsite incineration have been raised. One concern is the ability of alternative technology manufacturers to meet the increased demand for installations. Also, questions have been raised about the general stability in the alternative technology marketplace. Specifically, questions have been raised about whether vendors of alternative technologies will be able to service the equipment that has been installed over the life of that equipment. To respond to these concerns, the EPA solicits information on the number of companies that currently manufacture alternatives to onsite incineration, the number of U.S. installations, the number of installations the individual companies are capable of on an annual basis, and the number of years the individual companies have been in business.

Concerns about environmental impacts associated with the use of these alternatives have also been raised. Specifically, questions have been raised about air and water pollution impacts. As discussed earlier, data are not available to quantify air emissions from the use of alternative technologies. Data are also not available to quantify other environmental impacts resulting from the use of alternatives. In addition to air emissions data (requested earlier), the EPA solicits data related to other media impacts, including water pollution impacts, resulting from the use of alternative technologies.

C. Definition of Medical Waste

As discussed above, the definition of medical waste included in today's proposed regulations is very broad. Medical waste is any solid waste generated in the treatment, diagnosis, or immunization of humans or animals, or research pertaining thereto, or in the production or testing of biologicals.

Section 129 of the Clean Air Act directs the EPA to adopt regulations for solid waste incineration units burning medical waste. This section also states that ''* * * ''solid waste'' and ''medical waste'' shall have the meanings established by the Administrator pursuant to the Solid Waste Disposal Act.''

The Solid Waste Disposal Act was amended extensively and, for all practical purposes replaced, by the Resource Conservation and Recovery Act (RCRA) in 1976. The RCRA, in turn, was amended in 1984 and, as it pertains to medical waste, was amended again in 1988 by the Medical Waste Tracking Act (MWTA). The MWTA included a definition of medical waste, which was added to the RCRA. In implementing the amendments to the RCRA, this statutory definition of medical waste was adopted by the Administrator. The definition of medical waste included in today's proposal, therefore, is in EPA's opinion the definition of this term established by the Administrator pursuant to the Solid Waste Disposal Act.

As mentioned above, some have suggested the definition of medical waste included in today's proposal is inappropriate and the EPA requests comment on this definition. It appears the basis for this suggestion stems from the following concern. If the impact of today's regulation is as widespread as the EPA believes, in terms of the large number of medical waste generators who may decide to switch from the use of onsite incineration to the use of alternative waste disposal techniques, there may not be enough medical waste disposal capacity currently available to safely and properly dispose of this medical waste.

To reduce the amount of medical waste covered by today's proposed regulations, some have suggested that the EPA narrow the definition of medical waste. Various definitions have been offered, such as ''regulated medical waste'' (a term used by the EPA in implementing the MWTA amendments to the RCRA), ''red bag medical waste'', ''infectious medical waste'', etc. These wastes are included under the broad definition of medical waste, but are generally viewed as constituting only about 15 to 20 percent of the total quantity of medical waste. If today's proposal covered only these types of medical wastes, as opposed to all types of medical wastes, the amount of medical waste which might be displaced from onsite incineration at medical waste generators to alternative waste disposal techniques would be much less and, as a result, more easily handled by these alternative techniques.

It appears to the EPA, however, that there are several reasons to believe there is or would be sufficient capacity available to safely and properly treat and dispose of all the medical waste that might be displaced from onsite incineration at medical waste generators as a result of today's proposed regulations. Since this issue concerns medical waste presently being treated by onsite medical waste incinerators at medical waste generators, it concerns existing incinerators, not new incinerators. Thus, the focus of this issue is today's proposed emission guidelines, not the proposed new source performance standards.

Today's proposed emission guidelines provide time for medical waste generators currently using onsite medical waste incinerators to consider alternatives for treating and disposing of their medical waste. The guidelines will not be adopted by the EPA for at least 1 year (the EPA is under Court Order to adopt final regulations by April 15, 1996). States are provided 1 year by the Clean Air Act to adopt plans for implementing the guidelines and to submit these plans to the EPA for approval. The Act then provides EPA 180 days to review and approve these State plans. Finally, today's proposed guidelines provide 1 year following EPA approval of the State plan for existing medical waste incinerators to comply with the proposed emission limits.

Medical waste generators currently operating onsite incinerators, therefore,

have about 3½ years from today's date to consider how to treat and dispose of their medical waste in the future. In addition, today's proposed emission guidelines include provisions to permit an extension of up to 3 years following EPA approval of the state plan for individual medical waste generators currently operating medical waste incinerators to comply with the proposed emission limits. Consequently, where circumstances dictate the need for additional time, medical waste generators currently operating medical waste incinerators could have up to 5½ years from today's date to consider how to treat and dispose of their medical waste.

Turning to the alternatives, the EPA believes medical waste generators currently operating medical waste incinerators have three choices to consider. These are: (1) continued operation of their onsite incinerator and compliance with the proposed emission limits; (2) installation of an alternative medical waste treatment technology onsite, such as autoclaving, microwaving, macrowaving, chemical treatment, etc.; or (3) contracting with a commercial medical waste disposal service for offsite treatment and disposal of medical waste.

As discussed above, the EPA believes many medical waste generators currently operating onsite medical waste incinerators will select the second or third choice in response to today's proposed emission guidelines. With regard to the second choice, installation of an alternative medical waste treatment technology onsite, several manufacturers and vendors of autoclave, microwave, macrowave, and chemical treatment systems have indicated informally that 3½ to 5½ years is more than enough time to purchase and install one of these alternative treatment systems. In fact, some manufacturers and vendors have indicated informally that they could supply their equipment within months for installation.

These informal comments have led the EPA to conclude that today's proposed emission guidelines provide ample time for medical waste generators currently operating onsite medical waste incinerators, who may select the second choice, to purchase and install the appropriate equipment. The EPA, however, specifically requests manufacturers and vendors of these alternative treatment systems to comment formally on the time necessary for a medical waste generator to obtain the necessary permits to install and operate their systems, the time necessary to obtain and install their systems, and their ability to respond to increased orders for their systems over the next 3 to 6 years, as a result of today's proposal.

Based on a survey of current practices regarding landfill disposal of medical waste, the EPA believes that medical waste may be disposed of in most landfills provided it has been properly treated to destroy infectious agents and is not recognizable as medical waste. It appears the first criteria is met through the use of these alternative treatment systems. The second criteria is met by grinding and/or shredding the waste, which is common practice where these alternative treatment systems are in operation today. If this belief is correct, it would seem clear that there is more than enough landfill capacity available in the United States for disposal of medical waste treated by these alternative waste treatment disposal systems.

With regard to the third choice, contracting with a commercial medical waste disposal service, representatives and operators of these services have indicated informally that their industry is currently operating at very low capacity. They have indicated informally that the industry currently treats and disposes of about 20 percent of the medical waste generated in the United States and that the industry has the capacity today to treat and dispose of possibly as much as 40 percent of the medical waste generated. Finally, given the time frame of 3½ to 5½ years provided in the proposed emission guidelines for medical waste generators currently operating medical waste incinerators to decide how to dispose of their medical waste in the future, the commercial medical waste disposal industry has indicated informally that sufficient additional capacity could be permitted, constructed, and brought on line by the industry to service all those medical waste generators who may select this third choice.

It appears, therefore, the commercial medical waste disposal industry has a great deal of capacity today and could add substantial capacity in the near future to meet any increase in the need for their services which may result. The EPA, however, specifically requests that the representatives and operators of commercial medical waste disposal services comment formally on the capacity within their industry today to dispose of medical waste, the current utilization of this capacity, and their ability to permit, construct, and bring on line major additions to this capacity in the next 3 to 6 years.

Finally, while not related to questions of the capacity of alternatives to treat and dispose of medical waste displaced by medical waste generators which currently use onsite medical waste incinerators, there are other reasons EPA believes all medical waste should be covered by today's proposed regulations. The suggestions to narrow the applicability of today's proposal would basically narrow the proposal to cover ''red bag'' medical wastes. Testing during the EPA test program to examine differences in emissions between red-bag medical waste and general medical waste showed no significant difference in emissions of air pollutants, such as hydrogen chloride (HCl), dioxins, lead, mercury, etc.

The EPA believes, therefore, that there is no significant difference between red-bag medical waste and general medical waste in emissions of those air pollutants which section 129 of the Clean Air Act directs the EPA to regulate. In addition, there appears to be no significant difference in the applicability, performance, or cost of various technologies to reduce these emissions from medical waste incinerators burning red-bag medical waste or general medical waste. There is, therefore, no compelling reason EPA sees for narrowing the definition of medical waste included in today's proposed regulations.

VII. Administrative Requirements

A. Public Hearing

The EPA will hold at least one public hearing to provide interested parties an opportunity for oral presentation of data, views, or arguments concerning the proposal. Additional hearings may also be held. A Federal Register document will be published within the next 2 weeks to announce the details of the heading(s). At the public hearing(s), the proposed standards and guidelines will be discussed in accordance with section 307(d)(5). Oral presentations will be limited to 15 minutes each. Any member of the public may file a written statement before, during, or within 30 days after the hearing. Written statements should be mailed to the Air and Radiation Docket and Information Center at the address given in the *ADDRESSES* section of this preamble.

A verbatim transcript of the hearing and written statements will be available for public inspection and copying during normal working hours at the EPA's Air and Radiation Docket and Information Center in Washington, DC (see **ADDRESSES** section of this preamble).

B. Docket

The docket is an organized and complete file of all the information

submitted to or otherwise considered in the development of the proposed standards and guidelines. The principal purposes of the docket are: (1) to allow interested parties to identify and locate documents so that they can effectively participate in the rulemaking process, and (2) to serve as the record in case of judicial review (except for interagency review material [section 307(d)(7)(A)]). The docket number for this rulemaking is A–91–61.

C. Clean Air Act Procedural Requirements

1. Administrator Listing—Section 111; Section 129 of the Act

Section 129 of the Act calls for the Administrator to promulgate standards for new MWI's and guidelines for existing MWI's pursuant to section 111 and 129.

2. Periodic Review—Section 111 and Section 129 of the Act

Section 111 and section 129 of the Act require that the standards and guidelines be reviewed not later than 5 years following the initial promulgation. At that time and at 5-year intervals thereafter, the Administrator is to review the standards and guidelines and make revisions if necessary. This review will include an assessment of such factors as the need for integration with other programs, the existence of alternative methods, enforceability, improvements in emission control technology, and reporting requirements.

3. External Participation—Section 117 of the Act

In accordance with section 117 of the Act, publication of this proposal was preceded by consultation with appropriate advisory committees, independent experts, and Federal departments and agencies. The Administrator welcomes comments on all aspects of the proposal, including economic and technological issues.

4. Economic Impact Assessment—Section 317 of the Act

Section 317 of the Act requires the EPA to prepare an economic impact assessment for any emission standards and guidelines promulgated under section 111 of the Act. An economic impact assessment was prepared for the proposed standards and guidelines. In the manner described above under the discussions of the impacts of, and rationale for, the proposed standards and guidelines, the EPA considered all aspects of the assessment in proposing the standards and guidelines. The economic impact assessment is included in the docket listed at the beginning of today's notice under **SUPPLEMENTARY INFORMATION.**

D. Office of Management and Budget Reviews

1. Paperwork Reduction Act (PRA)

The information collection requirements in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the *Paperwork Reduction Act*, 44 U.S.C. 3501 *et seq.* An Information Collection Request (ICR) document has been prepared by the EPA (ICR No. 1730.01) and a copy may be obtained from Sandy Farmer, Information Policy Branch (2136); U. S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460 or by calling (202) 260–2740.

This collection of information is estimated to have an average annual reporting burden of 0.01 person years per pathological MWI and an average of about 2.4 person years for MWI's burning general medical waste. This includes time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Chief, Information Policy Branch (2136), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503, marked ''Attention: Desk Officer for the EPA.'' The final rule will respond to any OMB or public comments on the information collection requirements contained in this proposal.

2. Executive Order 12866 Review

Under Executive Order (E.O.) 12866, the EPA must determine whether the proposed regulatory action is ''significant'' and therefore, subject to the Office of Management and Budget (OMB) review and the requirements of the Executive Order. The Order defines ''significant'' regulatory action as one that is likely to lead to a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety in State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, it has been determined that the proposed standards and guidelines are ''significant'' because the annual effect on the economy will exceed $100 million. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations are documented in the public record.

3. Executive Order 12875

Under Executive Order 12875, the EPA is required to consult with representatives of affected State, local, and tribal governments, and keep these affected parties informed about the content and effect of the proposed standards and guidelines. The following discussion provides a brief summary of the content, need for, and cost of the proposed standards and guidelines, as well as the actions that the EPA has taken to communicate and consult with the affected parties.

a. Summary of the Proposed Standards and Guidelines

The proposed standards and guidelines would establish emission limitations for new and existing MWI's. The proposed standards and guidelines do not specify which type of air pollution control equipment must be used at MWI's to meet the proposed emission limitations. However, the EPA expects that, to meet the proposed emission limitations, most MWI's would use dry scrubbing systems (DI/FF) with activated carbon injection for dioxins/furans, metals, and acid gas control. Refer to section II of this preamble for a more detailed discussion of the proposed standards and guidelines.

b. Need for the Proposed Standards and Guidelines

Under the Act Amendments of 1990, section 129 includes a schedule that requires the EPA to develop standards and guidelines for MWI's by November 1992. The EPA did not comply with that schedule and is now under court order to propose the standards and guidelines by February 1, 1995 and promulgate the standards and guidelines by April 15, 1996. As required by section 129, the proposed standards and guidelines would establish emission limitations for PM, opacity, CO, CDD/CDF, HCl, SO_2, NO_X, Pb, Cd, and Hg. See section I of

this preamble for further discussion of the regulatory history and general goals of the proposed standards and guidelines.

c. Cost of the Proposal

The nationwide annual costs associated with the proposed standards for new MWI's would increase by approximately $74.5 million/yr from the regulatory baseline cost of $63.3 million/yr. The cost of compliance with the proposed standards for an individual facility will vary depending on the method chosen to comply with the proposed emission limitations. Of the projected number of new MWI's, some will be constructed with air pollution control equipment to comply with the proposed emission limitations. However, as discussed in Section III of this preamble, the EPA expects that, to avoid the increased costs associated with the installation of control equipment, as many as 80 percent of the projected number of new MWI's will not be constructed. Instead, these facilities are likely to consider less expensive methods of treatment and disposal.

Under the proposed standards, the average annualized cost of incineration for a typical small MWI would be about $326 thousand per year. The two most common alternatives to onsite incineration include offsite contract disposal and onsite steam sterilization. Instead of installing an MWI with air pollution control equipment, the facility may choose to use offsite contract disposal at an estimated average annualized cost of $98.8 thousand per year, or onsite steam sterilization at an estimated average annualized cost of $65.6 thousand per year. Either of these alternatives is considerably less expensive than onsite incineration under the proposed standards.

Under the proposed standards, the average annualized cost of incineration for a typical large MWI would be about $520 thousand per year. The cost to dispose of the same amount of waste using offsite contract disposal is estimated at about $1.01 million per year, which is considerably higher than the costs of onsite incineration. Onsite steam sterilization of the same amount of waste would cost about $158 thousand per year. Instead of installing an MWI with air pollution control equipment, the facility may choose to use onsite steam sterilization at a much lower cost. A more complete summary of the cost and economic impacts of the proposed standards are presented in Section III of this preamble.

The nationwide annual costs associated with the proposed guidelines for existing MWI's would increase by approximately $351 million/yr from the regulatory baseline cost of $265 million/yr. As with new MWI's, the cost of compliance with the proposed guidelines for an individual facility will vary depending on the method chosen to comply with the proposed emission limitations. Some facilities may choose to keep their incinerator and install air pollution control equipment to comply with the proposed emission limitations. However, as discussed in Section IV of this preamble, the EPA expects that as many as 80 percent of existing facilities currently using onsite incineration will switch to an alterative method of treatment and disposal to avoid the increased cost of installing air pollution control equipment.

For a typical small MWI, the installation of control equipment would increase the average annualized cost of incineration to about $329 thousand per year. Instead of installing air pollution control equipment, the facility may choose to use offsite contract disposal at an estimated average annualized cost of $98.8 thousand per year, or onsite steam sterilization at an estimated average annualized cost of $65.6 thousand per year. The costs for either of these alternatives is considerably less than the costs for installing control equipment to meet the proposed emission limitations.

The average annualized cost of incineration for a typical large MWI would increase to about $533 thousand per year. The cost to dispose of the same amount of waste using offsite contract disposal is estimated at about $1.01 million per year, which is substantially higher than the estimated costs of onsite incineration. Onsite steam sterilization of the same amount of waste would cost about $158 thousand per year. Instead of installing air pollution control equipment to meet the proposed emission limitations, the facility may choose to use onsite steam sterilization at a much lower cost. A more complete summary of the cost and economic impacts of the proposed guidelines are presented in Section IV of this preamble.

d. Communication With Affected Parties

As previously mentioned, Executive Order 12875 requires the EPA to consult with representatives of affected State, local, and tribal governments, and prior to promulgation of final standards, summarize concerns of the governmental entities and respond to their comments. The EPA has already initiated consultations with numerous governmental entities including, but not limited to, the U.S. Conference of Mayors, the National Association of City and County Health Officials, the National Association of Counties, the National Association of Public Hospitals, and the National Governors Association. These groups have been informed of the content of the proposal and the estimated impacts. In drafting the proposal, the EPA has considered the concerns expressed by these groups, and discussions with these groups will continue following proposal. The EPA awaits comments from these groups on the proposal and will respond to their comments.

E. Regulatory Flexibility Act Compliance

The Regulatory Flexibility Act (RFA) (5 U.S.C. 601 *et seq.*) requires Federal agencies to give special consideration to the impact of regulations on small entities, which are small businesses, small organizations, and small governments. The major purpose of the RFA is to keep paperwork and regulatory requirements from getting out of proportion to the scale of the entities being regulated, without compromising the objectives of, in this case, the Act.

If a regulation is likely to have a significant economic impact on a substantial number of small entities, the EPA may give special consideration to those small entities when analyzing regulatory alternatives and drafting the regulation. In the case of the proposed standards and guidelines, the results of the economic analysis indicate that the standards and guidelines will not have a significant impact on a substantial number of small entities. Less than 20 percent of ''small'' government jurisdictions are expected to be significantly impacted. In addition, although some small medical waste generators would be significantly impacted by the regulation's control requirements, the majority of these impacts could be avoided by switching to less expensive alternatives for medical waste disposal. Therefore, it is expected that the number of facilities that are significantly impacted will not be ''substantial.''

List of Subjects in 40 CFR Part 60

Air Pollution control, Incorporation by reference, Intergovernmental relations, Medical waste, Reporting and recordkeeping.

Dated: February 1, 1995.

Carol M. Browner,

Administrator.

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