ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 63, 264, 265, 266, 270, and 271

[FRL–7644–1]

RIN 2050–AE01

National Emission Standards for Hazardous Air Pollutants: Proposed Standards for Hazardous Air Pollutants for Hazardous Waste Combustors (Phase I Final Replacement Standards and Phase II)

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: This action proposes national emission standards for hazardous air pollutants (NESHAP) for hazardous waste combustors. These combustors include hazardous waste burning incinerators, cement kilns, lightweight aggregate kilns, industrial/commercial/institutional boilers and process heaters, and hydrochloric acid production furnaces, known collectively as hazardous waste combustors (HWCs). EPA has identified these HWCs as major sources of hazardous air pollutant (HAP) emissions. These proposed standards will, when final, implement section 112(d) of the Clean Air Act (CAA) by requiring hazardous waste combustors to meet HAP emission standards reflecting the application of the maximum achievable control technology (MACT).

The HAP emitted by facilities in the incinerator, cement kiln, lightweight aggregate kiln, industrial/commercial/institutional boiler, process heater, and hydrochloric acid production furnace source categories include arsenic, beryllium, cadmium, chromium, dioxins and furans, hydrogen chloride and chlorine gas, lead, manganese, and mercury. Exposure to these substances has been demonstrated to cause adverse health effects such as irritation on the lung, skin, and mucus membranes, effects on the central nervous system, kidney damage, and cancer. The adverse health effects associated with the exposure to these specific HAP are further described in the preamble. In general, these findings have only been shown with concentrations higher than those typically in the ambient air.

This action also presents our tentative decision regarding the February 28, 2002, petition for rulemaking submitted by the Cement Kiln Recycling Coalition to the Administrator, relating to EPA's implementation of the so-called omnibus permitting authority under section 3005(c) of the Resource Conservation and Recovery Act (RCRA), which requires that each permit issued under RCRA contain such terms and conditions as are determined necessary to protect human health and the environment. In that petition, the Cement Kiln Recycling Coalition requests that we repeal the existing site-specific risk assessment policy and technical guidance for hazardous waste combustors and that we promulgate the policy and guidance as rules in accordance with the Administrative Procedure Act if we continue to believe that site-specific risk assessments may be necessary.

DATES: Submit comments on or before July 6, 2004.

ADDRESSES: Submit your comments, identified by Docket ID No. OAR–2004–0022 by one of the following methods:

- Federal eRulemaking Portal: *http://www.regulations.gov*. Follow the on-line instructions for submitting comments.
- Agency Web site: *http://www.epa.gov/edocket*. EDOCKET, EPA's electronic public docket and comment system, is EPA's preferred method for receiving comments. Follow the on-line instructions for submitting comments.
- E-mail: *http://www.epa.gov/edocket*.
- Fax: 202–566–1741.
- Mail: OAR Docket, Environmental Protection Agency, Mailcode: B102, 1200 Pennsylvania Ave., NW., Washington, DC 20460. Please include a total of 2 copies.
- Hand Delivery: EPA/DC, EPA West, Room B102, 1301 Constitution Ave., NW., Washington, DC. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

Instructions: Direct your comments to Docket ID No. OAR–2004–0022. EPA's policy is that all comments received will be included in the public docket without change and may be made available online at *http://www.epa.gov/edocket*, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through EDOCKET, regulations.gov, or e-mail. The EPA EDOCKET and the federal regulations.gov Web sites are "anonymous access'' systems, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to EPA without going through EDOCKET or regulations.gov, your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses. For additional information about EPA's public docket visit EDOCKET on-line or see the **Federal Register** of May 31, 2002 (67 FR 38102).

For additional instructions on submitting comments, go to unit II of the **SUPPLEMENTARY INFORMATION** section of this document.

Docket: All documents in the docket are listed in the EDOCKET index at *http://www.epa.gov/edocket*. Although listed in the index, some information is not publicly available, *i.e.*, CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically in EDOCKET or in hard copy at the OAR Docket, EPA/DC, EPA West, Room B102, 1301 Constitution Ave., NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744, and the telephone number for the OAR Docket is (202) 566–1742.

FOR FURTHER INFORMATION CONTACT: For general information, call the RCRA Call Center at 1–800–424–9346 or TDD 1–800–553–7672 (hearing impaired). Callers within the Washington Metropolitan Area must dial 703–412–9810 or TDD 703–412–3323 (hearing impaired). The RCRA Call Center is open Monday–Friday, 9 a.m. to 4 p.m., eastern standard time. For more information about this proposal, contact Michael Galbraith at 703–605–0567, or *galbraith.michael@epa.gov*.

SUPPLEMENTARY INFORMATION:

I. Regulated Entities

The promulgation of the proposed rule would affect the following North

American Industrial Classification System (NAICS) and Standard Industrial Classification (SIC) codes:

Category	NAICS code	SIC code	Examples of potentially regulated entities
Any industry that combusts hazardous waste as defined in the proposed rule.	562211	4953	Incinerator, hazardous waste.
	327310	3241	Cement manufacturing, clinker production.
	327992	3295	Ground or treated mineral and earth manufacturing.
	325	28	Chemical Manufacturers.
	324	29	Petroleum Refiners.
	331	33	Primary Aluminum.
	333	38	Photographic equipment and supplies.
	488, 561, 562	49	Sanitary Services, N.E.C.
	421	50	Scrap and waste materials.
	422	51	Chemical and Allied Products, N.E.C.
	512, 541, 561, 812	73	Business Services, N.E.C.
	512, 514, 541, 711	89	Services, N.E.C.
	924	95	Air, Water and Solid Waste Management.

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities likely to be regulated by this action. This table lists examples of the types of entries EPA is now aware could potentially be regulated by this action. Other types of entities not listed could also be affected. To determine whether your facility, company, business, organization, etc., is regulated by this action, you should examine the applicability criteria in Part II of this preamble. If you have any questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

II. What Should I Consider as I Prepare My Comments for EPA?

1. *Submitting CBI.* Do not submit this information to EPA through EDOCKET, regulations.gov or e-mail. Clearly mark the part or all of the information that you claim to be CBI. For CBI information in a disk or CD–ROM that you mail to EPA, mark the outside of the disk or CD–ROM as CBI and then identify electronically within the disk or CD–ROM the specific information that is claimed as CBI). In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

2. *Tips for Preparing Your Comments.* When submitting comments, remember to:

A. Identify the rulemaking by docket number and other identifying information (subject heading, **Federal Register** date and page number).

B. Follow directions—The agency may ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.

C. Explain why you agree or disagree; suggest alternatives and substitute language for your requested changes.

D. Describe any assumptions and provide any technical information and/or data that you used.

E. If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.

F. Provide specific examples to illustrate your concerns, and suggest alternatives.

G. Explain your views as clearly as possible, avoiding the use of profanity or personal threats.

H. Make sure to submit your comments by the comment period deadline identified.

Outline

Abbreviations and Acronyms Used in This Document

acfm—actual cubic feet per minute
Btu—British thermal units
CAA—Clean Air Act
CFR—Code of Federal Regulations
DRE—destruction and removal efficiency
dscf—dry standard cubic foot
dscm—dry standard cubic meter
EPA—Environmental Protection Agency
FR—**Federal Register**
gr/dscf—grains per dry standard cubic foot
HAP—hazardous air pollutant(s)
ICR—Information Collection Request
kg/hr—kilograms per hour
kW-hour—kilo Watt hour
MACT—Maximum Achievable Control Technology
mg/dscm—milligrams per dry standard cubic meter
MMBtu—million British thermal unit
ng/dscm—nanograms per dry standard cubic meter
NESHAP—national emission standards for HAP
ng—nanograms
POHC—principal organic hazardous constituent
ppmv—parts per million by volume
ppmw—parts per million by weight
Pub. L.—Public Law
RCRA—Resource Conservation and Recovery Act
SRE—system removal efficiency
TEQ—toxicity equivalence
ug/dscm—micrograms per dry standard cubic meter
U.S.C.—United States Code

Part One: Background and Summary

I. Background Information

A. What Criteria Are Used in the Development of NESHAP?

1. What Information Is Covered in This Preamble and How Is It Organized?

In this preamble, EPA summarizes the important features of these proposed standards that apply to hazardous waste burning incinerators, cement kilns, lightweight aggregate kilns, boilers, and hydrochloric acid production furnaces, known collectively as HWCs. This preamble describes: (1) The environmental, energy, and economic impacts of these proposed standards; (2) the basis for each of the decisions made regarding the proposed standards; (3) requests public comments on certain issues; and (4) discusses administrative requirements relative to this action.

2. Where in the Code of Federal Regulations Will These Standards Be Codified?

The Code of Federal Regulations (CFR) is a codification of the general and permanent rules published in the **Federal Register** by the Executive departments and agencies of the Federal Government. The code is divided into 50 titles that represent broad areas subject to Federal regulation. These proposed rules would be published in Title 40, Protection of the Environment, Part 63, Subpart EEE: National Emission Standards for Hazardous Air Pollutants From Hazardous Waste Combustors.

3. What Criteria Are Used in the Development of NESHAP?

Section 112 of the Clean Air Act (CAA) requires EPA to promulgate regulations for the control of HAP emissions from each source category listed by EPA under section 112(c). The statute requires the regulations to reflect the maximum degree of reduction in emissions of HAP that is achievable taking into consideration the cost of achieving the emission reduction, any nonair quality health and environmental impacts, and energy requirements. This level of control is commonly referred to as MACT (*i.e.,* maximum achievable control technology). The MACT regulation can be based on the emission reductions achievable through application of measures, processes, methods, systems, or techniques including, but not limited to: (1) Reducing the volume of, or eliminating emissions of, such pollutants through process changes, substitutions of materials, or other modifications; (2) enclosing systems or processes to eliminate emissions; (3) collecting, capturing, or treating such pollutants when released from a process, stack, storage or fugitive emission point; (4) design, equipment, work practices, or operational standards as provided in subsection 112(h); or (5) a combination of the above. *See* section 112(d)(2) of the CAA.

For new sources, MACT standards cannot be less stringent than the emission control achieved in practice by the best-controlled similar source. *See* section 112(d)(3) of the Act. The MACT standards for existing sources can be less stringent than standards for new sources, but they cannot be less stringent than the average emission limitation achieved by the best-performing 12 percent of existing sources for categories and subcategories with 30 or more sources, or the best-performing 5 sources for categories or subcategories with fewer than 30 sources. *Id.* This level of control is usually referred to as the MACT "floor'', the term used in the Legislative History.

In essence, MACT standards ensure that all major sources of air toxic (*i.e.,* HAP) emissions achieve the level of control already being achieved by the better-controlled and lower-emitting sources in each category. This approach provides assurance to citizens that each major source of toxic air pollution will be required to effectively control its emissions of air toxics. At the same time, this approach provides a level playing field, ensuring that facilities that employ cleaner processes and good emission controls are not disadvantaged relative to competitors with poorer controls.

B. What Is the Regulatory Development Background of the Source Categories in the Proposed Rule?

Today's notice proposes standards for controlling emissions of HAP from hazardous waste combustors. Hazardous waste combustors comprise several categories of sources that burn hazardous waste: incinerators, cement kilns, lightweight aggregate kilns, boilers and hydrochloric acid production furnaces. We call incinerators, cement kilns, and lightweight aggregate kilns Phase I sources because we have already promulgated standards for those source categories. We call boilers and hydrochloric acid production furnaces Phase II sources because we intended to promulgate MACT standards for those source categories after promulgating MACT standards for Phase I sources. The regulatory background of Phase I and Phase II source categories is discussed below.

1. Phase I Source Categories

Phase I combustor sources are regulated under the Resource Conservation and Recovery Act (RCRA), which establishes a "cradle-to-grave'' regulatory structure overseeing the safe treatment, storage, and disposal of hazardous waste. We issued RCRA rules to control air emissions from incinerators in 1981, 40 CFR parts 264 and 265, subpart O, and from cement kilns and lightweight aggregate kilns that burn hazardous waste in 1991, 40 CFR part 266, subpart H. These rules rely generally on risk-based standards to achieve the RCRA protectiveness mandate.

The Phase I source categories are also subject to standards under section 112(d) of the Clean Air Act. We promulgated standards for Phase I sources on September 30, 1999 (64 FR 52828). This final rule is referred to as the Phase I rule or 1999 final rule. These emission standards created a technology-based national cap for hazardous air pollutant emissions from the combustion of hazardous waste in these devices. The rule regulates emissions of numerous hazardous air pollutants: dioxin/furans, other toxic organics (through surrogates), mercury, other toxic metals (both directly and through a surrogate), and hydrogen chloride and chlorine gas. Where necessary, section 3005(c)(3) of RCRA provides the authority to impose additional conditions in a RCRA permit to protect human health and the environment.

A number of parties, representing interests of both industrial sources and of the environmental community, sought judicial review of the Phase I rule. On July 24, 2001, the United States Court of Appeals for the District of Columbia Circuit (the Court) granted portions of the Sierra Club's petition for review and vacated the challenged portions of the standards. *Cement Kiln Recycling Coalition* v. *EPA,* 255 F. 3d 855 (D.C. Cir. 2001). The Court held that EPA had not demonstrated that its calculation of MACT floors met the statutory requirement of being no less stringent than (1) the average emission limitation achieved by the best performing 12 percent of existing sources and (2) the emission control achieved in practice by the best controlled similar source for new sources. 255 F.3d at 861, 865–66. As a remedy, the Court, after declining to rule on most of the issues presented in the industry petitions for review, vacated the "challenged regulations,'' stating that: "[W]e have chosen not to reach the bulk of industry petitioners' claims, and leaving the regulations in place during remand would ignore petitioners' potentially meritorious challenges.'' *Id.* at 872. Examples of the specific challenges the Court indicated might have merit were provisions relating to compliance during start up/shut down and malfunction events, including emergency safety vent openings, the dioxin/furan standard for lightweight aggregate kilns, and the semivolatile metal standard for cement kilns. *Id.* However, the Court stated, "[b]ecause this decision leaves EPA without standards regulating [hazardous waste combustor] emissions, EPA (or any of the parties to this proceeding) may file a motion to delay issuance of the mandate to request either that the current standards remain in place or that EPA be allowed reasonable time to develop interim standards.'' *Id.*

Acting on this invitation, all parties moved the Court jointly to stay the issuance of its mandate for four months to allow EPA time to develop interim standards, which would replace the vacated standards temporarily, until final standards consistent with the Court's mandate are promulgated. The interim standards were published on February 13, 2002 (67 FR 6792). EPA did not justify or characterize these standards as conforming to MACT, but rather as an interim measure to prevent the adverse environmental and other consequences that would result from the regulatory gap resulting from no standards being in place. *Id.* at 6795–96.

The motion also indicates that EPA will issue final standards which comply with the Court's opinion by June 14, 2005, and it indicates that EPA and Petitioner Sierra Club intend to enter into a settlement agreement requiring us to promulgate final rules by that date, and that date be judicially enforceable. EPA and Sierra Club entered into that settlement agreement on March 4, 2002.

The joint motion also details other actions we agreed to take, including issuing a one-year extension to the September 30, 2002, compliance date (66 FR 63313, December 6, 2001), and promulgating several of the compliance and implementation amendments to the rule which we proposed on July 3, 2001 (66 FR 35126). These final amendments were published on February 14, 2002 (67 FR 6968).

2. Phase II Source Categories

Phase II combustors—boilers and hydrochloric acid production furnaces—are also regulated under the Resource Conservation and Recovery Act (RCRA) pursuant to 40 CFR part 266, subpart H, and (for reasons discussed below) are also subject to the MACT standard setting process in section 112(d) of the CAA. We delayed promulgating MACT standards for these source categories pending reevaluation of the MACT standard setting methodology following the Court's decision to vacate the standards for the Phase I source categories. We have also entered into a judicially enforceable consent decree with Sierra Club which requires EPA to promulgate MACT standards for the Phase II sources by June 14, 2005—the same date that (for independent reasons) is required for the replacement standards for Phase I sources.

C. What Is the Statutory Authority for This Standard?

Section 112 of the Clean Air Act requires that the EPA promulgate regulations requiring the control of HAP emissions from major and certain area sources. The control of HAP is achieved through promulgation of emission standards under sections 112(d) and (in a second round of standard setting) (f) and, in appropriate circumstances, work practice standards under section 112(h).

EPA's initial list of categories of major and area sources of HAP selected for regulation in accordance with section 112(c) of the Act was published in the **Federal Register** on July 16, 1992 (57 FR 31576). Incinerators, cement kilns, lightweight aggregate kilns, industrial/commercial/institutional boilers and process heaters, and hydrochloric acid production furnaces are among the listed 174 categories of sources. The listing was based on the Administrator's determination that they may reasonably be anticipated to emit several of the 188 listed HAP in quantities sufficient to designate them as major sources.

D. What Is the Relationship Between the Proposed Rule and Other MACT Combustion Rules?

The proposed amendments to the subpart EEE, part 63, standards for hazardous waste combustors would apply to the source categories that are currently subject to that subpart—incinerators, cement kilns, and lightweight aggregate kilns that burn hazardous waste. Today's proposed rule, however, would also amend subpart EEE to establish MACT standards for the Phase II source categories—those boilers and hydrochloric acid production furnaces that burn hazardous waste.

Generally speaking, you are an affected source pursuant to subpart EEE if you combust, or have previously combusted, hazardous waste in an incinerator, cement kiln, lightweight aggregate kiln, boiler, or hydrochloric acid production furnace. You continue to be an affected source until you cease burning hazardous waste and initiate closure requirements pursuant to RCRA. See § 63.1200(b). If you never previously combusted hazardous waste, or have ceased burning hazardous waste and initiated RCRA closure requirements, you are not subject to subpart EEE. Rather, EPA has promulgated or proposed separate MACT standards for sources that do not burn hazardous waste within the following source categories: commercial and industrial solid waste incinerators (40 CFR part 60, subparts CCCC and DDDD); Portland cement manufacturing facilities (40 CFR part 63, subpart LLL); industrial/commercial/institutional boilers and process heaters (40 CFR part 63, proposed subpart DDDDD); and hydrochloric acid production facilities (40 CFR part 63, subpart NNNNN). In addition, EPA considered whether to establish MACT standards for lightweight aggregate manufacturing facilities that do not burn hazardous waste, and determined that they are not major sources of HAP emissions. Thus, EPA has not established MACT standards for lightweight aggregate manufacturing facilities that do not burn hazardous waste.

Note that non-stack emissions points are not regulated under subpart EEE.[1] Emissions attributable to storage and handling of hazardous waste prior to combustion (*i.e.,* emissions from tanks, containers, equipment, and process vents) would continue to be regulated pursuant to either RCRA subpart AA, BB, and CC or an applicable MACT that applies to the before-mentioned material handling devices. Emissions unrelated to the hazardous waste operations may be regulated pursuant to other MACT rulemakings. For example, Portland cement manufacturing facilities that combust hazardous waste are subject to both subpart EEE and subpart LLL, and hydrochloric acid production facilities that combust hazardous waste may be subject to both subpart EEE and subpart NNNNN.[2] In these instances subpart EEE controls HAP emissions from the cement kiln and hydrochloric acid production furnace stack, while subparts LLL and NNNNN would control HAP emissions from other operations that are not directly related to the combustion of hazardous waste (*e.g.,* clinker cooler emissions for cement production facilities, and hydrochloric acid product transportation and storage for hydrochloric acid production facilities).

Note that if you temporarily cease burning hazardous waste for any reason, you remain an affected source and are still subject to the applicable Subpart EEE requirements. However, even as an affected source, the proposed emission standards or operating limits derived from the hazardous waste combustors do not apply if: (1) Hazardous waste is not in the combustion chamber and you elect to comply with other MACT (or CAA section 129) standards that otherwise would be applicable if you were not burning hazardous waste, *e.g.,* the nonhazardous waste burning Portland Cement Kiln MACT (subpart LLL); or (2) you are in a startup, shutdown, or malfunction mode of operation.

E. What Are the Health Effects Associated With Pollutants Emitted by Hazardous Waste Combustors?

Today's proposed rule protects air quality and promotes the public health by reducing the emissions of some of the HAP listed in section 112(b)(1) of the CAA. Emissions data collected in the development of this proposed rule show that metals, particulate matter, hydrogen chloride and chlorine gas, dioxins and furans, and other organic compounds are emitted from hazardous waste combustors. The HAP that would

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[1] Note, however, that fugitive emissions attributable to the combustion of hazardous waste from the combustion device are regulated pursuant to subpart EEE.

[2] Hydrochloric acid production furnaces that combust hazardous waste would also be affected sources subject to subpart NNNNN if they produce a liquid acid product that contains greater than 30% hydrochloric acid.

be controlled with this rule are associated with a variety of adverse health affects. These adverse health effects include chronic health disorders (*e.g.,* irritation of the lung, skin, and mucus membranes and effects on the blood, digestive tract, kidneys, and central nervous system), and acute health disorders (*e.g.,* lung irritation and congestion, alimentary effects such as nausea and vomiting, and effects on the central nervous system). Provided below are brief descriptions of risks associated with HAP that are emitted from hazardous waste combustors. Note that a more detailed discussion of the risks associated with these emissions is included in Part Four.

Antimony

Antimony occurs at very low levels in the environment, both in the soils and foods. Higher concentrations, however, are found at antimony processing sites, and in their hazardous wastes. The most common industrial use of antimony is as a fire retardant in the form of antimony trioxide. Chronic occupational exposure to antimony (generally antimony trioxide) is most commonly associated with "antimony pneumoconiosis,'' a condition involving fibrosis and scarring of the lung tissues. Studies have shown that antimony accumulates in the lung and is retained for long periods of time. Effects are not limited to the lungs, however, and myocardial effects (effects on the heart muscle) and related effects (*e.g.,* increased blood pressure, altered EKG readings) are among the best-characterized human health effects associated with antimony exposure. Reproductive effects (increased incidence of spontaneous abortions and higher rates of premature deliveries) have been observed in female workers exposed in antimony processing facilities. Similar effects on the heart, lungs, and reproductive system have been observed in laboratory animals.

EPA recently assessed the carcinogenicity of antimony and found the evidence for carcinogenicity to be weak, with conflicting evidence from inhalation studies with laboratory animals, equivocal data from the occupational studies, negative results from studies of oral exposures in laboratory animals, and little evidence of mutagenicity or genotoxicity.[3] As a consequence, EPA concluded that insufficient data are available to adequately characterize the carcinogenicity of antimony and, accordingly, the carcinogenicity of antimony cannot be determined based on available information. However, IARC (International Agency for Research on Cancer) in an earlier evaluation, concluded that antimony trioxide is "possibly carcinogenic to humans'' (Group 2B).

Arsenic

Acute (short-term) high-level inhalation exposure to arsenic dust or fumes has resulted in gastrointestinal effects (nausea, diarrhea, abdominal pain), and central and peripheral nervous system disorders. Chronic (long-term) inhalation exposure to inorganic arsenic in humans is associated with irritation of the skin and mucous membranes. Human data suggest a relationship between inhalation exposure of women working at or living near metal smelters and an increased risk of reproductive effects, such as spontaneous abortions. Inorganic arsenic exposure in humans by the inhalation route has been shown to be strongly associated with lung cancer, while ingestion or inorganic arsenic in humans has been linked to a form of skin cancer and also to bladder, liver, and lung cancer. EPA has classified inorganic arsenic as a Group A, human carcinogen.

Beryllium

Beryllium is a hard, grayish metal naturally found in minerals, rocks, coal, soil, and volcanic dust. Beryllium dust enters the air from burning coal and oil. This beryllium dust will eventually settle over the land and water. It enters water from erosion of rocks and soil, and from industrial waste. Some beryllium compounds will dissolve in water, but most stick to particles and settle to the bottom. Most beryllium in soil does not dissolve in water and remains bound to soil. Beryllium does not accumulate in the food chain.

Beryllium can be harmful if you breathe it. The effects depend on how much you are exposed to and for how long. If beryllium air levels are high enough, an acute condition can result. This condition resembles pneumonia and is called acute beryllium disease. Long-term exposure to beryllium can increase the risk of developing lung cancer.

Cadmium

The acute (short-term) effects of cadmium inhalation in humans consist mainly of effects on the lung, such as pulmonary irritation. Chronic (long-term) inhalation or oral exposure to cadmium leads to a build-up of cadmium in the kidneys that can cause kidney disease. Cadmium has been shown to be a developmental toxicant in animals, resulting in fetal malformations and other effects, but no conclusive evidence exists in humans. An association between cadmium exposure and an increased risk of lung cancer has been reported from human studies, but these studies are inconclusive due to confounding factors. Animal studies have demonstrated an increase in lung cancer from long-term inhalation exposure to cadmium. EPA has classified cadmium as a Group B1, probable carcinogen.

Chlorine Gas

Acute exposure to high levels of chlorine in humans can result in chest pain, vomiting, toxic pneumonitis, and pulmonary edema. At lower levels chlorine is a potent irritant to the eyes, the upper respiratory tract, and lungs. Chronic exposure to chlorine gas in workers has resulted in respiratory effects including eye and throat irritation and airflow obstruction. Animal studies have reported decreased body weight gain, eye and nose irritation, nonneoplastic nasal lesions, and respiratory epithelial hyperplasia from chronic inhalation exposure to chlorine. No information is available on the carcinogenic effects of chlorine in humans from inhalation exposure. We have not classified chlorine for potential carcinogenicity.

Chromium

Chromium may be emitted in two forms, trivalent chromium (chromium III) or hexavalent chromium (chromium VI). The respiratory tract is the major target organ for chromium VI toxicity, for acute (short-term) and chronic (long-term) inhalation exposures. Shortness of breath, coughing, and wheezing have been reported from acute exposure to chromium VI, while perforations and ulcerations of the septum, bronchitis, decreased pulmonary function, pneumonia, and other respiratory effects have been noted from chronic exposure. Limited human studies suggest that chromium VI inhalation exposure may be associated with complications during pregnancy and childbirth, while animal studies have not reported reproductive effects from inhalation exposure to chromium VI. Human and animal studies have clearly established that inhaled chromium VI is a carcinogen, resulting in an increased risk of lung cancer. EPA has classified chromium VI as a Group A, human carcinogen.

Chromium III is less toxic than chromium VI. The respiratory tract is also the major target organ for

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[3] *See* "Evaluating the Carcinogenicity of Antimony,'' Risk Assessment Issue Paper (98–030/07–26–99), Superfund Technical Support Center, National Center for Environmental Assessment, July 26, 1999.

chromium III toxicity, similar to chromium VI. Chromium III is an essential element in humans, with a daily intake of 50 to 200 micrograms per day recommended for an adult. The body can detoxify some amount of chromium VI to chromium III. EPA has not classified chromium III with respect to carcinogenicity.

Cobalt

Cobalt is a relatively rare metal that is produced primarily as a by-product during refining of other metals, primarily copper. Cobalt has been widely reported to cause respiratory effects in humans exposed by inhalation, including respiratory irritation, wheezing, asthma, and pneumonia. Cardiomyopathy (or damage to the heart muscle) has also been reported, although this effect is better known from oral exposure. Other effects of oral exposure in humans are polycythemia (an abnormally high number of red blood cells) and the blocking of uptake of iodine by the thyroid. In addition, cobalt is a sensitizer in humans by any route of exposure. Sensitized individuals may react to inhalation of cobalt by developing asthma or to ingestion or dermal contact with cobalt by developing dermatitis. Cobalt is a vital component of vitamin B_{12}, though there is no evidence that intake of cobalt is ever limiting in the human diet.

A number of epidemiological studies have found that exposures to cobalt are associated with an increased incidence of lung cancer in occupational settings. The International Agency for Research on Cancer (IARC, part of the World Health Organization) classifies cobalt and cobalt compounds as "possibly carcinogenic to humans'' (Group 2B). The American Conference of Governmental Industrial Hygienists (ACGIH) has classified cobalt as a confirmed animal carcinogen with unknown relevance to humans (category A3). An EPA assessment concludes that under EPA's 1986 guidelines, cobalt would be classified as a probable human carcinogen (group B1) based on limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in animals, as evidenced by an increased incidence of alveolar/bronchiolar tumors in recent studies of both rats and mice. Under EPA's proposed cancer guidelines, cobalt is considered likely to be carcinogenic to humans.[4]

Dioxins and Furans

Exposures to 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TCDD) at levels 10 times or less above those modeled to approximate average background exposure have resulted in adverse non-cancer health effects in animals. These effects include changes in hormone systems, alterations in fetal development, reduced reproductive capacity, and immunosuppression. Effects that may be linked to dioxin and furan exposures at low dose in humans include changes in markers of early development and hormone levels. Dioxin and furan exposures are associated with altered liver function and lipid metabolism changes in activity of various liver enzymes, depression of the immune system, and endocrine and nervous system effects. EPA in its 1985 dioxin assessment classified 2,3,7,8-TCDD as a probable human carcinogen. The International Agency for Research on Cancer (IARC) concluded in 1997 that the overall weight of the evidence was sufficient to characterize 2,3,7,8-TCDD as a known human carcinogen.[5] In 2001 the U.S. Department of Health and Human Services National Toxicology Program in their 9th Report on Carcinogens classified 2,3,7,8-TCDD as a known human carcinogen.[6]

Hydrogen Chloride/Hydrochloric Acid

Hydrogen chloride, also called hydrochloric acid, is corrosive to the eyes, skin, and mucous membranes. Acute (short-term) inhalation exposure may cause eye, nose, and respiratory tract irritation and inflammation and pulmonary edema in humans. Chronic (long-term) occupational exposure to hydrochloric acid has been reported to cause gastritis, bronchitis, and dermatitis in workers. Prolonged exposure to low concentrations may also cause dental discoloration and erosion. No information is available on the reproductive or developmental effects of hydrochloric acid in humans. In rats exposed to hydrochloric acid by inhalation, altered estrus cycles have been reported in females and increased fetal mortality and decreased fetal weight have been reported in offspring. EPA has not classified hydrochloric acid for carcinogenicity.

Lead

Lead is a very toxic element, causing a variety of effects at low dose levels. Brain damage, kidney damage, and gastrointestinal distress may occur from acute (short-term) exposure to high levels of lead in humans. Chronic (long-term) exposure to lead in humans results in effects on the blood, central nervous system (CNS), blood pressure, and kidneys. Children are particularly sensitive to the chronic effects of lead, with slowed cognitive development, reduced growth and other effects reported. Reproductive effects, such as decreased sperm count in men and spontaneous abortions in women, have been associated with lead exposure. The developing fetus is at particular risk from maternal lead exposure, with low birth weight and slowed postnatal neurobehavioral development noted. Human studies are inconclusive regarding lead exposure and cancer, while animal studies have reported an increase in kidney cancer from lead exposure by the oral route. EPA has classified lead as a Group B2, probable human carcinogen.

Manganese

Health effects in humans have been associated with both deficiencies and excess intakes of manganese. Chronic (long-term) exposure to low levels of manganese in the diet is considered to be nutritionally essential in humans, with a recommended daily allowance of 2 to 5 milligrams per day (mg/d). Chronic exposure to high levels of manganese by inhalation in humans results primarily in central nervous system (CNS) effects. Visual reaction time, hand steadiness, and eye-hand coordination were affected in chronically-exposed workers. Manganism, characterized by feelings of weakness and lethargy, tremors, a mask-like face, and psychological disturbances, may result from chronic exposure to higher levels. Impotence and loss of libido have been noted in male workers afflicted with manganism attributed to inhalation exposures. EPA has classified manganese in Group D, not classifiable as to carcinogenicity in humans.

Mercury

Mercury exists in three forms: elemental mercury, inorganic mercury compounds (primarily mercuric chloride), and organic mercury compounds (primarily methyl mercury). Each form exhibits different health effects. Various sources may release elemental or inorganic mercury; environmental methyl mercury is

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[4] See "Derivation of a Provisional Carcinogenicity Assessment for Cobalt and Compounds,'' Risk Assessment Issue Paper (00–122/1–15–02), Superfund Technical Support Center, National Center for Environmental Assessment, January 15, 2002.

[5] IARC (International Agency for Research on Cancer). (1997) IARC monographs on the evaluation of carcinogenic risks to humans. Vol. 69. Polychlorinated dibenzo-para-dioxins and polychlorinated dibenzofurans. Lyon, France.

[6] The U.S. Department of Health and Human Services, National Toxicology Program 9th Report on Carcinogens, Revised January 2001.

typically formed by biological processes after mercury has precipitated from the air.

Acute (short-term) exposure to high levels of elemental mercury in humans results in central nervous system (CNS) effects such as tremors, mood changes, and slowed sensory and motor nerve function. High inhalation exposures can also cause kidney damage and effects on the gastrointestinal tract and respiratory system. Chronic (long-term) exposure to elemental mercury in humans also affects the CNS, with effects such as increased excitability, irritability, excessive shyness, and tremors. EPA has not classified elemental mercury with respect to cancer.

Acute exposure to inorganic mercury by the oral route may result in effects such as nausea, vomiting, and severe abdominal pain. The major effect from chronic exposure to inorganic mercury is kidney damage. Reproductive and developmental animal studies have reported effects such as alterations in testicular tissue, increased embryo resorption rates, and abnormalities of development. Mercuric chloride (an inorganic mercury compound) exposure has been shown to result in forestomach, thyroid, and renal tumors in experimental animals. EPA has classified mercuric chloride as a Group C, possible human carcinogen.

Nickel

Nickel is a commonly used industrial metal, and is frequently associated with iron and copper ores. Contact dermatitis is the most common effect in humans from exposure to nickel, whether via inhalation, oral, or dermal exposure. Cases of nickel-contact dermatitis have been reported following occupational and non-occupational exposure, with symptoms of itching of the fingers, wrists, and forearms. Many studies have also demonstrated dermal effects in sensitive humans from ingested nickel, invoking an eruption or worsening of eczema. Chronic inhalation exposure to nickel in humans results in direct respiratory effects, such as asthma due to primary irritation, or an allergic response and an increased risk of chronic respiratory tract infections.

Animal studies have reported a variety of inflammatory effects on the lungs, as well as effects on the kidneys and immune system from inhalation exposure to nickel. Significant differences in inhalation toxicity among the various forms of nickel have been documented, with soluble nickel compounds being more toxic to the respiratory tract than less soluble compounds (*e.g.,* nickel oxide). Animal studies have also reported effects on the respiratory and gastrointestinal systems, heart, blood, liver, kidney, and body weight from oral exposure to nickel, as well as to the fetus.

EPA currently classifies nickel refinery dust and nickel subsulfide (a major component of nickel refinery dust) as class A human carcinogens based on increased risks of lung and nasal cancer in human epidemiological studies of occupational exposures to nickel refinery dust, increased tumor incidences in animals by several routes of administration in several animal species, and positive results in genotoxicity assays. More recently, a pair of inhalation studies performed under the auspices of the National Toxicology Program (NTP) of the National Institutes of Health concluded that there was no evidence of carcinogenic activity of soluble nickel salts in rats or mice and that there was some evidence of carcinogenic activity of nickel oxide in male and female rats based on increased incidence of alveolar/bronchiolar adenoma or carcinoma and increased incidence of benign or malignant pheochromocytoma (a tumor of the adrenal gland) and equivocal evidence in mice based on marginally increased incidence of alveolar/bronchiolar adenoma or carcinoma in females and no evidence in males. The Tenth Annual Report on Carcinogens classifies nickel compounds as "known to be human carcinogens.'' [7] This is consistent with the International Agency for Cancer Research (IARC) which classifies nickel compounds as Group 1 human carcinogens.

Organic HAP

Organic HAPs include halogenated and nonhalogenated organic classes of compounds such as polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs). Both PAHs and PCBs are classified as potential human carcinogens, and are considered toxic, persistent and bioaccumulative. They include compounds such as benzene, methane, propane, chlorinated alkanes and alkenes, phenols and chlorinated aromatics. Adverse health effects of HAPs include damage to the immune system, as well as neurological, reproductive, developmental, respiratory and other health problems.

Particulate Matter [8]

Atmospheric PM is composed of sulfate, nitrate, ammonium, and other ions, elemental carbon, particle-bound water, a wide variety of organic compounds, and a large number of elements contained in various compounds, some of which originate from crustal materials and others from combustion sources. Combustion sources are the primary origin of trace metals found in fine particles in the atmosphere. Ambient PM can be of primary or secondary origin.[9]

A large body of evidence exists from epidemiological studies that demonstrates a relationship between ambient particulate matter (PM) and mortality and morbidity in the general population and, when combined with evidence from other studies (*e.g.,* clinical and animal studies), indicates that exposure to PM is a probable contributing cause to the adverse human health effects that have been observed. For example, many different studies report that increased cardiovascular and respiratory-related mortality risks are significantly associated with various measures (both long-term and short-term) of ambient PM. Some studies suggest that a portion of the increased mortality may be associated with concurrent exposures to PM and other criteria pollutants, such as SO_2. Much evidence exists of positive associations between ambient PM concentrations and increased respiratory-related hospital admissions, emergency room, and other medical visits. Additional findings implicate PM as likely associated with an increased occurrence of chronic bronchitis and a contributing factor in the exacerbation of asthmatic conditions. Recent reports from prospective cohort studies of long-term ambient PM exposures provide substantial evidence of an association between increased risk of lung cancer and PM, especially exposure to fine PM or its components.

PM has other effects, beyond the health effects to human beings. The major effect of atmospheric PM on ecosystems is indirect and occurs through the deposition of nitrates and sulfates and the acidifying effects of the associated hydrogen ions contained in

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[7] Report on Carcinogens, Tenth Edition; U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program, December 2002.

[8] The discussion of PM effects is drawn from the executive summary of the "Fourth External Review Draft of Air Quality Criteria for Particulate Matter,'' National Center for Environmental Assessment, Office of Research and Development, U.S. Environmental Protection Agency, EPA/600/P–99/002aD, June, 2003.

[9] Secondary PM is not emitted directly but is formed in the atmosphere by gas phase or aqueous phase reactions of emissions of various precursor compounds.

wet and dry deposition.[10] Acidification of surface waters can have long-term adverse effects on aquatic ecosystems, including effects on fish populations, macro invertebrates, species richness, and zooplankton abundance. In the soil environment, acid deposition has the potential to inhibit nutrient uptake, alter the ecological processes of energy flow and nutrient cycling, change ecosystem structure, and affect ecosystem biodiversity. In addition, ambient fine particles are well known as the major cause of visibility impairment. Visibility impairment (or haziness) is widespread in the U.S. and is greatest in the eastern United States and southern California. In addition, PM exerts important effects on materials, such as soiling, corrosion, and degradation of surfaces, and accelerates weathering of man-made and natural materials.

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Selenium

Selenium occurs naturally in soils, is associated with copper refining, and several industrial processes, and has been used in pesticides. It is an essential element and bioaccumulates in certain plant species, and has been associated with toxic effects in livestock (blind staggers syndrome). Soils containing high levels of selenium (seleniferous soils can lead to high concentration of selenium in certain plants, and pose a hazard to livestock and other species. Bioaccumulation and magnification of selenium has also been observed in aquatic organisms and has been shown to be toxic to piscivorous fish. In humans, selenium partitions to the kidneys and liver, and is excreted through the urine and feces. Selenium intoxication in humans causes a syndrome known as selenosis. The condition is characterized by chronic dermatitis, fatigue, anorexia, gastroenteritis, hepatic degeneration, enlarged spleen and increased concentrations of Se in the hair and nails. Clinical signs of selenosis include a characteristic "garlic odor'' of excess selenium excretion in the breath and urine, thickened and brittle nails, hair and nail loss, lowered hemoglobin levels, mottled teeth, skin lesions and CNS abnormalities (peripheral anesthesia, acroparesthesia and pain in the extremities). Aquatic birds are extremely sensitive to selenium; toxic effects include teratogenesis. Based on available data, both aquatic birds and aquatic mammals are sensitive ecological receptors.

II. Summary of the Proposed Rule

A. What Source Categories Are Affected by the Proposed Rule?

1. Incinerators That Burn Hazardous Waste

A hazardous waste burning incinerator is defined under § 63.1201(a) as a device that meets the definition of an incinerator in 40 CFR part 260.10 and that burns hazardous waste at any time. Hazardous waste incinerators are currently subject to the emission standards of part 63, subpart EEE.[12] Hazardous waste incinerator design types include rotary kilns, liquid injection incinerators, fluidized bed incinerators, and fixed hearth incinerators. Most incinerators have air pollution control equipment to capture particulate matter (and nonvolatile metals) and scrubbing equipment for the capture of acid gases. At least four incinerators are equipped with activated carbon injection systems or carbon beds to control dioxin/furan emissions (as well as other HAP emissions).

Incinerators can be further classified as either commercial or onsite. Commercial incinerators accept and treat, for a tipping fee, wastes that have been generated off-site. The purpose of commercial incinerators is to generate profit from treating hazardous wastes. On-site facilities treat only wastes that have been generated at the facility to avoid the costs of off-site treatment. In 2003, there were approximately 107 hazardous waste incinerators in operation, 15 of which were commercial facilities, the remaining being on-site facilities.

2. Cement Kilns That Burn Hazardous Waste

A hazardous waste burning cement kiln is defined under § 63.1201(a). Cement kilns that burn hazardous waste are currently subject to the emission standards of part 63, subpart EEE.[13] Cement kilns are long, cylindrical, slightly inclined rotating furnaces that are lined with refractory brick to protect the steel shell and retain heat within the

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[10] Nitrates and sulfates in PM are derived primarily from emissions of SO$_X$ and NO$_X$.

[11] Nitrates and sulfates in PM are derived primarily from emissions of SO$_X$ and NO$_X$.

[12] Incinerators that burn hazardous waste will also remain subject to the RCRA hazardous waste incinerator emission limitations pursuant to § 264 subpart O until they demonstrate compliance with the interim MACT standards and remove the emission limitations from their RCRA permit. See § 270.42 appendix I, section a.8 and introductory paragraph to § 270.62.

[13] Cement kilns that burn hazardous waste will also remain subject to the RCRA Boilers and Industrial Furnace emission limitations pursuant to § 266 subpart H until they demonstrate compliance with the interim MACT standards and remove the emission limitations from their RCRA permit. See § 270.42 appendix I, section a.8 and introductory paragraph to § 270.66.

kiln. Cement kilns are designed to calcine, or expel carbon dioxide by roasting, a blend of raw materials such as limestone, shale, clay, or sand to produce Portland cement. The raw materials enter the kiln at the elevated end, and the combustion fuels generally are introduced into the lower end of the kiln where the clinker product is discharged. The materials are continuously and slowly moved to the lower end by rotation of the kiln. As they move down the kiln, the raw materials are changed to cementitious minerals as a result of increased temperatures within the kiln.

Portland cement is a fine powder, usually gray in color, that consists of a mixture of minerals comprising primarily calcium silicates, aluminates, and aluminoferrites, to which small amounts of gypsum have been added during the finish grinding operations. Portland cement is the key ingredient in Portland cement concrete, which is used in almost all construction applications.

Cement kilns covered by this proposal burn hazardous waste-derived fuels to replace some or all of normal fossil fuels, typically coal. Most kilns burn liquid waste; however, cement kilns also may burn solids and small containers containing viscous or solid hazardous waste fuels. The annual hazardous waste fuel replacement rate varies considerably across sources from approximately 25 to 85 percent.

In 2003, there were 14 Portland cement plants in nine states operating a total of 25 hazardous waste burning kilns. All cement kilns use either bag houses or electrostatic precipitators to control particulate matter emissions.

3. Lightweight Aggregate Kilns That Burn Hazardous Waste

A hazardous waste burning lightweight aggregate kiln is defined under § 63.1201(a). Lightweight aggregate kilns that burn hazardous waste are currently subject to the emission standards of part 63, subpart EEE.[14] Raw materials such as shale, clay, and slate are crushed and introduced at the upper end of the rotary kiln. In passing through the kiln, the materials reach temperatures of 1,900–2,100 ° F. Heat is provided by a burner at the lower end of the kiln where the product is discharged. As the raw material is heated, it melts into a semi-plastic state and begins to generate gases that serve as the bloating or expanding agent. As temperatures reach their maximum, the semi-plastic raw material becomes viscous and entraps the expanding gases. This bloating action produces small, unconnected gas cells, which remain in the material after it cools and solidifies. Lightweight aggregate kilns are designed to expand the raw material by thermal processing into a coarse aggregate used in the production of lightweight concrete products such as concrete block, structural concrete, and pavement.

The lightweight aggregate kilns affected by this proposal burn hazardous waste-derived fuels to replace some or all of normal fossil fuels. Two of the facilities burn only liquid hazardous wastes, while the third facility burns both liquid and solid wastes. The annual hazardous waste fuel replacement rate is 100 percent.

In 2003, there were three lightweight aggregate kiln facilities in two states operating a total of seven hazardous waste-fired kilns. All lightweight aggregate kilns use baghouses to control particulate matter and one facility also uses a venturi scrubber to control acid gas emissions.

4. Boilers That Burn Hazardous Waste

Boilers that burn hazardous waste are currently regulated under RCRA at part 266, subpart H. We propose to use the RCRA definition of boiler under 40 CFR 260.10 for purposes of today's rulemaking for simplicity and continuity. This definition includes industrial, commercial, and institutional boilers as well as thermal units known in industry as process heaters. We propose to subcategorize boilers based on the type of fuel that is burned, which would result in separate emission standards for solid fuel-fired boilers and liquid fuel-fired boilers. We discuss subcategorization options in more detail in Part Two, Section II.

Boilers are typically described by either their design or type of fuel burned. Hazardous waste burning boilers comprise two basic different boiler designs—watertube and firetube. The choice of which design to use depends on factors such as the desired steam quality, thermal efficiency, size, economics, fuel type, and responsiveness. Watertube boilers are those that flow the water through tubes running the length of the boiler. The hot combustion gas surrounds these tubes, causing the water inside to get hot. Most hazardous waste burning boilers use this design. Watertube boilers can also burn a variety of fuel types including coal, oil, gas, wood, and municipal or industrial wastes. Firetube boilers are similar to watertube type, except the placement of the water and combustion gas is reversed. Here the hot combustion gas flows through the tubes, while the water surrounds the tubes. This design does have some disadvantages, however, in that they work well with only gas and liquid fuels.

Process heaters are similar to boilers (as conventionally defined), except they heat a fluid other than water. This fluid is often an oil or some other fluid with more suitable heating properties. Process heaters are often used in circumstances where the amount of heat needed is greater than what can be delivered by steam. For the purposes of this rulemaking and consistent with current RCRA regulations, process heaters would be classified as boilers.

Descriptions of liquid and solid fuel-fired boilers that burn hazardous waste are provided below.

a. Liquid Fuel-Fired Boilers. A liquid fuel-fired boiler is a device that meets the definition of a boiler under 40 CFR 260.10 and that burns any combination of liquid and gas fuels, but no solids. See proposed definition in § 63.1201(a). A liquid fuel is defined as a fuel that is pumpable (*e.g.*, liquid wastes, sludges, or slurries). Most liquid hazardous waste burning boilers co-fire natural gas, fuel oil, or process gases to achieve the proper combustion temperatures and a consistent steam supply.

There are approximately 104 liquid fuel-fired boilers that burn hazardous waste, 85 of which have not installed back-end air pollution control equipment. The rest of the liquid boilers use either a wet scrubber, electrostatic precipitator, or fabric filter. These boilers co-fire liquid hazardous waste with either natural gas or heating oil at heat input rates of 10% to 100%.

b. Solid Fuel-Fired Boilers. A solid fuel-fired boiler is a device that meets the definition of a boiler under 40 CFR 260.10 and that burns solid fuels, including both pulverized and stoker coal.[15] See proposed definition in § 63.1201(a). Boilers that co-fire solid fuel with liquid or gaseous fuels are solid fuel-fired boilers.

There are 12 solid fuel-fired boilers that burn hazardous waste. These boilers co-fire liquid hazardous waste with coal at heat input rates of 6% to 33%. Nine of these boilers are stoker-fired, and three burn pulverized coal. Two boilers are equipped with fabric filters to control particulate matter and

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[14] Lightweight aggregate kilns that burn hazardous waste will also remain subject to the RCRA Boilers and Industrial Furnace emission limitations pursuant to § 266 subpart H until they demonstrate compliance with the interim MACT standards and remove the emission limitations from their RCRA permit. See § 270.42 appendix I, section a.8 and introductory paragraph to § 270.66.

[15] Please note that the RCRA definition of boiler includes devices defined under part 63 as boilers and process heaters.

metals, and 10 are equipped with electrostatic precipitators.

5. Hydrochloric Acid Production Furnaces That Process Hazardous Waste

Hydrochloric acid production furnaces that burn hazardous waste are currently regulated under RCRA at part 266, subpart H. We propose to use the RCRA definition of hydrochloric acid production furnace under 40 CFR 260.10 for purposes of today's rulemaking for simplicity and continuity. See proposed definition in § 63.1201(a).

Hydrochloric acid production furnaces burn chlorinated hazardous wastes to make an aqueous hydrochloric acid for on-site use as an ingredient in a manufacturing process. The hazardous waste feedstocks have a chlorine content of over 20% by weight. The hydrochloric acid produced by burning the chlorinated byproducts dissolves in the scrubber water to produce an acid product containing hydrochloric acid greater than 3% by weight. There are 17 hazardous waste burning hydrochloric acid production furnaces currently in operation.

Chlorine-bearing feedstreams, wastes, and auxiliary fuels (usually natural gas) are burned in these hydrochloric acid production furnaces in a refractory lined chamber similar to a liquid waste incinerator chamber. Combustion is maintained at a high temperature, with adequate excess hydrogen to ensure the conversion of chlorine in the feedstreams to hydrogen chloride in the combustion gases. Many furnaces also have waste heat boilers, similar to those used by some incinerators, to recover heat and return it to the production process. Others use a water spray quench to cool the combustion gases.

The cooled combustion flue gas is routed to an acid recovery system, consisting of multiple wet scrubbing absorption units. These units are usually packed tower or film tray scrubbers which operate with an acidic scrubbing solution. The scrubbing solution is recycled to concentrate the acid until it reaches the desired concentration level, at which point it is recovered for use as a valuable product. A final polishing scrubber, operated with a caustic liquid solution, is used to control emissions of hydrogen chloride and chlorine gas.

B. What HAP Are Emitted?

Incinerators, cement kilns, lightweight aggregate kilns, and hydrochloric acid production furnaces that burn hazardous waste can emit high levels of dioxin/furans depending on the design and operation of the emission control equipment, and, for incinerators, whether a waste heat recovery boiler is used. Our data base shows that boilers that burn hazardous waste generally do not emit high levels of dioxin/furans.

All hazardous waste combustors can emit high levels of other organic HAP if they are not designed, operated, and maintained to operate under good combustion conditions.

Hazardous waste combustors can also emit high levels of metal HAP, depending on the level of metals in the waste feed and the design and operation of air emissions control equipment. Hydrochloric acid production furnaces, however, generally feed and emit low levels of metal HAP.

Hazardous waste combustors can also emit high levels of particulate matter, except that hydrochloric acid production furnaces generally feed wastes with low ash content and emit low levels of particulate matter.[16] The majority of particulate matter emissions from hazardous waste combustors is in the form of fine particulate (*i.e.*, 50% or more of the particulate matter emitted is 2.5 microns in diameter or less).[17] Particulate emissions from incinerators and liquid fuel-fired boilers depend on the ash content of the waste feed and the design and operation of air emission control equipment. Particulate emissions from cement kilns and lightweight aggregate kilns are not significantly affected by the ash content of the hazardous waste fuel because uncontrolled particulate emissions are attributable primarily to raw material entrained in the combustion gas. Thus, particulate emissions from kilns depend on operating conditions that affect entrainment of raw material, and the design and operation of the emission control equipment.

C. Does Today's Proposed Rule Apply to My Source?

The following sources that burn hazardous waste are considered to be affected sources subject to today's proposed rule: Incinerators, cement kilns, lightweight aggregate kilns, boilers, and hydrochloric acid production furnaces. Affected sources do not include: (1) Sources exempt from regulation under 40 CFR part 266, subpart H, because the only hazardous waste they burn is listed under 40 CFR 266.100(c); (2) research, development, and demonstration sources exempt under § 63.1200(b); and (3) boilers exempt from regulation under 40 CFR part 266, subpart H, because they meet the definition of small quantity burner under 40 CFR 266.108. See § 63.1200(b).

Affected sources also do not include emission points that are unrelated to the combustion of hazardous waste (*e.g.*, cement kiln clinker cooler stack emissions, hydrochloric acid production facility emissions originating from product or waste storage tanks and transfer operations, *etc.*). This is because subpart EEE only controls HAP emission points that are directly related to the combustion of hazardous waste. Under separate rulemakings, the Agency has or will establish MACT standards, where warranted, to control HAP emissions from non-hazardous waste related emission points.

Hazardous waste combustors are affected sources irrespective of whether they are major sources or area sources. As discussed in Part Two, Section I.A, we are proposing to subject area sources of boilers and hydrochloric acid production furnaces to the major source MACT standards for mercury, dioxin/furans, carbon monoxide/hydrocarbons, and destruction and removal efficiency pursuant to section 112(c)(6). As promulgated in the 1999 rule, both area source and major source incinerators, cement kilns, and lightweight aggregate kilns will continue to be subject to the full suite of Subpart EEE emission standards.

D. What Emissions Limitations Must I Meet?

Under today's proposal, you would have to comply with the emission limits in Tables 1 and 2. Note that these emission limitations are discussed in greater detail for each source category (and subcategory) in Part Two, Section VII thru XII. Note also that we are proposing several alternative emission standards: (1) You may elect to comply with an alternative to the particulate matter standard for incinerators and liquid fuel-fired boilers that would limit emissions of total metal HAP; and (2) you may elect to comply with an alternative to the total chlorine standard applicable to all source categories, except hydrochloric acid production furnaces, under which you may establish site-specific, risk-based emission limits for hydrogen chloride and chlorine gas based on national

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[16] Emissions of particulate matter are of interest because metal HAP, except notably for mercury, are in the particulate form in stack gas. Thus, controlling particulate matter controls metal HAP.

[17] Particulate size distributions are somewhat dependent on the type of combustor. See USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume V: Emission Estimates and Engineering Costs,'' March 2004, Chapter 7 for more information.

exposure standards. These alternative standards are discussed in Part Two, Section XVIII and Section XIII, respectively.

TABLE 1.—PROPOSED STANDARDS FOR EXISTING SOURCES

	Incinerators	Cement kilns	Lightweight aggregate kilns	Solid fuel-fired boilers[1]	Liquid fuel-fired boilers[1]	Hydrochloric acid production furnaces[1]
Dioxin/Furans (ng TEQ/dscm).	0.28 for dry APCD and WHB sources;[6] 0.40 for others.	0.20 or 0.40 + 400°F at APCD inlet.	0.40	CO or THC standard as a surrogate.	0.40 for dry APCD sources; CO or HC standard as surrogate for others.	0.40
Mercury	130 ug/dscm	64 ug/dscm[2]	67 ug/dscm[2]	10 ug/dscm	3.7E–6 lb/ MMBtu[2,5].	Total chlorine standard as surrogate
Particulate Matter	0.015 gr/dscf[8]	0.028 gr/dscf	0.025 gr/dscf	0.030 gr/dscf[8]	0.032 gr/dscf[8]	Total chlorine standard as surrogate
Semivolatile Metals (lead + cadmium).	59 ug/dscm	4.0E–4 lbs/ MMBtu[5].	3.1E–4 lb/ MMBtu[5] and 250 ug/dscm[3].	170 ug/dscm	1.1E–5 lb/ MMBtu[2,5].	Total chlorine standard as surrogate
Low Volatile Metals (arsenic + beryllium + chromium).	84 ug/dscm	1.4E–5 lbs/ MMBtu[5].	9.5E–5 lbs/ MMBtu[5] and 110 ug/dscm[3].	210 ug/dscm	1.1E–4 lb/ MMBtu[4,5].	Total chlorine standard as surrogate
Total Chlorine (hydrogen chloride + chlorine gas).	1.5 ppmv[7]	110 ppmv[7]	600 ppmv[7]	440 ppmv[7]	2.5E–2 lb/ MMBtu[5,7].	14 ppmv or 99.9927% system removal efficiency
Carbon Monoxide (CO) or Hydrocarbons HWC.	100 ppmv CO or 10 ppmv HWC.	See Part Two, Section VIII.	100 ppmv CO or 20 ppmv HWC.	(2) 100 ppmv CO or 10 ppmv HWC		
Destruction and Removal Efficiency (DRE).	99.99% for each principal organic hazardous pollutant. For sources burning hazardous wastes F020, F021, F022, F023, F026, or F027, however, 99.9999% for each principal organic hazardous pollutant.					

Notes:

[1] Particulate matter, semivolatile metal, low volatile, and total chlorine standards apply to major sources only for solid fuel-fired boilers, liquid fuel-fired boilers, and hydrochloric acid production furnaces.

[2] Standard is based on normal emissions data.

[3] Sources must comply with both the thermal emissions and emission concentration standards.

[4] Low volatile metal standard for liquid fuel-fired boilers is for chromium only. Arsenic and beryllium are not included in the low volatile metal total for liquid fuel-fired boilers.

[5] Standards are expressed as mass of pollutant contributed by hazardous waste per million Btu contributed by the hazardous waste.

[6] APCD denotes "air pollution control device", WHB denotes "waste heat boiler".

[7] Sources may elect to comply with site-specific, risk-based emission limits for hydrogen chloride and chlorine gas based on national exposure standards. See Part Two, Section XIII.

[8] Sources may elect to comply with an alternative to the particulate matter standard. See Part Two, Section XVIII.

TABLE 2.—PROPOSED STANDARDS FOR NEW SOURCES

	Incinerators	Cement kilns	Lightweight aggregate kilns	Solid fuel boilers[1]	Liquid fuel boilers[1]	Hydrochloric acid production furnaces[1]
Dioxin/Furans (ng TEQ/dscm).	0.11 for dry APCD or WHBs[5]; 0.2 for others.	0.20 or 0.40 + 400°F at inlet to particulate matter control device.	0.40	Carbon monoxide (CO) or hydrocarbon (HC) as a surrogate.	0.015 or 400°F at the inlet to particulate matter control device for dry APCD; CO or HC standard as surrogate for others.	0.40
Mercury	8 ug/dscm	35 ug/dscm[2]	67 ug/dscm[2]	10 ug/dscm	3.8E–7 lb/ MMBtu[2,4].	Tcl as surrogate
Particulate matter	0.00070 gr/dscf[7]	0.0058 gr/dscf	0.0099 gr/dscf	0.015 gr/dscf[7]	0.0076 gr/dscf[7]	TCL as surrogate
Semivolatile Metals (lead + cadmium).	6.5 ug/dscm	6.2E–5 lb/ MMBtu[4].	2.4E–5 lb/ MMBtu[4].	170 ug/dscm	4.3E–6 lb/ MMBtu[2,4].	TCL as surrogate
Low Volatile Metals (arsenic + beryllium + chromium).	8.9 ug/dscm	1.4E–5 lb/ MMBtu[4].	3.2E–5 lb/ MMBtu[4].	190 ug/dscm	3.6E–5 lb/MMBtu in HW[3,4].	TCL as surrogate
Total Chlorine (Hydrogen chloride + chlorine gas).	0.18 ppmv[6]	78 ppmv[6]	600 ppmv[6]	73 ppmv[6]	7.2E–4 lb/ MMBtu[4,6].	1.2 ppmv or 99.99937% SRE

TABLE 2.—PROPOSED STANDARDS FOR NEW SOURCES—Continued

	Incinerators	Cement kilns	Lightweight aggregate kilns	Solid fuel boilers[1]	Liquid fuel boilers[1]	Hydrochloric acid production furnaces[1]
Carbon monoxide CO or Hydrocarbons (HWC).	100 ppmv (CO) or 10 ppmv HWC.	See Part Two, Section VIII.	100 ppmv CO or 20 ppmv HWC.	100 ppmv CO or 10 ppmv HWC		
Destruction and Removal Efficiency.	99.99% for each principal organic hazardous pollutant. For sources burning hazardous wastes F020, F021, F022, F023, F026, or F027, however, 99.9999% for each principal organic hazardous pollutant.					

Notes:

[1] Particulate matter, semivolatile metal, low volatile metal, and total chlorine standards apply to major sources only for solid fuel-fired boilers, liquid fuel-fired boilers, and hydrochloric acid production furnaces.

[2] Standard is based on normal emissions data.

[3] Low volatile metal standard for liquid fuel-fired boilers is for chromium only. Arsenic and beryllium are not included in the low volatile metal total for liquid fuel-fired boilers.

[4] Standards are expressed as mass of pollutant contributed by hazardous waste per million Btu contributed by the hazardous waste.

[5] APCD denotes "air pollution control device", WHB denotes "waste heat boiler".

[6] Sources may elect to comply with site-specific, risk-based emission limits for hydrogen chloride and chlorine gas based on national exposure standards. See Part Two, Section XIII.

[7] Sources may elect to comply with an alternative to the particulate matter standard. See Part Two, Section XVIII.

E. What Are the Testing and Initial Compliance Requirements?

We are proposing testing and initial compliance requirements for solid fuel-fired boilers, liquid fuel-fired boilers and hydrochloric acid production furnaces that are identical to those that are applicable to incinerators, cement kilns, and lightweight aggregate kilns already in place at §§ 63.1206, 63.1207, and 63.1208. Please note also that in Part Three of today's preamble we request comment on, or propose revisions to, several testing and initial compliance requirements. Any amendments to the testing and compliance requirements that we promulgate as a result of those discussions would be applicable to all hazardous waste combustors.

In addition, we are proposing to revise the existing initial compliance requirements for incinerators, cement kilns, and lightweight aggregate kilns. Under the proposed revision, owners and operators of incinerators, cement kilns, and lightweight aggregate kilns would be required to conduct the initial comprehensive performance test to document compliance with the replacement standards proposed today (§§ 63.1219, 63.1220, and 63.1221) within 12 months of the compliance date. Owners and operators of solid fuel-fired boilers, liquid fuel-fired boilers and hydrochloric acid production furnaces would be required to conduct an initial comprehensive performance test within six months of the compliance date, and periodic comprehensive performance tests every five years. The purpose of the comprehensive performance test is to document compliance with the emission standards, document that continuous monitoring systems meet performance requirements, and establish limits on operating parameters that would be monitored by continuous monitoring systems.

Owners and operators of liquid fuel-fired boilers equipped with a dry air pollution control device and hydrochloric acid production furnaces would be required to conduct a dioxin/furan confirmatory performance test 2.5 years after each comprehensive performance test (*i.e.*, midway between comprehensive performance tests). The purpose of the dioxin/furan confirmatory performance test is to document compliance with the dioxin/furan standard when operating within the range of normal operations. Owners and operators of solid fuel-fired boilers, and liquid fuel-fired boilers that are not subject to a numerical dioxin/furan emission standard (*i.e.*, liquid fuel-fired boilers other than those equipped with an electrostatic precipitator or fabric filter), would be required to conduct a one-time dioxin/furan test to enable the Agency to evaluate the effectiveness of the carbon monoxide/hydrocarbon standard and destruction and removal efficiency standard in controlling dioxin/furan emissions for those sources. The Agency would use those emissions data when reevaluating the MACT standards under section 112(d)(6) and when determining whether to develop residual risk standards for these sources pursuant to CAA section 112(f)(2).

Owners and operators of solid fuel-fired boilers, liquid fuel-fired boilers and hydrochloric acid production furnaces would be required to use the following stack test methods to document compliance: (1) Method 29 for mercury, semivolatile metals, and low volatile metals; and (2) Method 26A for hydrogen chloride and chlorine gas; (3) either Method 0023A or Method 23 for dioxin/furans; and (4) either Method 5 or 5i for particulate matter.

The following is a proposed time-line for testing and initial compliance requirements for owners and operators of solid fuel-fired boilers, liquid fuel-fired boilers and hydrochloric acid production furnaces: (1) The compliance date is three years from publication of the final rule; (2) you must place in the operating record a Documentation of Compliance by the compliance date identifying that the operating parameter limits you have determined using available information will ensure compliance with the emission standards; (3) you must commence the initial comprehensive performance test within six months of the compliance date; (4) you must complete the initial comprehensive performance test within 60 days of commencing the test; and (5) you must submit a Notification of Compliance within 90 days of completing the test documenting compliance with emission standards and CMS requirements.

F. What Are the Continuous Compliance Requirements?

We are proposing continuous compliance requirements for solid fuel-fired boilers, liquid fuel-fired boilers and hydrochloric acid production furnaces that are identical to those already in place at § 63.1209 and applicable to incinerators, cement kilns, and lightweight aggregate kilns. Please note, however, that in Part Three of today's preamble we request comment on, or propose revisions to, several continuous compliance requirements. Any amendments to the continuous compliance requirements that we promulgate as a result of those discussions would be applicable to all hazardous waste combustors.

Owners and operators of solid fuel-fired boilers, liquid fuel-fired boilers and hydrochloric acid production furnaces would be required to use carbon monoxide or hydrocarbon continuous emissions monitors (as well as an oxygen continuous emissions monitor to correct the carbon monoxide or hydrocarbon values to 7% oxygen) to ensure compliance with the carbon monoxide or hydrocarbon emission limits.

Owners and operators of solid fuel-fired boilers, liquid fuel-fired boilers and hydrochloric acid production furnaces would also be required to establish limits on the feedrate of metals, chlorine, and (for some source categories) ash, key combustor operating parameters, and key operating parameters of the control device based on operations during the comprehensive performance test. You must continuously monitor these parameters with continuous monitoring systems. See Part Two, Section XIV.C for a discussion of the specific parameters for which you must establish limits.

G. What Are the Notification, Recordkeeping, and Reporting Requirements?

We are proposing notification, recordkeeping, and reporting requirements for solid fuel-fired boilers, liquid fuel-fired boilers and hydrochloric acid production furnaces that are identical to those already in place at §§ 63.1210 and 63.1211 and applicable to incinerators, cement kilns, and lightweight aggregate kilns. Please note, however, that we are proposing a new requirement applicable to all hazardous waste combustors that would require you to submit a Notification of Intent to Comply and a Compliance Progress Report. See Part Two, Section XVI.B.

The proposed notification, recordkeeping, and reporting requirements are summarized in Part Two, Section XVI.

Part Two: Rationale for the Proposed Rule

I. How Did EPA Determine Which Hazardous Waste Combustion Sources Would Be Regulated

A. How Are Area Sources Regulated?

We are proposing to subject area source boilers and hydrochloric acid production furnaces to the major source MACT standards for mercury, dioxin/furan, carbon monoxide/hydrocarbons, and destruction and removal efficiency pursuant to section 112(c)(6).[18] Both area source and major source incinerators, cement kilns, and lightweight aggregate kilns will continue to be subject to the full suite of Subpart EEE emission standards.[19]

Section 112(c)(6) of the CAA requires EPA to list and promulgate section 112(d)(2) or (d)(4) standards (*i.e.*, standards reflecting MACT) for categories and subcategories of sources emitting seven specific pollutants. Four of those listed pollutants are emitted by boilers and hydrochloric acid production furnaces: mercury, 2,3,7,8-tetrachlorodibenzofuran, 2,3,7,8-tetrachlorodibenzo-p-dioxin, and polycyclic organic matter. EPA must assure that source categories accounting for not less than 90 percent of the aggregated emissions of each enumerated pollutant are subject to MACT standards. Congress singled out the pollutants in section 112(c)(6) as being of "specific concern'' not just because of their toxicity but because of their propensity to cause substantial harm to human health and the environment via indirect exposure pathways (*i.e.*, from the air through other media, such as water, soil, food uptake, etc.). Furthermore, these pollutants have exhibited special potential to bioaccumulate, causing pervasive environmental harm in biota and, ultimately, human health risks.

We estimate that approximately 1,800 pounds of mercury are emitted annually in aggregate from hazardous waste burning boilers in the United States.[20] Also, we estimate that hazardous waste burning boilers and hydrochloric acid production furnaces emit in aggregate approximately 1.1 and 1.6 grams TEQ per year of dioxin/furan, respectively. The Agency has already counted on the control of these pollutants from area sources in the industrial/commercial/institutional boiler source category when we accounted for at least 90 percent of the emissions of these hazardous air pollutants as being subject to standards under section 112(c)(6). See 63 FR 17838; April 10, 1998. Therefore, we are proposing to subject boiler and hydrochloric acid furnace area sources to the major source MACT standards for mercury, dioxin/furan, carbon monoxide/hydrocarbons, and destruction and removal efficiency pursuant to section 112(c)(6).

We are proposing that only major source boilers and hydrochloric acid furnaces would be subject to the full suite of subpart EEE emission standards we propose today. Section 112(c)(3) of the CAA requires us to subject area sources to the full suite of standards applicable to major sources if we find "a threat of adverse effects to human health or the environment'' that warrants such action. We cannot make this finding for area source boilers and halogen acid production furnaces.[21] Consequently, area sources in these categories would be subject to the MACT standards for mercury, dioxin/furan, carbon monoxide/hydrocarbons, and destruction and removal efficiency standards only to control the HAP listed under section 112(c)(6). RCRA standards under Part 266, Subpart H for particulate matter, metals other than mercury, and hydrogen chloride and chlorine gas would continue to apply to these area sources unless an area source elects to comply with the major source standards in lieu of the RCRA standards. See proposed § 266.100(b)(3) and the proposed revisions to §§ 270.22 and 270.66.

B. What Hazardous Waste Combustors Are Not Covered by This Proposal?

1. Small Quantity Burners

Boilers that are exempt from the RCRA hazardous waste-burning boilers rule under 40 CFR 266.108 because they burn small quantities of hazardous waste fuel would also be exempt from today's proposed rule. Those boilers would be subject, however, to the MACT standards the Agency has proposed for industrial/commercial/institutional boilers. See 68 FR 1660, January 13, 2003.

The type and concentration of HAP emissions from boilers that co-fire small quantities of hazardous waste fuel with other fuels under § 266.108 should be characterized more by the metals and chlorine levels in the primary fuels and the effect of combustion conditions on the primary fuels than by the composition and other characteristics of the hazardous waste fuel. Under § 266.108, boilers that burn small quantities of hazardous waste fuel cannot fire hazardous waste at any time at a rate greater than 1 percent of the

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[18] We are using carbon monoxide or hydrocarbons and destruction and removal efficiency as surrogates for control of polycyclic organic matter emissions.

[19] In support of the 1999 Final Rule, EPA determined incinerators, cement kilns, and lightweight aggregate kilns that are area sources can emit HAP at levels that pose a hazard to human health and the environment. Accordingly, EPA subjected area sources within those source categories to the same emission standards that apply to major sources. See 64 FR at 52837–38.

[20] See USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume V: Emission Estimates and Engineering Costs,'' March, 2004, Chapter 3.

[21] We believe that two or fewer boilers are area sources. We do not believe any hydrochloric acid production furnaces are area sources.

total fuel requirements for the boiler. In addition, a boiler with a stack height of 20 meters or less cannot fire more than 84 gallons of hazardous waste fuel a month, which would equate to an average firing rate of 0.5 quarts per hour. Finally, the hazardous waste fuel must have a heating value of 5,000 Btu/lb to ensure it is a bonafide fuel, and cannot contain hazardous wastes that are listed because they contain chlorinated dioxins/furans. Given these restrictions, we believe that HAP emissions are not substantially related to the hazardous waste fuels these boilers burn. Thus, these boilers are more appropriately regulated under the MACT standards proposed at part 63, subpart DDDDD, than the MACT standards proposed today for hazardous waste combustors.

Boilers that burn small quantities of hazardous waste fuel under § 266.108 would become subject to part 63, subpart DDDDD, three years after publication of the final rule for hazardous waste combustors (*i.e.*, the rules we are proposing today). Subpart DDDDD exempts “a boiler or process heater required to have a permit under section 3005 of the Solid Waste Disposal Act [*i.e.*, RCRA] or covered by 40 CFR part 63, subpart EEE (*e.g.*, hazardous waste combustors).’’ See 40 CFR 63.7491(d). Boilers that burn small quantities of hazardous waste fuel under § 266.108 are exempt from the substantive emission standards of part 266, subpart H, and the permit requirements of 40 CFR part 270 (establishing RCRA permit requirements). In addition, owners and operators of such boilers would not know whether they are covered by part 63, subpart EEE, until we promulgate the final rule for hazardous waste combustors. Thus, it is appropriate to require that these boilers begin complying with subpart DDDDD three years after we publish the final rule for hazardous waste combustors.

2. Sources Exempt From RCRA Emission Regulation Under 40 CFR Part 266.100(c)

Consistent with the Phase I Hazardous Waste Combustor MACT rule promulgated in 1999, we would not subject boilers and hydrochloric acid production furnaces to today’s proposed requirements if the only hazardous waste combusted is exempt from regulation pursuant to § 266.100(c), including certain types of used oil, landfill gas, and otherwise exempt or excluded waste. This is appropriate because HAP emissions from sources that qualify for this exemption would not be significantly impacted by the combustion of hazardous waste. Thus, emissions from these sources would be more appropriately regulated by other promulgated MACT standards that specifically address emissions from these sources.

3. Research, Development, and Demonstration Sources

Consistent with the Phase I Hazardous Waste Combustor MACT rule promulgated in 1999, we would not subject boilers and hydrochloric acid production furnaces that are research, development, and demonstration sources to today’s proposed requirements. We explained at promulgation of the Phase I MACT standards that the hazardous waste combustor emission standards may not be appropriate for research, development, and demonstration sources because of their typically intermittent operations and small size. See 64 FR at 52839. Given that emissions from these sources are addressed under RCRA on case-by-case basis pursuant to § 270.65, we continue to believe this is appropriate, and we are today proposing the same exemption for boilers and hydrochloric acid production furnaces.

C. How Would Sulfuric Acid Regeneration Facilities Be Regulated?

Sulfuric acid regeneration facilities burn spent sulfuric acid and sulfur-bearing hazardous wastes or hazardous waste fuel to produce sulfuric acid and are subject to 40 CFR part 266, subpart H, (*i.e.*, the RCRA Boiler and Industrial Furnace Rule) as a listed industrial furnace. We are not proposing MACT standards for these sources because EPA did not list sulfuric acid regeneration facilities as a category of major sources of HAP emissions. See 57 FR 31576 (July 16, 1992). We obtained emissions and other data on these sources and confirmed that they emit very low levels of HAP.[22] Accordingly, these combustors will remain subject to RCRA regulations under part 266, subpart H.

II. What Subcategorization Considerations Did EPA Evaluate?

CAA section 112(d)(1) allows us to distinguish amongst classes, types, and sizes of sources within a category when establishing floor levels. Subcategorization typically reflects “differences in manufacturing process, emission characteristics, or technical feasibility.’’ See 67 FR 78058. A classic example, provided in the legislative history to CAA 112(d), is of a different process leading to different emissions and different types of control strategies—the specific example being Soderberg and prebaked anode primary aluminum processes. See “A Legislative History of the Clean Air Act Amendments of 1990,’’ vol. 1 at 1138–39 (floor debates on Conference Report). If we determine, for instance, that a given source category includes sources that are designed differently such that the type or concentration of HAP emissions are different we may subcategorize these sources and issue separate standards.

We have determined that it is appropriate to subcategorize sources that combust hazardous waste from those sources that do not. EPA published an initial list of categories of major and area sources of HAP selected for regulation in accordance with section 112(c) of the Act on July 16, 1992 (57 FR 31576). Hazardous waste incineration, Portland cement manufacturing, clay products manufacturing (including lightweight aggregate manufacturing), industrial/commercial/institutional boilers and process heaters, and hydrochloric acid production are among the listed 174 categories of sources. Although some cement kilns, lightweight aggregate kilns, boilers and process heaters, and hydrochloric acid production furnaces burn hazardous waste, EPA did not list hazardous waste burning sources as separate source categories. Nonetheless, we generally believe that hazardous waste combustion sources can emit different types or concentrations of HAP emissions because hazardous waste combustors: (1) Have different fuel HAP concentrations; (2) use different control techniques (*e.g.*, feed control); and (3) have a different regulatory history given that their toxic emissions were regulated pursuant to RCRA standards. As a result, we believe it is appropriate to subcategorize each source category listed above to define sources that burn hazardous waste as a separate classes of combustors. We also assessed if further subdividing each class of hazardous waste burning combustors is warranted using both engineering judgement and statistical analysis. In our proposed approach, we first use engineering information and principles to identify potential subcategorization options. We then determine if there is a statistical difference in the emission characteristics between these options. See Part Two, Section VI.C for a discussion of this statistical analysis. Finally, we review the results of the statistical analysis to determine whether they are an appropriate basis for

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[22] See U.S. EPA, “Draft Technical Support Document for HWC MACT Replacement Standards, Volume II: HWC Emissions Data Base,’’ March 2004.

subcategorization.[23] We describe below the subcategorization options we considered for each source category.

A. What Subcategorization Options Did We Consider for Incinerators?

We considered whether to propose separate standards for three hazardous waste incinerator subcategory options. First, we assessed whether government-owned incinerator facilities had different emission characteristics when compared to non-government facilities for the mercury, semivolatile metal, low volatile metal, particulate matter, and total chlorine floors. After evaluating the data, we determined that emission characteristics from these two subcategories are not statistically different, and, therefore are not proposing separate emission standards.

Second, we assessed whether liquid injection incinerators emitted significantly different levels of metals and particulate matter compared to incinerators that feed solid wastes (*e.g.*, rotary kilns, fluid bed units, and hearth fired units). We define liquid injection units as those incinerators that exclusively feed pumpable waste streams and solid feed units as those that feed a combination of liquid and solid wastes. We determined that emissions of metal HAP from these potential subcategories are not statistically different.[24] We, therefore, are not proposing separate emission standards for metal HAP. The statistical analysis for particulate matter shows that emissions from liquid feed injection incinerators are higher than emissions from solid feed injection units. However, we believe that separate standards for particulate matter are not warranted because the difference in emissions was more a factor of the types of back-end air pollution devices used by the sources rather than incinerator design. We would expect particulate emissions to be potentially higher for solid feed units, not lower, because solid feed units have higher ash feedrates and air pollution control device inlet particulate matter loadings. Therefore, we must conclude that the difference is the product of less effective back-end air pollution control.

Third, we assessed whether incinerators equipped with dry air pollution control devices and/or waste heat boilers have different dioxin/furan emission characteristics when compared to other sources, *i.e.*, sources with either wet air pollution control or no air pollution control devices. Our statistical analysis determined that dioxin/furan emissions from sources equipped with waste heat boilers and/or dry air pollution control devices are higher.[25] We believe use of wet air pollution control systems (and use of no air pollution control system) can result in different dioxin/furan emission characteristics because they have different post-combustion particle residence times and temperature profiles, which can affect dioxin/furan surface catalyzed formation reaction rates. As a result, we believe that it is appropriate to subcategorize these different types of combustors.

Note that we do not subcategorize based on the type of air pollution control device used. See 69 FR 394 (January 5, 2004). Dioxin/furan emission characteristics are unique in that they are not typically fed into the combustion device, but rather are formed in the combustor or post combustion within ductwork, a heat recovery boiler, or the air pollution control system. Wet and dry air pollution control systems are generally not considered to be dioxin/furan control systems because their primary function is to remove metals and/or total chlorine from the combustion gas. They generally do not remove dioxin/furans from the incinerator flue gas unless they are used in tandem with carbon injection systems or carbon beds. (In contrast, carbon injection systems and carbon beds are considered to be dioxin/furan air pollution control systems). Thus, the differences in dioxin formation here reflect something more akin to a process difference resulting in different emission characteristics, rather than a difference in pollution-capture efficiencies among pollution control devices. We thus are not proposing to subcategorize based on whether a source is equipped with a dioxin/furan control system.

We also considered whether to further subcategorize based on the presence of a waste heat boiler or dry air pollution control device. Our analysis determined that dioxin/furan emissions from incinerators with waste heat boilers are not statistically different from those equipped with dry air pollution control devices.[26] We conclude that further subcategorization is not necessary. See Part Two, Section VII.A for more discussion on the proposed dioxin/furan standards for incinerators.

B. What Subcategorization Options Did We Consider for Cement Kilns?

We considered subdividing hazardous waste burning cement kilns by the clinker manufacturing process: wet process kilns without in-line raw mills versus preheater/precalciner kilns with in-line raw mills. All cement kilns that burn hazardous waste use one of these clinker manufacturing processes. Based on available emissions data, we evaluated design and operating features of each process to determine if the features could have a significant impact on emissions. For the reasons discussed below, we believe that subcategorization is not warranted.

In the wet process, raw materials are ground, wetted, and fed into the kiln as a slurry. Twenty-two of the 25 cement kilns that burn hazardous waste use the wet process to manufacture clinker. In the preheater/precalciner kilns, raw materials are ground dry in a raw mill and fed into the kiln dry. The remaining three of the 25 cement kilns burning hazardous waste use preheater/precalciner kilns with in-line raw mills.

Combustion gases and raw materials move in a counterflow direction inside a cement kiln for both processes. The kiln is inclined, and raw materials are fed into the upper end while fuels are typically fired into the lower end. Combustion gases move up the kiln counter to the flow of raw materials. The raw materials get progressively hotter as they travel down the length of the kiln. The raw materials begin to soften and fuse at temperatures between 2,250 and 2,700 °F to form the clinker product.

Wet process kilns are longer than the preheater/precalciner kilns in order to facilitate evaporation of the water from the slurried raw material. The preheater/precalciner kilns begin the calcining process—heating of the limestone to drive off carbon dioxide to obtain lime (calcium oxide)—before the raw materials are fed into the kiln. This is accomplished by routing the flue gases from the kiln up through the preheater tower while the raw materials are passing down the preheater tower.

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[23] For example, although the statistical analysis may find a significant difference in emission levels between potential subcategories, the emission levels may be more a function of the emission control equipment rather than a function of the design and operation of the combustors within the subcategories. If differences in emission levels are attributable to use of different emission control devices, and if there is nothing inherent in the design or operation of sources in both subcategories that would preclude applicability of those control devices, subcategorization would not be warranted.

[24] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards'', March 2004, Chapter 4.

[25] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards'', March 2004, Chapter 4.

[26] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards'', March 2004, Chapter 4.

The heat of the flue gas is transferred to the raw material as they interact in the preheater tower. The precalciner is a secondary firing system—typically fired with coal—located at the base of the preheater tower.

Though not necessary in a wet process kiln, a preheater/precalciner kiln uses an alkali bypass designed to divert a portion of the flue gas to remove problematic volatile constituents such as alkalies (potassium and sodium oxides), chlorides, and sulfur that, if not removed, can lead to operating problems. In addition, removal of the alkalies is necessary so that their concentrations are below maximum acceptable levels in the clinker. An alkali bypass diverts between 10–30% of the kiln off-gas before it reaches the lower cyclone stages of the preheater tower. Without use of a bypass, the high concentration of volatile constituents at the lower cyclone stage of the preheater tower would create operational problems. Bypass gases are quenched and sent to a dedicated particulate matter control device to capture and remove the volatile constituents.

All preheater/precalciner kilns that burn hazardous waste use the hot flue gases to dry the raw materials as they are being ground in the in-line raw mill. Typically, the raw mill is operating or "on'' approximately 85% of the time. The kilns with in-line raw mills must operate both in the "on'' mode—gases are routed through the raw mill supporting raw material drying and preparation—and in the "off'' mode—necessary down time for raw mill maintenance. Given that there are few preheater/precalciner cement kilns that burn hazardous waste, we had limited emissions data to evaluate to see if there was a significant difference in emissions. Moreover, we do not have any data from a preheater/precalciner kiln operating under similar operating conditions (*e.g.*, metals and chlorine feed concentrations) both for the "on'' mode and "off'' mode.

We evaluated whether there was a significant difference in HAP emissions between wet process kilns without in-line raw mills versus preheater/precalciner kilns with in-line raw mills. We found a statistically significant difference in mercury emissions between wet process kilns and preheater/precalciner kilns in the "off'' mode.[27] But, we conclude that there is no significant difference in emissions of dioxin/furans, particulate matter, semivolatile metals, low volatile metals, and total chlorine between these types of kiln systems.[28]

For wet process cement kilns without in-line raw mills, mercury remains in the vapor phase at the typical operating temperatures in the kiln and particulate matter control equipment, and exits the kiln as volatile stack emissions with only a small fraction partitioning to the clinker or cement kiln dust. In the preheater/precalciner kilns with in-line raw mill, we believe that a significant portion of the volatilized mercury condenses on to the surfaces of the cooler raw material in the operating raw mill. The raw material with adsorbed mercury ends up in the raw material storage bin which will eventually be fed to the kiln and re-volatilized. During the periods that the in-line raw mill is "on'', mercury is effectively captured in the raw mill essentially establishing an internal recycle loop of mercury that builds-up within the system. Eventually, when the in-line raw mill switches to the "off'' mode, the re-volatilized mercury exits the kiln as volatile stack emissions. Notwithstanding the apparent removal of mercury during periods that the in-line raw mill is "on'' in a preheater/precalciner kiln, over time the mercury is emitted eventually as volatile stack emissions because system removal efficiencies for mercury are essentially zero. Thus, over a longer period of time (*e.g.*, one month), the mass of mercury emitted by a wet process kiln without an in-line raw mill and a preheater/precalciner kiln with an in-line raw mill (assuming identical mercury-containing feedstreams) would be the same. However, at any given point in time, the stack gas concentration of mercury of the two types of kilns could be significantly different.

As noted above, our data base shows a significant difference in mercury emissions between preheater/precalciner kilns when operating in the "off'' mode and emissions both from wet process kilns and preheater/precalciner kilns in the "on'' mode. In spite of this difference, we don't believe it is technically justified to subcategorize cement kilns for mercury.[29]

In conclusion, we propose not to subcategorize the hazardous waste burning class of cement kilns by wet process kilns and preheater/precalciner kilns with in-line raw mills.

C. What Subcategorization Options Did We Consider for Lightweight Aggregate Kilns?

Following promulgation of the September 1999 Final Rule, Solite Corporation filed a Petition for Review challenging the total chlorine standard for new kilns. For new sources, the Clean Air Act states that the MACT floor cannot be "less stringent than the emission control that is achieved by the best controlled similar source.'' Solite Corporation challenged the standard on the ground that Norlite Corporation, another hazardous waste-burning lightweight aggregate kiln source, should not be the best controlled similar source because they are designed to burn for purposes of treatment hazardous wastes containing high levels of chlorine and high mercury. Solite states that Norlite's superior emission control equipment is designed to control the chlorine and mercury in these wastes that are burned for treatment, rather than primarily as fuel for lightweight aggregate production. Thus, Solite states that Norlite's sources should be considered a separate class of lightweight aggregate kilns.

Though we believe that subcategorizing by the concentrations of HAP in the hazardous waste is not appropriate, we considered subdividing hazardous waste burning lightweight aggregate kilns by the types of hazardous waste they combust: low Btu wastes with higher concentrations of chlorine and mercury and high Btu wastes with lower concentrations of chlorine and mercury. We believe, however, that separate emission standards for lightweight aggregate kilns based on the types of hazardous waste they burn are unnecessary because the floor levels would not differ significantly under either approach.

Analysis of available total chlorine emissions from compliance testing indicates that the emissions are significantly different for sources burning hazardous waste with high levels of chlorine compared to sources burning wastes with much lower levels of chlorine. Total chorine emissions range from 14 to 116 ppmv for sources feeding higher concentrations of chlorine but using a venturi scrubber to control emissions and range from 500 to 2,400 ppmv for sources feeding waste with lower levels of chlorine and not using a wet scrubber. However, when we identify floor levels for these potential subcategories (both for existing and new sources), the calculated floor

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[27] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards'', March 2004, Chapter 4.

[28] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume V: Emission Estimates and Engineering Costs'', March 2004, Chapter 4.

[29] We note that in the September 1999 final rule we established a provision that allows cement kilns operating in-line raw mills to average their emissions based on a time-weighted average concentration that considers the length of time the in-line raw mill is on-line and off-line. See § 63.1204(d).

level would be less stringent than the interim emission standard sources are currently achieving. Because all sources are achieving the more stringent interim standard, the interim standard becomes the default floor level. Therefore, subdividing would not affect the proposed floor level.

We have compliance test mercury emissions data representing maximum emissions for only one source, and we have snap-shot mercury emissions data within the range of normal emissions for all sources. Snap-shot mercury emissions range from: (1) 11 to 20 ug/dscm for sources with the potential to feed higher concentrations of mercury because they use a venturi scrubber to control emissions; and (2) 1 to 47 ug/dscm for sources that typically feed lower mercury containing wastes and do not use a wet scrubber to control mercury. We performed a statistical test and confirmed that there is no statistically significant difference in the snap-shot mercury emissions between sources that have the potential to feed higher levels of mercury because they are equipped with a wet scrubber and with other sources. Therefore, it appears that subcategorization for mercury is not warranted.[30]

D. What Subcategorization Options Did We Consider for Boilers?

We discuss below the rationale for proposing to subcategorize boilers by the physical form of the fuels they burn—solid fuel-fired boilers and liquid fuel-fired boilers. We also discuss further subcategorization options we considered for each of those subcategories and explain why we believe that further subcategorization is not warranted.

1. Subcategorization by Physical Form of Fuels Burned

There are substantial design differences and emission characteristics among boilers that cofire hazardous waste primarily with coal versus oil or gas. Because of these differences, it is appropriate to subcategorize boilers by the physical form of the fuel burned. We note that the Agency has already proposed that industrial/commercial/institutional boilers and process heaters that do not burn hazardous waste should be subcategorized by the physical form of fuels fired.[31]

Twelve boilers cofire hazardous waste with coal. These boilers are designed to handle high ash content solid fuels, including the relatively large quantities of boiler bottom ash and particulate matter that are entrained in the combustion gas. The coal also contributes to emissions of metal HAP. Approximately 104 boilers co-fire hazardous waste with natural gas or fuel oil. These units are not designed to handle the high ash loadings that are associated with coal-fired units, and the primary fuels for these boilers contribute little to HAP emissions. See "Draft Technical Support Document for HWC MACT Replacement Standards, Volume I: Description of Source Categories'' (Chapter 2.4) and "Volume III: Selection of MACT Standards'' (Chapter 4) for a discussion of the design differences between liquid and coal fuel-fired boilers.

Because the type of primary fuel burned dictates the design of the boiler and emissions control systems, and can affect the concentration of HAP, it is appropriate to subcategorize boilers by the physical form of the fuel.

2. Subcategorization Considerations Among Solid Fuel Boilers

We considered whether to subcategorize solid fuel-fired boilers to establish separate particulate matter standards. All 12 of the solid fuel-fired boilers co-fire hazardous waste with coal. Three of the 12 boilers burn pulverized coal while the remaining nine are stoker-fired boilers. Pulverized coal-fired boilers have higher uncontrolled emissions than stoker-fired boilers because the coal is pulverized to a talcum powder consistency and burned in suspension. Stoker-fired boilers burn lump coal partially or totally on a grate. Thus, much more of the coal ash is entrained in the combustion gas for pulverized coal-fired boilers than for stoker-fired boilers.

Although the pulverized coal-fired boilers have higher uncontrolled particulate matter emissions (*i.e.,* at the inlet to the emission control device), controlled emissions from the pulverized coal-fired boilers are not statistically different than emissions from the stoker-fired boilers, primarily because all solid fuel-fired boilers are equipped with either a baghouse or electrostatic precipitator.[32] Accordingly, we conclude that it is not appropriate to establish separate particulate matter standards for pulverized coal-fired boilers versus stoker-fired boilers. This is consistent with the proposal for industrial/institutional/commercial boilers and process heaters that do not burn hazardous waste.

3. Subcategorization Considerations for Liquid Fuel Boilers

We believe it is appropriate to combine liquid and gas fuel boilers into one subcategory because emissions from gas fuel boilers are within the range of emissions one finds from liquid fuel boilers. Also, most of the hazardous waste burning liquid fuel boilers, in fact, burn gas fossil fuels to supplement the liquid hazardous waste fuel. Even though there are no hazardous waste gas burning boilers currently in operation, today we propose to subject hazardous waste gas burning boilers that may begin operating in the future to the standards for liquid fuel-fired boilers. See proposed definition of liquid boiler in § 63.2101(a).

We also assessed whether liquid fuel-fired boilers equipped with dry air pollution control devices had different dioxin/furan emission characteristics when compared to other sources, *i.e.,* sources with either wet air pollution control devices or no air pollution control device. Our statistical analysis indicated that dioxin/furan emissions from sources equipped with dry air pollution control devices are higher.[33] We believe use of wet air pollution control systems (and use of no air pollution control system) can result in different dioxin/furan emission characteristics because they have different post-combustion particle residence times and temperature profiles, which can affect dioxin/furan surface catalyzed formation reaction rates. As a result, we believe that it is appropriate to have different subcategories for these different types of combustors. As discussed previously for incinerators in Part Two, Section II.A, the differences in dioxin formation here reflect something more akin to a process difference resulting in different emission characteristics, rather than a difference in pollution-capture efficiencies among pollution control devices. We thus are not subcategorizing based on whether a source is equipped with a dioxin/furan control system.

E. What Subcategorization Options Did We Consider for Hydrochloric Acid Production Furnaces?

Consistent with our incinerator subcategorization analysis (*see* Section A of this Part), we also considered whether to establish separate floor emission standards for dioxin/furans for

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[30] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standard, Volume III: Selection of MACT Standards'', March 2004, Chapter 4.

[31] See 68 FR at 1670 (January 13, 2003).

[32] See USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapter 4.

[33] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards'', March 2004, Chapter 4.

hydrochloric acid production furnaces equipped with waste heat recovery boilers versus those without boilers. As discussed below, we conclude that there is no significant statistical difference in dioxin/furan emissions between furnaces equipped with boilers and those without them. As a result we do not propose to have different subcategories for these sources.

Ten of the 16 hydrochloric acid production furnaces are equipped with waste heat recovery boilers, and all hydrochloric acid production furnaces are equipped with wet scrubbers that quench the combustion gas immediately after it exits the furnace or boiler. We have dioxin/furan emissions data for eight of the ten furnaces with boilers. Two furnaces have low dioxin/furan emissions—approximately 0.1 ng TEQ/dscm, while the other six furnaces have emissions ranging from 0.5 to 6.8 ng TEQ/dscm. We have dioxin/furan emissions data for five of the six furnaces without boilers. Dioxin/furan emissions for four furnaces are below 0.15 ng TEQ/dscm. But, one furnace has dioxin/furan emissions of 1.7 ng TEQ/dscm.

It appears that dioxin/furan emissions from hydrochloric acid production furnaces may not be governed by whether the furnace is equipped with a waste heat recovery boiler. We performed a statistical test and confirmed that there is no statistically significant difference in dioxin/furan emissions between furnaces equipped with boilers and those without boilers.[34] Thus, we conclude that it is not appropriate to establish separate dioxin/furan emission standards for furnaces with boilers and those without boilers.

III. What Data and Information Did EPA Consider To Establish the Proposed Standards?

The proposed standards are based on our hazardous waste combustor data base. The data base contains general facility information, stack gas emissions data, combustor design information, composition and feed concentration data for the hazardous waste, fossil fuel, and raw materials, combustion unit operating conditions, and air pollution control device operating information. We gathered the emissions data and information from test reports submitted by hazardous waste combustor facilities to EPA Regional Offices or State agencies. Many of the test reports were prepared as part of the compliance demonstration process for the current RCRA standards, and may include results from trial burns, certification of compliance demonstrations, annual performance tests, mini-burns, and risk burns.

A. Data Base for Phase I Sources

The current data base for Phase I sources contain test results for over 100 incinerators, 26 cement kilns, and 9 lightweight aggregate kilns. In many cases, especially for cement and lightweight aggregate kilns, the data base contain test reports from multiple testing campaigns. For example, our data base includes results for a cement kiln that conducted emissions testing for the years 1992, 1995, and 2000.

We first compiled a data base for hazardous waste burning incinerators, cement kilns, and lightweight aggregate kilns to support the proposed MACT standards in 1996 (61 FR 17358, April 19, 1996). Based on public comments, a revised Phase I data base was published for public comment (62 FR 960, January 7, 1997). The data base was again revised based on public comments, and we used this data base to develop the Phase I MACT standards promulgated in 1999 (64 FR 52828, September 30, 1999).

Following promulgation of the interim standards, we initiated a data collection effort in early 2002 to obtain additional test reports. The effort focused on obtaining test reports from sources for which we had no information, obtaining data from more recent testing, and updating the list of operating Phase I sources. Sources once identified as hazardous waste combustors, but that have since ceased operations as a hazardous waste combustor, were removed from the data base. This revised data base was noticed for public comment in July 2002 (67 FR 44452, July 2, 2002) and updated based on public comments. See USEPA “Draft Technical Support Document for HWC MACT Replacement Standards, Volume II: HWC Emissions Data Base,’’ March 2004, Appendix A for comments and responses.

In comments on the data base notice, industry stakeholders question whether emissions data obtained for some sources are appropriate to use to identify MACT floor for today’s proposed replacement standards. Stakeholders suggest that it is inappropriate to use emissions data from sources that tested after retrofitting their emission control systems to meet the emission standards promulgated in September 1999 (and since vacated and replaced by the February 2002 Interim Standards). Stakeholders refer to this as MACT-on-MACT: establishing MACT floor based on sources that already upgraded to meet the 1999 standards. Stakeholders identified emissions data from only approximately three of the Phase I sources (all incinerators) as being obtained after the source upgraded to meet the 1999 standards. None of these incinerator sources are consistently identified as a best performer when establishing the proposed MACT standards.

Notwithstanding stakeholder concerns, we believe it is appropriate to consider all of the data collected in the 2002 effort.[35] First, section 112(d)(3) states that floor standards for existing sources are to reflect the average emission achieved by the designated per cent of best performing sources “*for which the Administrator has emissions information’’* (emphasis added). Second, the motivation for a source’s performance is legally irrelevant in developing MACT floor levels. *National Lime Ass’n* v. *EPA,* 233 F. 3d at 640. In any case, it would be problematic to identify sources that upgraded their facilities (and reduced their emissions) for purposes of complying with the 1999 standards versus for other purposes (*e.g.,* normal replacement schedule). Moreover, the MACT-on-MACT formulation is not correct. Although the Interim Standards did result in reduction of emissions from many sources, those standards are not MACT standards, and do not purport to be. See February 13, 2002, Interim Standards Rulemaking, 67 FR at 7693. Finally, we note that, although we were prepared to use the same data base for today’s proposed rules as we used for the September 1999 rule to save the time and resources required to collect new data, industry stakeholders wanted to submit new emissions data for us to consider in developing the replacement standards. Rather than allowing industry stakeholders to submit potentially selected emissions data, however, we agreed to undertake a substantial data collection effort in 2002. It is unfortunate that industry stakeholders now suggest that some portion of the new data is not appropriate for establishing MACT.

Notwithstanding our view that all of the 2002 data base should be considered in establishing MACT standards, we

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[34] USEPA, “Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards’’, March 2004, Chapter 4.

[35] However, we did not consider emissions data from Ash Grove Cement Company (Chanute, Kansas), an owner and operator of a new preheater/precalciner kiln, because the test report is a MACT comprehensive performance test demonstrating compliance with the new source standards of the September 1999 final rule. We judged these data are inappropriate for consideration for the floor analyses for existing sources.

specifically request comment on: (1) Whether emissions data should be deleted from the data base that were obtained from sources that owners and operators assert were upgraded to meet the 1999 rule; and (2) whether, because it may be problematic to identify such data, we should identify MACT using the original 1999 data base.

Stakeholders have also raised concerns that the Agency may be considering inappropriately emissions data in its MACT analyses based on the language of section 112(d)(3)(A) of the Clean Air Act. Section 112(d)(3)(A) says emissions standards for existing sources shall not be less stringent, and may be more stringent than—

> the average emission limitation achieved by the best performing 12 percent of the existing sources (for which the Administrator has emissions information), excluding those sources that have, within 18 months before the emission standard is proposed or within 30 months before such standard is promulgated, whichever is later, first achieved a level of emission rate or emission reduction which complies, or would comply if the source is not subject to such standard, with the lowest achievable emission rate (as defined by section 171) applicable to the source category and prevailing at the time, in the category or subcategory for categories and subcategories with 30 or more sources,

Section 171 pertains to nonattainment areas for a particular pollutant. The lowest achievable emission rate (LAER) for a pollutant in a nonattainment area is the most stringent emission limitation which is contained in the implementation plan of any State, or the most stringent emission limitation which is achieved in practice. Given that stakeholders neither identified any lowest achievable emission rates for any pollutants applicable to nonattainment areas nor identified any sources that are subject to such lowest achievable emission rates, we conclude that there are no sources to exclude.

B. Data Base for Phase II Sources

Phase II sources are comprised of boilers and hydrochloric acid production furnaces that burn hazardous waste. The data base for Phase II sources was initially compiled by EPA in 1999. In developing this data base, we collected the most recent test report available for each source that included test results under compliance test operating conditions. The most recent test report, however, may have also included data used for other purposes (*e.g.,* risk burn to obtain data for a site-specific risk assessment), which are also included in the data base. In nearly all instances, the dates of the test reports collected were either 1998 or 1999.

After the initial compilation, we published the Phase II data base for public comment in June 2000 (65 FR 39581, June 27, 2000). Since the June 2000 notice, we have not collected additional emissions data for Phase II sources; however, we revised the data base to address public comments received in response to the June 2000 notice. We noticed the Phase II data base (together with the one for Phase I sources) for public comment in July 2002 (67 FR 44452, July 2, 2003) and revised the data base based on comments received. The current data base for Phase II sources contains test reports for over 115 boilers and 17 hydrochloric acid production furnaces. See USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume II: HWC Emissions Data Base,'' March 2004.

C. Classification of the Emission Data

The hazardous waste combustor data base[36] comprises emissions data from tests conducted for various purposes, including compliance testing, risk burns, annual performance testing, and research testing. Therefore, some emissions data represent the highest emissions the source has emitted in each of its compliance demonstrations, some data represent normal or typical operating conditions and emissions, and some data represent operating conditions and emissions during compliance testing in a test campaign where there are other compliance tests with higher emissions.

Hazardous waste combustors generally emit their highest emissions during RCRA compliance testing while demonstrating compliance with emission standards. For real-time compliance assurance, sources are required to establish limits on particular operating parameters that are representative of operating levels achieved during compliance testing. Thus, the emission levels achieved during these compliance tests are typically the highest emission levels a source emits under reasonably anticipable circumstances. To ensure that these operating limits do not impede normal day-to-day operations, sources generally take measures to operate during compliance testing under conditions that are at the extreme high end of the range of normal operations. For example, sources often feed ash, metals, and chlorine during compliance testing at substantially higher than normal levels (*e.g.,* by spiking the waste feed) to maximize the feed concentration, and they often detune the air pollution control equipment to establish operating limits on the control equipment that provide operating flexibility. By designing the compliance test to generate emissions at the extreme high end of the normal range of emissions, sources can establish operating limits that account for variability in operations (*e.g.,* composition and feedrate of feedstreams, as well as variability of pollution control equipment efficiency) and that do not impede normal operations.

The data base also includes normal emissions data that are within the range of typical operations. Sources will sometimes measure emissions of a pollutant during a compliance test even though the test is not designed to establish operating limits for that pollutant (*i.e.,* it is not a compliance test for the pollutant). An example is a trial burn where a lightweight aggregate kiln measures emissions of all RCRA metals, but uses the Tier I metals feedrate limit to comply with the mercury emission standard.[37] Other examples of emissions data that are within the range of normal emissions are annual performance tests that some sources are required to conduct under State regulations, or RCRA risk burns. Both of these types of tests are generally performed under normal operating conditions, and would not necessarily reflect day-to-day emission variability. However, such data may be appropriate to use to evaluate long-term average performance.

Other emissions tests may generate emissions in-between normal and the highest compliance test emissions. An example is a compliance test designed to demonstrate compliance with the particulate matter standard where: (1) The air pollution control equipment is detuned; and (2) the source measured lead and cadmium emissions even though it elected to comply with RCRA Tier 1 feedrate limits for those metals and, thus, does not spike those metals. We would conclude that lead and cadmium emissions—together they comprise the semivolatile metals—are between normal and the highest compliance test emissions. Emissions are not likely to be as high as

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[36] Though the Phase I and II data bases were developed and titled separately, for purposes of today's proposal we are combining both into one data base termed the "hazardous waste combustor data base.''

[37] A Tier 1 feedrate limit is a conservative compliance option offered pursuant to RCRA requirements which assumes all of the metal/chlorine that is fed to the combustion unit is emitted (uncontrolled). Sources electing to comply with Tier 1 limits are not required to conduct emissions testing and are not required to establish operating parameter limits based on a compliance test. See § 266.106.

compliance test emissions because the source did not use the test to demonstrate compliance with emission standards for the metals (and so did not spike the metals). However, emissions of the metals are likely to be higher than normal because the air pollution control equipment was detuned.

To distinguish between normal and compliance test data, we classified emissions data for each pollutant for each test condition as compliance test (CT); normal (N); in between (IB); or not applicable (NA).[38] These classifications apply on a HAP-by-HAP basis. For example, some HAP measured during a test condition may be classified as representing compliance test emissions for those HAP, while other HAP measured during the test condition may be classified as representing normal emissions. See USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume II: HWC Emissions Data Base,'' March 2004, Chapter 2, for additional details.

D. Invitation To Comment on Data Base

As previously discussed, we updated the data base based on comments received since it was last made publicly available. We believe the data base used to determine today's proposed standards is complete and accurate. However, given the complexity of the data base, we believe it is appropriate to once again solicit comments on the accuracy of the data. If you find errors, please submit the pages from the test report that document the missing or incorrect entries and the cover page of the test report as a reference. In addition, we identified several sources that are no longer burning hazardous waste and removed their emissions data and related information from the data base. We encourage owners and operators of hazardous waste combustors to review our list of operating combustors to ensure its accuracy. See USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards and Technologies,'' March 2004.

IV. How Did EPA Select the Format for the Proposed Rule?

The proposed rule includes emission limits for dioxin/furans, mercury, particulate matter, semivolatile metals, low volatile metals, hydrogen chloride/chlorine gas, and carbon monoxide or hydrocarbons. We also propose percent reduction standards for: (1) Destruction and removal efficiency[39] for organic HAP; and (2) total chlorine control for hydrochloric acid production furnaces. Finally, sources would be required to establish operating parameter limits under prescribed procedures to ensure continuous compliance with the emission standards.

We discuss below the rationale for: (1) Selecting an emission limit format rather than a percent reduction format in most cases; (2) selecting a hazardous waste thermal emissions format for the emission limit in some cases, and an emissions concentration format in others; (3) selecting surrogates to control multiple HAP; and (4) using operating parameter limits to ensure compliance with emission standards.

A. What Is the Rationale for Generally Selecting an Emission Limit Format Rather Than a Percent Reduction Format?

Using emission limits as the format for most of the proposed standards provides flexibility for the regulated community by allowing a regulated source to choose any control technology or technique to meet the emission limits, rather than requiring each unit to use a prescribed method that may not be appropriate in each case. (See CAA section 112(h), relating to authority to adopt work place standards). Although a percent reduction format would allow flexibility in choosing the control technology to achieve the reduction, a percent reduction technology does not allow the option of achieving the standard by feed control—minimizing the feed of metals or chlorine. Consequently, we propose percent reduction standards only in special circumstances.

We are proposing a percent reduction standard for boilers and hydrochloric acid production furnaces, *i.e.,* a destruction and removal efficiency standard for organic HAP, because all sources currently comply with such a standard under RCRA and RCRA implementing rules. Further, we do not have emissions data on trace levels of organic HAP that would be needed to establish emission limits for particular compounds.

We also propose a total chlorine percent reduction standard as a compliance option for hydrochloric acid production furnaces in lieu of the proposed stack gas concentration limit because a stack gas concentration limit may ultimately result in limiting the feed of chlorine to furnaces with MACT emission control equipment. Given that these furnaces produce hydrochloric acid from chlorinated feedstocks, limiting the feed of chlorine is inappropriate. See Part Two, Section VI.A and XII for more discussion on the total chlorine standard for hydrochloric acid production furnaces.

B. What Is the Rationale for Selecting a Hazardous Waste Thermal Emissions Format for Some Standards, and an Emissions Concentration Format for Others?

We are proposing numerical emission limits in two formats: hazardous waste thermal emissions, and stack gas emissions concentrations. Hazardous waste thermal emissions are expressed as mass of pollutant contributed by hazardous waste per million Btu of heat contributed by hazardous waste. Emission concentration based standards are expressed as mass of pollutant (from all feedstocks) per unit of stack gas (*e.g.,* μg/dscm).

1. What Is the Rationale for the Hazardous Waste Thermal Emissions Format?

In the 1999 rule, we assessed hazardous waste feed control levels for metals and chlorine by evaluating each source's maximum theoretical emission concentration (MTEC) using the "aggregate MTEC'' approach. See 64 FR at 52854. MTEC is defined as the metals or chlorine feedrate divided by the gas flow rate, and is expressed in μg/dscm. We used MTECs to assess feed control levels because it normalizes metal and chlorine feedrates across sources of different sizes. Industry stakeholders have claimed that use of MTECs to assess feed control levels for energy recovery units (*e.g.,* cement kilns) when establishing floor standards inappropriately penalizes sources that burn hazardous waste fuels at high firing rates (*i.e.,* percent of heat input from hazardous waste). This is because hazardous waste fuels generally have higher levels of metals and chlorine than the fossil fuels they displace, thus metal and chlorine feedrates and emissions may increase as the hazardous waste firing rate increases.

Although we are not using the aggregate MTEC approach to evaluate feed control in today's proposal, the SRE/Feed approach explained in Part Two, Section VI.A, does assess each source's metal and chlorine hazardous waste feed control levels. In order to avoid the hazardous waste firing rate bias discussed above for energy recovery

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[38] NA means the normal versus compliance test classification is not applicable. Research testing data is an example of the type of data that would get a NA rating.

[39] Please note that we propose today a destruction and removal efficiency standard only for boilers and process heaters and hydrochloric acid production furnaces. We are not reproposing the destruction and removal efficiency standard in subpart EEE currently in effect for incinerators, cement kilns, and lightweight aggregate kilns.

units, we believe it is appropriate to instead assess feed control for energy recovery units by ranking each source's thermal feed concentration, which is equivalent to the mass of metal or chlorine in the hazardous waste per million BTUs hazardous waste fired to the combustion unit. This approach not only normalizes metal and chlorine feedrates across sources of different sizes, but also normalizes these feedrates across energy recovery units with different hazardous waste firing rates. For example, a kiln that feeds hazardous waste with a given metal concentration to fulfill 100% of its energy demand would be an equally ranked feed control source when compared to an identical kiln that fulfills 50% of its energy demand from coal and 50% from hazardous waste with an identical metal concentration.

Similarly, it is our preference to express today's proposed emission standards for metals and chlorine in units of hazardous waste thermal emissions as opposed to expressing the standards in units of stack gas concentrations. As previously discussed, hazardous waste thermal emission standards are expressed as mass of HAP emissions attributable to the hazardous waste per million Btu hazardous waste fired to combustor. As with thermal feed concentration, thermal emissions normalizes emissions across energy recovery units with different hazardous waste firing rates. The hazardous waste thermal emissions format addresses two concerns. First, it avoids the above discussed bias against sources that burn hazardous waste fuels at high firing rates. We prefer not to discourage energy recovery from hazardous waste as opposed to potentially establishing standards that effectively restrict the hazardous waste firing rate in an energy recovery combustor. (See, for example, the requirement in CAA section 112(d)(2) to take energy considerations into account when promulgating MACT standards, as well as the objective in RCRA section 1003(b)(6) to encourage properly conducted recycling and reuse of hazardous waste).

Second, because the hazardous waste thermal emissions approach controls only emissions attributable to the hazardous waste feed (see discussion in following section), the rule can be simplified by not including waivers for sources that cannot meet the standard because of metals or chlorine contributed by nonhazardous waste feedstreams. To ensure that hazardous waste combustors will be able to achieve the standards if they use MACT control for metals and chlorine attributable to the hazardous waste feed, but irrespective of metals and chlorine in nonhazardous waste feedstreams, current MACT standards for cement and lightweight aggregate kilns that burn hazardous waste provide alternative standards that sources can request under a petitioning procedure. See § 63.1206(b)(9–10). These alternative standards would be unnecessary under the hazardous waste thermal emissions approach because, by definition, the approach controls only hazardous waste-derived metals and chlorine.

2. Which Standards Would Use the Hazardous Waste Thermal Emissions Format?

We propose a hazardous waste thermal emissions format for mercury, semivolatile metals, low volatile metals, and total chlorine (*i.e.,* the HAPs found in hazardous waste fuels) for source categories that burn hazardous waste fuels where we have data to calculate a hazardous waste thermal emissions limit. Cement kilns, lightweight aggregate kilns and liquid-fuel fired boilers burn hazardous waste fuels and are thus candidates for the hazardous waste thermal emission standards. Incinerators and solid fuel-fired boilers are not candidates for thermal emission standards because some sources within these source categories do not combust hazardous waste for energy recovery, *i.e.,* they burn low heating value hazardous waste for the purpose of treating the waste.[40] Consequently, these sources could not duplicate a hazardous waste thermal emissions standard based on emissions from sources that burn hazardous waste fuels, even though their stack gas emission concentrations could be as low or lower than emissions from a best performing source under the hazardous waste thermal emissions approach.

We propose a hazardous waste thermal emissions format for all HAP for which we can apportion emissions between the hazardous waste fuel feed and other feedstreams. Under this approach, we apportion total stack emissions between hazardous waste fuel and other feedstreams using the ratio of the feedrate contribution from hazardous waste to the total feedrate of the pollutant. Thus, the particulate matter, metals, and total chlorine standards are candidates because we often have data on hazardous waste and total feedrates of these pollutants.

We believe, however, that a hazardous waste thermal emissions format is not appropriate for particulate matter for cement and lightweight aggregate kilns because particulate matter emissions from cement and lightweight aggregate kilns are primarily entrained raw material, not ash contributed by the hazardous waste fuel. There is therefore no correlation between particulate matter emissions and hazardous waste thermal input rate.

In addition, please note that we could have expressed the proposed particulate matter standard for liquid boilers in units of hazardous waste thermal emissions since (unlike the case of kilns just discussed) particulate matter emissions are attributable to the hazardous waste fuel. However, for consistency, we elected to use the same format for all the particulate matter standards. We invite comment as to whether the particulate matter standard for liquid boilers should be expressed in units of hazardous waste thermal emissions.

We do not have adequate data to establish hazardous waste thermal emissions-based standards for several cases. An example is when we have only normal feedrate and emissions data (*e.g.,* the mercury standard for cement kilns). We prefer to establish emission standards under the hazardous waste thermal emissions format using compliance test data because the metals and chlorine feedrate information from compliance tests that we use to apportion emissions to calculate emissions attributable to hazardous waste are more reliable than feedrate data measured during testing under normal, typical operations.[41] Thus, as a general rule, we prefer to express emission standards for energy recovery units using the hazardous waste thermal emissions format only when we have sufficient compliance test feed data.[42] These situations are discussed below in more detail in Part Two, Sections VIII, IX, and XI where we discuss the rationale for the proposed emission standards for energy recovery units.

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[40] Three of the 13 solid fuel-fired boilers burn low heating value hazardous waste for treatment.

[41] Feedrate data from testing during normal, typical operations may not be as accurate as data from compliance testing because of the sampling and analytical error associated with low feedrates. In contrast, sources generally spike metals and chlorine during compliance testing, so that measurement error is somewhat masked by the higher feedrate values.

[42] Two exceptions are the mercury and semivolatile metal standard for liquid fuel-fired boilers. We propose to express this standard in the hazardous waste thermal emissions format even though it is based on normal test data because we do not use feedrate data to apportion emissions in this case. Rather, we assume semivolatile metal emissions from liquid fuel-fired boilers are attributable solely to the hazardous waste given that these sources co-fire hazardous waste with natural gas or, in a few cases, fuel oil.

3. How Are Emissions From Other Feedstreams Regulated Under the Hazardous Waste Thermal Emissions Format?

Under the thermal emissions format, only emissions of HAP contributed by the hazardous waste are directly regulated by today's proposed standards. Non-mercury metal HAP emissions from raw materials and fossil fuels would be subject to MACT standards, even though it may not be feasible to directly control their feedrate. We are proposing standards for particulate matter as surrogates to control these HAP metals contributed by raw materials and fossil fuel.

C. What Is the Rationale for Selecting Surrogates To Control Multiple HAP?

HWCs can emit a wide variety of HAP, depending on the types and concentrations of pollutants in the hazardous waste feed. Because of the large number of HAP potentially present in emissions, we propose to use several surrogates to control multiple HAP. This will reduce the burden of implementation and compliance on both regulators and the regulated community.

1. Surrogates for Metal HAP

We are proposing to control metal HAP emissions attributable to the hazardous waste by subjecting sources to metal and particulate matter emission limitations.[43] We grouped metal HAP according to their volatility because volatility is a primary consideration when selecting an emission control technology.[44] We then considered the following to identify metals that would be "enumerated'' and directly controlled with an emission limit: (1) The amount of available data for the metal HAP; (2) the potential for hazardous waste to contain substantial levels of a metal; and (3) the toxicity of the metal. Other, "nonenumerated'' metal HAP would be controlled using particulate matter as a surrogate.

Mercury is highly volatile, especially toxic, and may not be controllable by the same air pollution control mechanisms as the other HAP metals, so we are proposing a standard for mercury individually. Two semivolatile metals can be prevalent in hazardous waste and are particularly hazardous: lead and cadmium. We group these two metals together and propose an emission standard for these metals, combined. The combined emissions of lead and cadmium cannot exceed the semivolatile metal emission limit. Three low volatile metals can be prevalent in hazardous waste and are particularly hazardous: arsenic, beryllium, and chromium. We group these three metals together and propose an emission standard for these metals, combined. The combined emissions of arsenic, beryllium, and chromium cannot exceed the low volatile metal emission limit.

The particulate matter standard generally serves as a surrogate to control non-enumerated metals in the hazardous waste as well as a surrogate to control relevant metal HAP in non-hazardous waste feed streams. We generally chose not to propose numerical metal HAP emission standards that would have accounted for all metal HAP for two reasons (note that such an approach would be in lieu of a proposed particulate matter standard because particulate matter is not a listed HAP). We generally do not have as much compliance test emissions information in our database for the nonenumerated metal HAP compared to the enumerated metal HAP. Thus it would be more difficult to assess the control levels for these additional metals. We also believe that a particulate matter standard, in lieu of emission standards that directly regulate all the metals, simplifies compliance activities in that sources would not have to monitor feed control levels of these nonenumerated metals on a continuous basis.

Note that particulate matter is not an appropriate surrogate where standards are based, in part (or in whole) on feedrate control. This is because, unlike the case where HAP metals are controlled by air pollution control devices, HAP metal reductions in hazardous waste feedrate are not necessarily correlated with particulate matter reductions, *i.e.,* hazardous waste feedrate reductions could reduce HAP metal emissions without a correlated reduction in particulate matter emissions. (See *National Lime,* 233 F. 3d at 639 noting this possibility.) Moreover, particulate matter that is emitted generally contain greater percentages of HAP metals when the metal concentrations in the hazardous waste feed increase. Thus, low particulate matter emissions do not necessarily guarantee low metal HAP emissions, especially in instances where the hazardous waste feeds are highly concentrated with metal HAP.

We do not believe that the proposed emission standards for semivolatile and low volatile metals serve as adequate surrogate control for the nonenumerated metal HAP. Compliance with the semivolatile and low volatile metal emission standards does not ensure that sources are using MACT back-end control devices because they could be achieving compliance by primarily implementing hazardous waste feed control for the enumerated metals. Thus, if a source uses superior feed control only for the enumerated metals, the nonenumerated metal emissions would not be controlled to MACT levels if it were not using a MACT particulate matter control device. The proposed semivolatile and low volatile metal standards are also inappropriate surrogates for controlling nonmercury metal HAP in the nonhazardous waste feedstreams for kilns and solid fuel-fired boilers for the same reason. These sources may comply with the proposed semivolatile and low volatile metal emission standards by implementing hazardous waste feed control. This would not assure that the nonmercury metal HAP emissions attributable to the nonhazardous waste feedstreams are controlled to MACT levels. A particulate matter standard provides this assurance.

Note that we are proposing that incinerators and liquid boilers that emit particulate matter at levels higher than the proposed standard but do not emit significant levels of non-mercury metal HAP can elect to comply with an alternative standard. Under the proposed alternative standard, these sources would be required to: (1) Limit emissions of all semivolatile metals, including nonenumerated semivolatile metals, to the emission limit for semivolatile metals; and (2) limit emissions of all low volatile metals, including nonenumerated low volatile metals, to the emission limit for low volatile metals. See Part Two, Section XVIII for more discussion on this alternative.

2. Surrogates for Organic HAP

For Phase II sources, we propose two standards as surrogates to control emissions of organic HAP: carbon monoxide or hydrocarbons, and destruction and removal efficiency.[45] Both of these standards control organic HAP by ensuring combustors are operating under good combustion

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[43] As discussed later, we are also propsoing particulate matter standards to generally serve as surrogates to control relevant metal HAP in non-hazardous waste feed streams when appropriate.

[44] See 64 FR at 52845–47 (September 30, 1999).

[45] Please note that we are proposing the organic emission standards—carbon monoxide or hydrocarbons, and desturction and removal efficiency—for boilers and process heaters and hydrochloric acid production furnaces only. Requirements to comply with these standards are currently in effect under subpart EEE for incinerators, cement kilns, and lightweight aggregate kilns. We are not reporposing or reopening consideration of those standards in today's notice.

practices that should result in destruction of the organic HAP. Note that boilers and hydrochloric acid production furnaces that burn hazardous waste are currently subject to RCRA requirements that regulate carbon monoxide or hydrocarbon emissions and destruction and removal efficiency standard under RCRA regulations. We propose to control dioxin/furans by a separate standard because dioxin/furan can also be formed post-combustion in ductwork, waste heat recovery boilers, or dry air pollution control devices (*e.g.,* electrostatic precipitators and fabric filters).

Hydrocarbon emissions are a direct measure of many organic compounds, including organic HAP. Carbon monoxide emissions are a more conservative indicator of hydrocarbon and organic HAP emissions because the presence of carbon monoxide at elevated levels is indicative of incomplete oxidation of organic compounds. Sources generally choose to comply with the carbon monoxide standard because carbon monoxide continuous emissions monitors are less expensive and easier to maintain than hydrocarbon monitors.

We also propose to use the destruction and removal efficiency standard to help ensure boilers and hydrochloric acid production furnaces operate under good combustion conditions. We propose to adopt the standard and implementation procedures that currently apply to these sources under RCRA regulations at § 266.104. We propose, however, to require a one-time only compliance requirement for destruction and removal efficiency, unless a source changes its design or operation in a manner that could adversely affect its ability to meet the destruction and removal efficiency standard. Further, previous destruction and removal efficiency testing performed under RCRA could be used to document the one-time compliance.

D. What Is the Rationale for Requiring Compliance With Operating Parameter Limits To Ensure Compliance With Emission Standards?

In addition to meeting emission limits, today's proposal would require sources to establish limits on key operating parameters for the combustor and emission control devices. Each source would establish site-specific limits for the parameters based on operations during the comprehensive performance test, using prescribed procedures for calculating the limits. The operating parameter limits would reasonably ensure that the combustor and emission control devices continue to operate in a manner that will achieve the same level of control as during the comprehensive performance test.

We selected the operating parameters for which sources would establish limits because: (1) The parameters can substantially affect emissions of HAP; (2) they are feasible to monitor continuously; (3) they are currently used to monitor performance under the Interim Standards Rule for incinerators, cement kilns, and lightweight aggregate kilns that burn hazardous waste; and (4) this is the same general compliance approach that is currently applicable to all hazardous waste combustion sources pursuant to the RCRA emission standard requirements.

V. How Did EPA Determine the Proposed Emission Limitations for New and Existing Units?

A. How Did EPA Determine the Proposed Emission Limitations for New Units?

All standards established pursuant to section 112 of the CAA 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, and any non-air quality health and environmental impacts and energy requirements, determines is achievable for each category. The CAA specifies that the degree of reduction in emissions that is deemed achievable for new hazardous waste combustors must be at least as stringent as the emissions control that is achieved in practice by the best-controlled similar unit (as noted earlier, this specified level of minimum stringency is referred to as the MACT floor, the term used when the statutory provision was first introduced in Congress). However, EPA may not consider costs or other impacts in determining the MACT floor. EPA may adopt a standard that is more stringent than the floor (*i.e.,* a beyond-the-floor standard) if the Administrator considers the standard to be achievable after considering cost, environmental, and energy impacts.

B. How Did EPA Determine the Proposed Emission Limitations for Existing Units?

For existing sources, MACT can be less stringent than standards for new sources, but cannot be less stringent than the average emission limitation achieved by the best-performing 12 percent of existing sources for categories and subcategories with 30 or more sources. EPA may not consider costs or other impacts in determining the MACT floor. The EPA may require a control option that is more stringent than the floor (beyond-the-floor) if the Administrator considers the cost, environmental, and energy impacts to be reasonable.

It has been argued that EPA is limited in the level of performance it can evaluate in assessing which are the 12 percent existing best performing sources to standards codified in permits, or other regulatory limitations. The argument is based on use of the term "emission limitation'' in section 112 (d) (3), the argument being that "emission limitation'' is a term defined in section 302 (k) to mean "a requirement established by the State or the Administrator which limits the quantity, rate, or concentration of air pollutants * * *''. EPA does not accept this argument, and indeed doubts that such an interpretation of the statute is even permissible. In brief:

(i) *Statutory text indicates that MACT floors for existing sources is to based on actual performance.* Section 112 (d) (3) (A) speaks to the actual performance of sources, and requires that the floor for existing sources reflect actual performance. The key statutory phrase is not just "emission limitation'' but "emission limitation achieved'', a phrase referring to actual performance, not just a limit simply set out in a permit or regulation. The floor is to be calculated using "emissions information'', a reference again to actual performance. The provision likewise states that certain sources achieving a lowest achievable emission rate (LAER) level of performance without being subject to LAER (a regulatory limit) are not to be considered in assessing best performers, redundant language if only regulatory limits could be considered.

In fact, it is clear from context when Congress used the term "emission limitation'' to refer to regulatory limits, and when it uses the term to refer to a level of performance actually achieved. Compare CAA section 111(b)(1)(B) (EPA is to consider "emissions limitations and percent reductions achieved in practice'' when considering whether to revise new source performance standards) with section 110(a)(2)(A) (State Implementation Plans must contain "enforceable emission limitations'').

(ii) *The argument leads to absurd and illegal results.* The argument that existing source MACT floors can only be based on regulatory limits leads to results that are illegal, absurd, or both. Congress enacted section 112 to assure technology-based control of HAP which had heretofore gone unregulated due to the vagaries and glacial pace of implementing the previous risk-based regime for HAP. 1 *Legislative History* at 790, 860; 2 *Legislative History* at 3174–78, 3340–42. The result, at the time of the 1990 amendments is that there were widespread regulatory limits for only one of the 190 listed HAPs (lead, for which there was a National Ambient Air Quality Standard) plus NESHAPs for a half dozen other HAPs. Thus, "emission limitations'', in the sense used in the argument, did not exist for most HAPs. This would lead necessarily to the result of no existing source floors because no "emission limitations'' exist. This result is illegal. *National Lime* v. *EPA,* 233 F. 3d 625, 634 (D.C. Cir. 2000). Where regulatory limits are higher than actual performance levels, existing source floors likewise would be higher than performance levels, a result both absurd and illegal. *Sierra Club* v. *EPA,* 167 F. 3d 658, 662–63 (D.C. Cir. 1999). In fact, at the time of the 1999 rule for this source category (hazardous waste combustion), RCRA regulatory limits were higher than the level of performance achieved even by the very *worst* performing source in the category (for some HAPs, by orders of magnitude). Yet under the argument, the floor for existing sources would have to be higher than even this worst performing single source.

(iii) *Legislative History shows that Congress intended the existing source floor to reflect actual best performance.* The legislative history to the MACT floor provision for existing sources likewise makes clear that the standard was to reflect actual performance, not regulatory limits. 2 *Legislative History* pp. 2887, 2898; 3353; 1 *Legislative History* p. 870. The legislative history to the parallel provision for municipal waste combusters in section 129(a)(2) (which floor requirement reads identically to section 112(d)(3)) is equally clear, stating that the floor for such sources is to reflect emission limitations which either have been achieved in practice or are reflected in permit limitations, whichever is more stringent. See *Sierra Club* v. *EPA,* 167 F. 3d at 662 (noting this legislative history.)

(iv) *The argument has already been rejected in litigation.* The D.C. Circuit, in the three cases dealing with MACT floors, has held in all three cases that the floor standard must reflect actual performance. *Sierra Club,* 167 F. 3d at 162–63; *National Lime,* 233 F. 3d at 632; *Cement Kiln Recycling Coalition,* 255 F. 3d at 865–66.

For these reasons, we reject the argument that existing source floors are compelled to reflect only regulatory limits. Such limits may be a permissible means of establishing existing source floors, but only if regulatory limits "are a reasonable means of estimating the performance of the top 12 percent of [sources] in each [category or subcategory].'' *Sierra Club,* 167 F. 3d at 661.

Somewhat ironically, there is a regulatory limit which is relevant in establishing floors for incinerators, cement kilns and lightweight aggregate kilns. The interim standards fix a level of performance for all of these sources. Thus, any floor standard can be no less stringent than this standard (see *National Lime* 233 F. 3d at 640 (reason for which a level of performance is being achieved is irrelevant in ascertaining MACT floors)). Based on actual performance, however, floors may be more stringent.

VI. How Did EPA Determine the MACT Floor for Existing and New Units?

We followed five basic steps to calculate the proposed MACT floors. First, we determined which MACT methodology approach is most appropriate to apply to the given pollutant for each source category. Second, we selected which of the available emissions data best represent each source's performance. Third, we evaluated whether it is appropriate to issue separate emissions standards for various subcategories. Fourth, we identified the best performing sources based on the chosen methodology and data. Finally, we calculated floor levels for new and existing sources. The following sections include a description of each of these steps. Please note that we are also proposing to invoke CAA section 112(d)(4) to establish risk-based standards on a site-specific basis for total chlorine for hazardous waste combustors (except for hydrochloric acid production furnaces). Under the proposed approach, sources may elect to comply with either risk-based standards or section 112(d) MACT standards. See Part Two, Section XIII for more details.

A. What MACT Methodology Approaches Are Used To Identify the Best Performers for the Proposed Floors, and When Are They Applied?

A MACT methodology approach is a set of procedures used to define and identify the best performing sources consistent with CAA section 112(d)(3). We have developed and used the following three different MACT methodologies to identify the best performing sources for the full suite of proposed floor standards for new and existing sources: (1) System Removal Efficiency (SRE)/Feed approach; (2) Air Pollution Control Technology Approach; and (3) Emissions-Based approach. These three methodologies, together with their rationales and when they are used, are described in the following sections. Note that each methodology described below assesses best performing sources for each pollutant or pollutant group independently, often resulting in different best performers for each pollutant. For a more detailed description of these methodologies and when they are applied, see USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapters 7 through 15.

1. What Is SRE/Feed Approach, and When Are We Proposing To Apply It?

The SRE/Feed MACT approach defines best performers as those sources with the best combined front-end hazardous waste feed control and back-end air pollution control efficiency as defined by our ranking procedure. The approach is applicable to HAP whose emissions can be controlled by controlling the hazardous waste feed of the HAP: metals and chlorine.[46]

These two parameters—feedrate of metals and chlorine in hazardous waste, and performance of the emission control device measured by system removal efficiency[47] determine emissions of metals and chlorine contributed by the hazardous waste feed. Back-end air pollution control is evaluated by assessing each source's pollutant system removal efficiency, which is a measure of the percentage of HAP that is emitted compared to the amount fed to the unit. In identifying system removal efficiency as a measure of best performing, the Agency is rejecting the notion that "best performing'' must mean a source with the lowest absolute rate of emission of a HAP. A source emitting 300 pounds of a HAP, but removing that HAP at a rate of 99.9% from its emissions, can logically be considered a better performing source than one emitting 100 pounds of the same HAP but

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[46] The particulate matter standard is used as a surrogate to control nonmercury metal HAP in the nonhazardous waste feedstreams and to control the nonenumerated metals in the hazardous waste. As explained Part Two, Section VI.A.2.b., control of ash feed may not be an effective technique to control metal HAP. Thus, we do not use the SRE/Feed approach to identify floor levels for particulate matter since ash feed control may not be a reliable indicator of performance.

[47] Although system removal efficiency measures primarily the performance of the back-end emission control device, it also measures any other internal control mechanisms, such as partitioning of metals to the product in a cement or lightweight aggregate kiln.

removing it at an efficiency of only 50 percent.

Use of feedrate and system removal efficiency as measures of performance is appropriate because these parameters incorporate the effects of the myriad factors that can indirectly affect emissions, such as level of maintenance of the combustor or emission control equipment, and operator training, as well as design and operating parameters that directly affect performance of the emission control device (*e.g.,* air to cloth ratio and bag type for a fabric filter; use of a power controller on an electrostatic precipitator). For example, an incinerator with a well-designed and operated fabric filter would have a higher performance rating measured by system removal efficiency than an identical incinerator equipped with the same fabric filter which is, in addition, poorly maintained because of inadequate operator training. Also, although feedrate of metals and chlorine in nonhazardous waste feedstreams such as raw materials and fossil fuels fed to a cement kiln can affect HAP emissions substantially, those emissions can be feasibly controlled only by back-end control (measured here by system removal efficiency).[48] This is because neither fuel switching nor raw material switching is practicable for production facilities such as cement and lightweight aggregate kiln facilities. Thus, feedrate of metals and chlorine contributed by the hazardous waste—the only controllable feed parameter for these sources—is an appropriate metric.

For incinerators and solid fuel-fired boilers, feed control is evaluated by assessing each source's hazardous waste pollutant maximum theoretical emission concentration.[49] Feed control for energy recovery units (cement kilns, lightweight aggregate kilns, and liquid fuel-fired boilers) are evaluated by assessing each source's hazardous waste pollutant thermal feed concentration when possible (*i.e.,* when EPA has sufficient data to make the calculation).

We rank each source's pollutant hazardous waste feed control level against all the other source's feed control level, assigning a relative rank of 1 to the source with the lowest, *i.e.,* best, feed control level and assigning the highest ranking score to the source with the highest, *i.e.,* worst, feed control level. We do the same with each source's system removal efficiency. We rank each source's pollutant system removal efficiency against all the other sources' system removal efficiencies, assigning a relative rank of 1 to the source with the highest, *i.e.,* best, system removal efficiency and assigning the highest ranking score to the source with the lowest, *i.e.,* worst, system removal efficiency. We then add each source's feed control ranking score and system removal efficiency ranking score to yield an SRE/Feed aggregated score. Each source's aggregated score is arrayed and ranked from lowest to highest, *i.e.,* best to worst, and, for existing sources, the best performers are the sources at the 12th percentile aggregate score and below. Floor levels are then calculated by using the emissions from these best performing sources. The SRE/Feed-based standards are expressed in units of hazardous waste thermal emissions when possible for energy recovery units.

Please note that the SRE/Feed approach can occasionally identify a floor level for new sources that is higher than the floor level for existing sources, as discussed below in Sections VII to XII. This is because the source with the best SRE/Feed aggregate score, and thus, the single best performing source under this approach, does not always achieve the lowest emissions among the best performing sources after accounting for emissions variability. In two cases only, the emissions for the best performing SRE/Feed source, after accounting for emissions variability, are higher than the average of the best performing five (or 12%) of sources—the floor for existing sources—after considering emissions variability.[50] For example, the single best performing SRE/Feed source may have both higher emissions and run variability than other best performing sources. This source's emissions are averaged with the other best performers to identify the floor level, and its run variability is dampened when we calculate the floor for existing sources by pooling run variability across the best performing sources. When the single best performer's emissions are evaluated individually, however, a relatively high run variability is not dampened. In those few situations where the best performing SRE/Feed source has higher emissions, after accounting for emissions variability (*i.e.,* the potential floor for new sources), than the floor for existing sources, we default to the floor for existing sources to identify the floor for new sources. We request comment on whether it would be more appropriate to identify the floor for new sources under the SRE/Feed approach by selecting the source with the lowest emissions among the best performing existing sources, after considering run variability, rather than the lowest SRE/Feed aggregate score.

The SRE/Feed methodology is generally applied only to HAP where we can accurately assess each source's relative hazardous waste feed control and back-end air pollution control: mercury, semivolatile metals, low volatile metals, and total chlorine. Dioxin/furans are not considered to be feed control HAP because they generally are not fed into the combustor; rather, they are formed in the combustor and post combustion. Also, whereas particulate matter (for all source categories) and total chlorine (for hydrochloric acid production furnaces) could be considered to be feed-controlled and back-end controlled pollutants, we do not believe it is appropriate to assess feed control as a control mechanism for these situations for reasons discussed below in Section 2 (largely dealing with the inability to control HAP in raw material feed or in fossil fuel). As a result, we did not apply the SRE/Feed approach to these pollutants.

Finally, the SRE/Feed approach is also not applied when we do not have sufficient compliance test data to accurately assess each source's relative back-end control efficiency. This occurs in a limited number of circumstances when the majority of the emissions data reflect normal operations. The mercury and semivolatile metal standard for liquid boilers are examples of when we do not believe we possess sufficient data to accurately assess each source's back end control efficiency because we are concerned that the normal feed data are too sensitive to sampling and measurement error to provide a reliable

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[48] *See* discussion in the proposed lime production MACT explaining why neither raw material or fossil fuel substitution are available means of controlling the feedrate of HAP. *See* 67 FR at 78059–61 (Dec. 20, 2002). The rationale for lime kilns also applies to cement and lightweight aggregate kilns. Briefly, in the context of floor control: (1) A kiln's principle raw materials (limestone for cement kilns and clay for lightweight aggregate kilns) are not available to other kilns; and (2) we are not aware of raw materials, or sources of coal or oil, that have characteristic and consistent (low) concentrations of HAP. In the context of beyond-the-floor control, additional issues include: (1) The cost of transporting raw materials with lower levels of HAP (if it were feasible to identify them) would be prohibitive; and (2) although switching from coal or oil to natural gas would reduce the feedrate of HAP, the limitations of the natural gas distribution infrastructure are such that natural gas is not readily available to many sources.

[49] In the 1999 rule, we developed the term maximum theoretical emissions concentration to compare metals and chlorine feed control levels across sources of different sizes. *See* 64 FR at 52854. Maximum theoretical emissions concentration is defined as the metals or chlorine feedrate divided by the gas flowrate, and is expressed in terms of µg/dscm. *See* Part Two, section IV.B.1 for more discussion on how we normalize feedrates and emissions across sources.

[50] This occurred for the low volatile metal standard for cement kilns and the mercury standard for solid-fuel fired boilers.

system removal efficiency that would be used reliably in the ranking procedure. Our preference is to use system removal efficiencies that are based on compliance testing because sources typically spike the pollutant feeds during these compliance tests to known elevated levels, resulting in calculated system removal efficiencies that are more reliable.

2. What Are the Air Pollution Control Technology Approaches, and When Are They Applied?

The air pollution control technology approach is applied in two situations where we consider it inappropriate to directly assess hazardous waste feed control—the particulate matter standard for all sources categories and the total chlorine standard for hydrochloric acid production furnaces. We apply slightly different methodologies to each of these situations, as discussed below.

a. What Methodology Was Used To Identify the Best Performing Sources for the Particulate Matter Floors? The best performing sources for the proposed particulate matter floor levels are determined using a methodology that is conceptually similar to that used in the Industrial Boiler MACT proposal. *See* 68 FR at 1660. We call this methodology the "air pollution control technology'' approach because it defines best performers as those that use the best type of back-end air pollution control technology.

This methodology first assesses all the back-end control technologies used by all the sources within the source category, and ranks the general effectiveness of these control technologies from best to worst using engineering information and principles. For example, for particulate matter control, high efficiency particulate air filters may be ranked as the best air pollution control device, followed by baghouses, electrostatic precipitators, and high energy wet scrubbers. In this example, all sources equipped with a high efficiency particulate air (*i.e.,* HEPA) filter would get the best ranking (*e.g.,* "1''), and all sources equipped with high energy wet scrubbers would get the worst ranking (*e.g.,* 4).

The sources are arrayed and ranked from best to worst based on their control technology rankings. For existing sources, MACT control is defined as the control technology or technologies used by the best 12 percent of these sources. For example, using the previous particulate matter control rankings, if more than 12 percent of the sources within the source category were using high efficiency particulate air filters, then MACT control would be defined to be high efficiency particulate air filters. If 10 percent of all the sources were equipped with high efficiency particulate air filters, and 4 percent were equipped with baghouses, then MACT control would be defined as both high efficiency particulate air filters and baghouses.

After the MACT control technology or technologies are determined, the MACT floor levels are calculated using emissions data from those sources using MACT control. *See* Part Two, Section IV.D.3 for more discussion on the ranking procedure that is used to identify the best performing sources under this approach. Also *see* USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapter 9, for more information. This methodology consequently focuses on performance of the best pollution control device, but does not assess further control that might result from lower HAP feedrates.[51]

We believe it is appropriate to identify the best performing sources using particulate matter emissions from those using MACT back-end control without considering hazardous waste ash feedrate control. For cement kilns, lightweight aggregate kilns, and solid fuel-fired boilers, particulate emissions are largely contributed by non-hazardous waste feedstreams (*i.e.,* entrained raw material for kilns, and entrained coal ash for solid fuel-fired boilers). Thus, hazardous waste feed control is an inappropriate factor to consider when assessing particulate matter control efficiency. Assessment of, and control of, total ash feedrate (*i.e.,* hazardous waste plus raw materials and nonhazardous waste fuel ash feed) would also be inappropriate because, as discussed below, total ash feedrate may not be a reliable indicator of a source's emission control level for metal HAP, and could inappropriately result in a methodology that assesses (and controls) raw material and/or nonhazardous waste fuel input.

Although particulate matter emissions for incinerators and liquid fuel-fired boilers are more directly related to these devices' hazardous waste ash feedrate, the hazardous waste ash feedrate for these sources may not be a reliable indicator of a source's feedrate (and emissions) of nonenumerated metal HAP given that the ash feed into the combustor may contain high or low concentrations of regulated metal HAP. A source that feeds low levels of ash thus may not be a best performing source for metal HAP emissions if its metal concentration levels in its ash are relatively high. Such a source could be identified as a best performing source because its particulate matter emissions and ash feed is low, even though its metal HAP emissions are relatively high. This result would also inappropriately assess and control elements of the hazardous waste ash feed that are not regulated HAP (*e.g.,* silica input). For these reasons, using the air pollution control technology approach to establish particulate matter floors without explicitly considering ash feedrate is appropriate since it focuses on the control technology (*i.e.,* back-end air pollution control technology) that is known to control metal HAP emissions.[52]

b. What Methodology Is Used To Identify the Best Performing Sources for the Total Chlorine Floor for Hydrochloric Acid Production Furnaces? We apply the air pollution control technology approach to total chlorine for hydrochloric acid production furnaces differently. For this floor calculation, we are proposing to use the same methodology that the Agency used for the hydrochloric acid production MACT final rule for sources that do not burn hazardous waste. *See* 68 FR at 19076. This methodology defines best performers as those sources with the best total chlorine system removal efficiency. Each source's total chlorine system removal efficiency is arrayed and ranked from highest to lowest, and the best existing performers are the sources at the 12th percentile ranking and below. We calculate the system removal efficiency floor level using the total chlorine system removal efficiencies achieved by these best performing sources. Consistent with the non hazardous waste hydrochloric acid production MACT final rule, we also propose to allow sources to comply with a total chlorine stack gas concentration limit that is calculated by multiplying the highest hazardous waste chlorine maximum theoretical emission concentration in the data base by 1 minus the MACT system removal efficiency. This ensures that a source

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[51] This methodology does not, however, expand the MACT pool to include sources with emission levels greater than those of the best 12 per cent of performers using MACT control (the approach the Court in *CKRC* held was inadequately justified as representing the 12 percent of best performing sources).

[52] Please note that, although we do not explicitly consider ash feedrate when establishing the particulate matter floor, ash feedrate is an appropriate and necessary compliance assurance parameter for incinerators and liquid fuel-fired boilers where ash from hazardous waste feedstreams contribute substantially (or entirely) to particulate emissions.

complying with the alternative concentration-based standard would not emit higher levels of total chlorine than a source equipped with wet scrubbers that achieve MACT system removal efficiency. We believe this alternative standard is appropriate because it gives sources the option of complying with the floor by implementing hazardous waste feed control.[53]

We believe this methodology is appropriate even though it does not directly assess hazardous waste total chlorine feed control because these sources are in the business of feeding highly chlorinated hazardous wastes so that they can recover the chlorine for use in their production process. Requiring these sources to minimize hazardous waste chlorine feed would be directly regulating their raw material and would directly affect their ability to produce their product. Again, in this situation, we believe it is appropriate to use a methodology approach that solely focuses on back-end control, since back-end control assures removal of the target pollutant without inappropriately requiring a source to control feedstreams in a manner that affects its ability to produce its intended product.

3. What Is the Emissions-Based Approach, and When Is It Applied?

The emissions-based approach defines best performers as those sources with the lowest emissions in our database. We array and rank each source's pollutant emission levels from lowest to highest. The best existing performers are the sources at the 12th percentile ranking and below. We calculate floor levels using the emission levels from these best performing sources. We express the emissions-based standards in units of hazardous waste thermal emissions when possible for energy recovery units, and use the approach whenever the SRE/Feed or air pollution control technology approaches are not used. Specifically, we use the emissions-based approach for the dioxin/furan floors for all source categories, and for the mercury and semivolatile metal floors for liquid fuel-fired boilers.

The SRE/Feed and air pollution technology-based approaches cannot be used for the dioxin/furan floors because dioxin/furans are generated in the combustor or post-combustion within the air pollution control device. Since dioxin/furans are generally not fed to the units, the SRE/Feed methodology would not properly assess dioxin/furan emission control performance. In theory, the technology-based approach for particulate matter could be applied to the dioxin/furan floors. However, such a technology approach would, for the most part, identify the same best performers as the emissions-based approach because there is only one primary control technology being used by all the sources—temperature control at the inlet to the dry air pollution control device.

The SRE/Feed approach cannot be used for the mercury and semivolatile metal floors for the liquid fuel-fired boilers because we do not have sufficient compliance test data to accurately assess each source's back-end control efficiency. The technology-based approach is also not appropriate because sources within this source category control these HAP both by feed control and by back-end control. As a result, a methodology that considers only one of the two primary control techniques may not be appropriate.

4. Why Doesn't EPA Simply Apply the Emissions-Based Approach to All Source Categories and HAP?

Under the most simplistic interpretation of CAA 112(d), we would apply the emissions-based approach to all source categories and HAP in calculating floors for existing sources. We considered proposing this option. As described later in Part Two, Section VI.G, it was one of three options for which we conducted a complete economics analysis. We discuss below, however, why we believe the air pollution control technology and SRE/Feed approaches more reasonably ascertains the performance of the average of the best 12 percent of existing sources.

a. Why Do We Prefer the SRE/Feed Approach Over the Emissions-Based Approach? We believe the SRE/Feed approach is a reasonable and appropriate MACT methodology for the hazardous waste combustion source categories because it better estimates the performance of the average of the 12 percent best performing sources, and (as a necessary corollary) assures that the floor standards would be achievable by such sources. As previously discussed, we apply the SRE/Feed approach to HAP that are actively controlled (via floor controls) by both hazardous waste feed control and back-end air pollution control. There are only two ways to control emissions of these HAP from these sources—limit the feedrate of metal and chlorine and remove them prior to venting the exhaust gas out the stack. These two control mechanisms are used simultaneously by all sources in this category at varying levels.

We do not believe the lowest emission levels in our data base in fact represent the full range of emissions achieved in practice by the best performing sources. Indeed, it would be unlikely if this were the case, since these data are necessarily "snapshots'' of emissions from the source, obtained in one-time testing events.[54] Notwithstanding that such testing seeks to encompass much of the variability in system performance, no single test can be expected to do so. Thus, inherent variability such as feedrate fluctuation over time due to production process changes, uncertainties associated with correlations between operating parameter levels and emissions, precision and accuracy differences in different testing crews and analytical laboratories, and changes in emission of materials (SO_2 being an example) that may cause test method interferences. *See* generally 64 FR at 52857and 52587–59.

An emissions-based approach for cement kilns, lightweight aggregate kilns, and solid fuel-fired boilers that assesses performance based on stack gas concentrations (as opposed to hazardous waste thermal emissions) may not appropriately estimate the performance of the average of the 12 percent best performing sources given that those best performers may have low emissions in part because their raw material and/or fossil fuels contained low levels of HAP during the emissions test. We do not believe feed control of HAP in raw material and fossil fuel should be assessed as a MACT floor control primarily because it could result in floor levels that are not replicable by the best performing sources, nor duplicable by other sources. *See* Part Two, Section VI.A.1.

Moreover, although the emissions-based approach is not facially inconsistent with section 112 of the Act, there are serious questions as to whether its applicability here leads to limits that could be achieved even by the average of the best performing sources (under the emissions-based approach). The alternative emissions-based floor Options 1 and 2 discussed in Part Two, Section VI.G result in floor levels across all HAP that are achievable simultaneously by fewer than 6% of the sources for the cement kiln, incinerator, and liquid fuel-fired boiler source

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[53] A source could operate with a "less than MACT'' system removal efficiency provided that it controls its hazardous waste chlorine feed levels such that its emissions are lower than the emission standard.

[54] One-time testing events, however, are a necessity because Continuous Emission Monitors still do not exist for most of the HAPs emitted by these sources.

categories.[55] See USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapters 10 and 19, for a summary of the simultaneous achievability analysis. A reason the floors which would result from this methodology are so low is that there already have been at least one and, for many of the sources, two rounds of regulatory reduction of emissions from these sources (under the RCRA rules, and then under the Interim Standards MACT rules for incinerators and kilns). The emissions-based approach thus yields results more akin to new source standards, confirmation being that the levels are not even achievable as a whole by the average of the 12 percent best performing sources. The simultaneous achievability of today's proposed floors, for which we use the SRE/Feed approach for certain HAP preferentially over the emissions-based approach, is substantially better (but not dramatically more than 6%) for cement kilns and liquid fuel-fired boilers than the achievability under the emissions-based approach.

There are other reasons why the emissions-based approach results in such low simultaneous achievability percentages. If the emissions-based approach is applied to feed-controlled HAP, the best performers are defined as those sources that are either: (1) The lowest feeders; (2) the best back-end controlled units; or (3) the best combination of front-end control or back-end control. The emissions-based approach selects the lowest emitters from the previous three categories and does not necessarily account for the full range of emissions that are achieved in practice by well designed and operated feed control units, well designed and operated back-end controlled units, or well designed and operated combination of both front-end and back-end controlled units. As explained below, the SRE/Feed methodology better accounts for the range of emissions from these well designed and operated sources.[56]

For example, assume we have 100 sources in a hypothetical source category, and source A is the 5th best feed controlled source and the 30th best back-end controlled source. Source B, on the other hand, is the 30th best feed controlled source and the 5th best back-end controlled source. The SRE/Feed ranking procedure would score these two sources equally, even though their emissions may be different. Let's also assume that these two sources are among the best performers for the SRE/Feed approach. We would not expect their emission levels to be dramatically different under the SRE/Feed approach because source A is a superior front-end controlled source with a relatively poorer back-end control device, and source B is a superior back-end controlled source with relatively poorer feed control. Even though sources A and B do not have the same emissions, they are both considered to be well designed and operated sources because they both use a superior combination of front-end and back-end control. The difference in emissions merely reflects the range of emissions from well designed and operated sources.

If the emissions-based approach was applied in the source A and B example, the source with the higher emissions would have a worse emission ranking, and thus may not be identified as a best performer. Thus, even though we would consider this higher emitting source under the SRE/Feed approach to be a well-designed and operated source, it would not be capable of achieving the calculated floor level. We believe this outcome may be problematic, for example, because sources that are already operating with a well-designed and operated back-end control unit should not have to upgrade its back-end control technology simply because it is not achieving a floor level driven, in part, by other sources within the source category that are implementing lower feed control rates that are impractical for it to achieve.[57] It may be questionable to require these well controlled back-end units to implement better feed control to achieve this emission-based floor level because: (1) they may not be capable of implementing feed control without sending/diverting the waste elsewhere—yet these units are providing a needed and required service in treating hazardous waste; and (2) it could be argued that hazardous waste containing high levels of metals and chlorine should in fact be treated in the well-designed and operated back-end controlled units (see RCRA sections 3004 (d) to (m), requiring advanced treatment of hazardous waste before the waste can be land disposed).

Similarly, sources that are already achieving superior feedrate control should not necessarily have to upgrade their feedrate control further simply because they are not achieving a floor level driven, in part, by sources with superior back-end control. Improving already superior feedrate control may be problematic simply because they may not be capable of implementing additional feed control (*e.g.,* source reduction) at their facility, or having generators implement further feedrate control. EPA believes that hazardous waste feed control is an important element of what constitutes "best performing'' sources from this source category, and does not wish to structure the rule to discourage the practice by developing standards which do not directly take this means of control into account. See CAA section 112(d)(2)(A) (feed control is an explicit means of achieving MACT); and see also the pollution prevention and waste minimization goals of both the CAA (sections 112(d) (2) and 101(c) and RCRA (section 1003(b)). The SRE/Feed approach thus better preserves the opportunity for sources to achieve the floor levels if they are using either superior front-end control or back-end control (or superior combination of both). At the same time, it addresses both means by which sources in this category can control their HAP emissions: hazardous waste feed control and back-end air pollution capture through control technology.

The example in the previous paragraph of the source using superior feed control is clearly applicable to incinerators and boilers that combust hazardous waste. These are somewhat unique source categories in that they are comprised of many different industrial sectors that may not be capable of achieving/duplicating the same metal and chlorine feedrate control levels of other sources within their respective source category given that hazardous waste feed control levels are directly influenced by amount of HAP that are generated in their specific production process. Similarly, other sources that comprise commercial hazardous waste combustors (*i.e.,* kilns and commercial incinerators) are subject to the feed control levels that are governed

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[55] Simultaneous achievability percentages for lightweight aggregate kilns, solid fuel-fired boilers, and hydrochloric acid production furnaces must be interpreted differently given that there are significantly fewer than 30 sources within these source categories. As a result, we believe that the emission standards should be simultaneously achievable by at least two or three sources for these source categories given that CAA 112(d) defines best performing sources as the average of the best five sources.

[56] Note, however, that many of the best performing sources for the SRE/Feed approach are the same as those for emissions-based approach, primarily because there is a good correlation between the SRE/Feed aggregated ranking score and emissions in that the emission levels generally increase as the as the aggregate ranking score increases.

[57] Moreover, the superior low metal and chlorine feedrates that on-site incinerators and boilers are "achieving'' may simply reflect the composition of the waste generated by the manufacturing operation.

primarily by third parties (*i.e.,* the generators or fuel blenders). The emissions-based approach identifies the best performers as those sources with the lowest emissions and does not consider differences in emission characteristics across all the industrial sectors that combust hazardous waste. We contemplated whether we should assess if subcategorization is appropriate based on the various industrial sectors that combust hazardous waste. We believe, however, that such an assessment would be difficult given the vast number of industrial sectors that generate hazardous waste which is treated by combustion.

The emissions-based approach could be identifying a suite of floor levels across HAP that would require sources to operate at feedrate control levels in the aggregate that are in theory achieved by few, if any, well-operated and designed feed controlled sources. For example, the best performing sources for the emissions-based approach for the incinerator semivolatile and low volatile metal floors are entirely different. This may occur because sources have different relative feed control levels for mercury, semivolatile metals, low volatile metals, and total chlorine (*e.g.,* a source could have superior semivolatile metal feed control but only moderate low volatile metal feed control).

Finally, the emissions-based approach may result in low simultaneous achievability percentages because a back-end control technology for one pollutant may not control the emissions of another pollutant as efficiently. For example, wet air pollution control systems may control total chlorine emissions very well, but are not as efficient at limiting particulate matter emissions when compared to a baghouse. Thus, best performers under the emissions-based floor approach for total chlorine could be driven by sources with wet air pollution control systems, and the particulate matter floor could be driven by sources equipped with baghouses, resulting in a combined set of floors that are conceivably achieved by few sources, a result confirmed, as noted above, in that less than 6% of existing sources would be achieving floor standards developed using the emission-based approach.[58, 59]

We thus believe that using the SRE/Feed approach preferentially over the emissions-based approach and technology based approach is appropriate because use of the SRE/Feed approach results in floor levels that better reflect the range of emissions from well-designed and operated sources and also results in floor levels across all HAP that are achievable simultaneously by at least 6 percent of the sources within each source category.

b. Why Do We Prefer the Air Pollution Control Technology Approach Over the Emissions-Based Approach? As previously discussed, we apply the air pollution control technology approach in two situations where we consider it inappropriate to directly assess hazardous waste feed control using an SRE/Feed type approach: the particulate matter standard for all source categories; and, the total chlorine standard for hydrochloric acid production furnaces. We discuss below why the emissions-based approach is not our preferred methodology for these standards.

For particulate matter, the emissions-based approach identifies the lowest emitters as best performers, irrespective of the types of controls that were used. This would not necessarily reflect emissions that are in fact capable of being achieved by sources using MACT back-end control technology as defined by the air pollution control technology approach because, as discussed above, our data are "snapshots'' of emissions from each source, obtained in one-time testing events. As a result, the particulate matter floors that are based on the emissions-based approach would not necessarily account for inherent variability such as ash feedrate fluctuation over time due to production process changes,[60] uncertainties associated with correlations between operating parameter levels and emissions, precision and accuracy differences in different testing crews and analytical laboratories, and changes in emission of materials (SO_2 being an example) that may cause test method interferences. The air pollution control technology approach may better account for this inherent variability because it assesses the emissions ranges from those sources that utilize the defined back-end MACT control devices, as opposed to merely selecting the lowest emitters irrespective of the type of control it uses.

Also, using the emissions-based approach for incinerators and liquid boilers (for the particulate matter standard) and hydrochloric acid production furnaces (for the total chlorine standard) is not our preferred approach because it assesses in part, hazardous waste ash and chlorine feed control. As discussed above, the emissions-based approach defines best performers as those sources with the lowest emissions, and thus inherently accounts for and assesses hazardous waste ash and chlorine feed control in that sources with lower ash feedrates and chlorine feedrates may have lower emissions.[61] This is not our preferred way of establishing floors for these HAP for the reasons discussed above in Section A.2.

B. How Did EPA Select the Data To Represent Each Source When Determining Floor Levels?

After we determine which MACT methodology is appropriate for a given pollutant and source category, we select which of the available emissions data to use for each source to: (1) Determine if subcategorization is warranted; (2)

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[58] Although the SRE/Feed approach does not directly address this issue within the methodology, the simultaneous achievability of the SRE/Feed-based floors is substantially better (but not dramatically more than 6%) for cement kilns and liquid fuel-fired boilers than the achievability under the emissions-based approach.

[59] Note that we considered using a floor methodology that simultaneously assesses all the pollutant emissions from each source. This methodology would define best performers as those sources with the best aggregate emissions across all (or a subset of all) the HAP and would perhaps more directly achieve the goal of obtaining a full suite of emission standards that are achievable by at least 6% of the sources. We rejected this approach in the 1999 rule, since it could potentially result in least-common denominator source levels. *See* 64 FR at 52856. However, at least for incinerators and kilns, there is less potential concern with such a result because the Interim Standards have already reduced sources' emissions of all HAP considerably and the Interim Standards cap the level of floors for these sources. Nonetheless we may not have enough complete emissions information for all HAP for many source categories to adequately assess enough source's true "aggregate emissions.'' *See* Section VI.G.

[60] The emissions-based approach may not account for particulate matter emissions variability factors that are attributable to factors other than MACT control. For example, two sources with identical air pollution control devices could have different particulate matter emission concentrations merely because they process different types and amounts of raw material and/or nonhazardous waste fuels. From a MACT perspective, the source with the higher emissions would not be a poorer performer because feed control of raw material and nonhazardous waste fuels are not MACT floor controls.

[61] The best performers identified by the air pollution technology approach are less likely to be driven by low ash feeding facilities for the particulate matter standard because all the sources equipped with MACT-defined back-end control devices typically feed high levels of ash, thus we believe particulate matter emission levels from these sources are more a function of the air pollution control device control efficiency rather than the ash feed levels.

identify the best performing sources; and (3) calculate the floor levels. Our emissions data base is complex because it includes, in part, compliance test data, emissions data that is representative of the normal operating range of the source, and, for the Phase I sources, multiple emission test data that have been collected over a number of years. *See* Part Two, Section III for more discussion on data base issues.

We follow a general "data hierarchy'' to determine which of these data types to use to represent each source's performance (with the performance being reassessed for each HAP). First, we prefer to explicitly use compliance test data rather than data representative of normal operations because compliance test data best reflect the upper range of emissions from each source and thus best accounts for day-to-day emissions variability. Use of compliance test data allows us to express emission floors as "short-term limits'' (*e.g.,* hourly or twelve hour rolling averages), which is consistent with the current interim MACT standard format for incinerators, cement kilns, and lightweight aggregate kilns. Short-term limits are also consistent with the RCRA emission standards currently applicable to boilers and hydrochloric acid production furnaces. Finally, we prefer to use compliance test data because the majority of the available data are compliance test data.

Absent sufficient compliance test data for sources within the source category to calculate floor levels, we default to explicitly using data that are representative of the source's operating range under conditions not designed to assess performance variability. Since these so-called normal data do not typically reflect the upper range of emissions from each source, we believe it is necessary to account for emissions variability (in part) by expressing floors that are based on normal data as long-term, annual average emission limits (since the snap-shot data, by definition, do not reflect short-term variability).

We considered using all available emissions data to calculate the floors, irrespective of whether they were normal or compliance test data. We believe, however, that it is inappropriate to mix such dissimilar data when calculating floor levels because it would bring into question how to account for day-to-day emissions variability when setting the format of the standard. For example, if a floor were calculated using 50% percent normal data and 50% compliance data, should the standard be expressed as a long-term limit or short-term limit? This is critical because the averaging period associated with the numerical emission limitation affects the stringency of the standard. It is also unclear how mixing dissimilar data would affect the statistical variability factor we apply to each floor to assure that floor levels are achievable by the average of the best performing sources. As discussed in Part Two, Section VI.E, we apply the statistical variability factor to the floor levels to assure that the average of the best performing sources would be able to replicate the emission test results that were used to calculate the floor levels. Mixing dissimilar data not only complicates the analyses, but also could result in inconsistent evaluation of data (hence inconsistent results), primarily because the ratio of normal data to compliance data differs across HAP within each source and across all sources. We therefore believe it is appropriate to assess "like data'' explicitly to assure results are consistent across HAP and source categories.

We prefer to use the most recent compliance test data to represent each source in situations where we have data from multiple test campaigns that were collected at different times. For example, we typically have multiple test campaign emission information for cement kilns and lightweight aggregate kilns because: (1) We conducted a comprehensive data collection effort for these sources to update the data base that was used to support the 1999 final rule; and (2) these sources, prior to receiving their RCRA permit, are required to conduct emissions tests every three years.

We believe it is appropriate to only use the most recent compliance test data for a source because those data best reflect current operations and emission levels. Older compliance test data may not be representative of current emissions because: (1) Permitted feed and air pollution control device operating levels may have been changed/upgraded; (2) combustion unit and associated air pollution control equipment design may have been changed/upgraded; and (3) standard operating practices that relate to maintenance and upkeep may have been changed/upgraded. As a result, we believe that a source's most recent compliance data best reflect a source's upper range of emissions. We considered using all of the sources historical compliance emissions data to perhaps better account for day-to-day emissions variability. We believe, however, that it is not appropriate to consider older compliance emission test data to account for day-to-day emission variability because: (1) The older compliance data may reflect varying emissions merely because the source was previously operating with poorer control levels, which is not an appropriate factor to consider when assessing day-to-day emission variability; and (2) the most recent compliance test data adequately accounts for day-to-day variability because the operating levels demonstrated during the most recent compliance test generally represent the maximum upper range of operations and emissions.[62]

We do not apply the concept of using the most recent emissions test information to normal emissions data (as previously discussed, we use normal emission data to calculate floor levels only in situations where we do not have sufficient compliance test data). We instead use all normal emissions data that are available because we are concerned that a source's most recent normal emissions may not be representative of its average emissions. The most recent normal emissions data could reflect emissions at the upper range of normal operations or the lower end of normal operations. If we were to use only the most recent normal emissions information, we may identify as best performers those sources that were operating below their average levels. This would be inappropriate because the floor level may be unachievable by the best performing sources.

Finally, for liquid fuel-fired and solid fuel-fired boilers, we eliminated emission test runs from the MACT analysis when we had information that the source conducted sootblowing during that emission test run. Boilers that burn fuels with high ash content are designed to blow the soot off the tubes periodically to maintain proper heat transfer. The soot can contain metal HAP, and emissions of these HAP can increase during sootblowing. Although the current RCRA particulate matter and metals emissions standards for these sources at §§ 266.105 and 266.106 do not require sootblowing during compliance testing, we have provided guidance recommending that sources blow soot during one of the three runs of a compliance test condition and calculate average emissions considering the frequency and duration of sootblowing.[63] We conclude that these sootblowing run data should not be

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[62] Operating parameter limits are established based on compliance test operations to ensure emissions achieved during normal operations do not exceed the emissions that were demonstrated in the compliance test.

[63] USEPA, "Technical Implementation Document for EPA's Boiler and Industrial Furnace Regulations'' EPA530–R–92–011, March 1992, NTIS #PB92–154 947.

considered when establishing MACT floor, however, for several reasons. We do not know if all sources that blow soot followed the guidance to blow soot during a run of the test condition. If they did not, they could be identified as a best performer but may not be able to achieve the floor level when blowing soot. In addition, several boilers that blew soot during a run of the test condition did not use our recommended approach to calculate time-weighted average emissions considering the frequency and duration of sootblowing. For these sources, we cannot calculate time-weighted average emissions. We also note that, for sources with emission control equipment, emissions during sootblowing runs are not significantly higher than when not blowing soot. This is because soot particles are relatively large and easily controlled. For sources with no emission control equipment, sootblowing increased particulate matter emissions for some sources, but not others. In addition, we could not use the sootblowing run to help address emissions variability by evaluating run variability because the (in some cases) higher emissions during sootblowing are unrelated to the factors affecting run variability that we are evaluating (*e.g.*, method precision and other largely uncontrollable factors that affect run-to-run emissions during a test condition). Finally, we note that the Agency did not propose to require sootblowing to demonstrate compliance with the MACT standards for industrial, commercial, and institutional boilers and process heaters.[64] Although for these reasons we conclude that it is appropriate not to consider sootblowing run data to establish the MACT floor, we request comment on alternative views.[65]

Because we do not consider sootblowing when establishing floor levels, sootblowing would not be required during performance testing to demonstrate compliance with the standards for particulate matter and semivolatile and low volatile metals.[66]

C. How Did We Evaluate Whether It Is Appropriate To Issue Separate Emissions Standards for Various Subcategories?

The third step we use to calculate MACT floor levels evaluates subcategorization options. CAA section 112(d)(1) allows us to distinguish among classes, types, and sizes of sources within a category when establishing floor levels. Subcategorization typically reflects “differences in manufacturing process, emission characteristics, or technical feasibility.'' *See* 67 FR 78058.

We use both engineering principles and a statistical analysis to assess whether it is appropriate to subcategorize and issue separate emission standards. We first use engineering principles to determine potential subcategory options. These subcategory options are discussed in more detail in Part Two Section II for each source category. As discussed in greater detail below, we then determine if there is a statistical difference in the emission characteristics between these potential subcategory options. Finally, we conduct a technical analysis to determine if the statistical analysis results are consistent with sound engineering judgement.

“Analysis of Variance'' (ANOVA) is the statistical test used to cross-check these engineering judgements. ANOVA, a conventional statistical method, evaluates whether there are differences in the mean of HAP emissions levels from two or more different potential subcategories (*i.e.*, do the different subcategories of HAP data come from distinctly different populations). Subcategories are considered significantly different using a 95% confidence level. ANOVA is used in combination with engineering principles to sequentially identify significant differences between various different combinations of potential subcategories. *See* U.S. EPA “Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapter 4, for detailed steps and results of the ANOVA evaluation process.

D. How Did We Rank Each Source's Performance Levels To Identify the Best Performing Sources for the Three MACT Methodologies?

The fourth step used in determining the MACT floor levels involves ranking each source's performance level to identify the best performers. Below we discuss the general ranking procedure used for each of the three MACT methodologies and the statistical methodology used to perform the ranking process.

1. Emissions-Based Methodology Ranking Procedure

As previously discussed in Part Two, Section VI.A, the emissions-based approach defines best performers as those sources with the lowest emissions in our database. Each source's emission test runs are first converted to an upper 99% confidence level in order to rank performance not only on the average emission levels each source achieves, but also on the emissions variability each source demonstrates during the emissions tests. We believe this is appropriate because a source's ability to consistently control its emissions below the MACT floor levels is important in determining whether a source is in fact a well designed and operated source.[67] We then array and rank each source by its 99% upper confidence emission levels from best to worst (*i.e.*, lowest to highest). For existing source floors, we identify the best performers as either sources at the 12th percentile ranking and below or the lowest 5 ranked sources values if we have data from less than 30 sources. The best performing source for the new source floor is simply the source with the single lowest ranked 99% upper confidence emission level.

2. SRE/Feed Ranking Procedure

As previously discussed, the SRE/Feed methodology approach defines best performers as those sources with the best combined front-end hazardous waste feed control and back-end air pollution control efficiency as defined by our ranking procedure. The first step involves ranking each source's feed control level. As with the emissions-based approach, we first convert each source's feed control run levels (*i.e.*, hazardous waste maximum theoretical emission concentration level or thermal feed concentrations) to an upper 99% confidence level. We then array each source's 99% upper confidence feed control levels from best to worst (*i.e.*, lowest to highest). Next we assign a feed control ranking score to each source. The source with the lowest feed control value gets a ranking of 1, and the source with highest feed control value receives the highest numerical ranking.

The second step ranks each source's system removal efficiency, which is a measure of the percent of metal or

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[64] *See* 68 FR 1660 (January 13, 2003).

[65] We note that a floor level considering sootblowing may be higher than a floor level based on discounting sootblowing runs.

[66] The comparative risk assessment for this proposed rule did not evaluate the impact of sootblowing on average emissions. To ensure that RCRA permits are protective of human health and the environment, regulatory officials may determine that the effect of sootblowing on average emissions (*i.e.*, considering the frequency and duration of sootblowing) should be considered in some situations, such as a source with uncontrolled or poorly controlled particulate emissions and with relatively high particulate matter or toxic metal emissions.

[67] For example, a source with average emissions of 100 and calculated variability of 10 would be ranked as a better performing source when compared to a source with average emissions of 100 and a calculated variability of 20.

chlorine that is emitted as compared to the amount fed to the combustion unit. Again, we first convert each source's system removal efficiency run values to an upper 99% confidence level value. We then array each source's 99% upper confidence levels from best to worst (*i.e.*, highest to lowest). Next we assign a system removal efficiency ranking score to each source. The source with the best system removal efficiency gets a ranking of 1, and the source with the worst system removal efficiency receives the highest numerical ranking.

As with the emissions ranking procedure discussed above, our feed control and system removal efficiency ranking procedure measures performance not only on the average feed control and system removal efficiency level each source achieves, but also on the feed and system removal efficiency variability each source demonstrates during the emissions tests. This is appropriate because a source's ability to consistently regulate its control mechanisms to achieve MACT emissions is important in determining whether a source is in fact a well designed and operated source.

Third, we add each source's feed control ranking score and system removal efficiency ranking score together in order to calculate an aggregated SRE/Feed score. We then array and rank each source's aggregated score from best to worst (*i.e.*, lowest to highest). For existing source floors, we identify the best performers as sources at the 12th percentile aggregate ranking and below or sources with the lowest 5 aggregated scores if we have data from less than 30 sources. The best performing source for the new source floor is simply the source with the single lowest aggregated score.

3. Technology Approach Ranking Procedure for the Particulate Matter Standard

As previously discussed in Part Two, Section VI.A.2.a, the best performing sources for the particulate matter proposed floor levels are determined from a pool of sources that use the MACT-defining back-end control technology. We assess only the emissions from those sources equipped with the MACT-defining control technology (or technologies), and, as with the previously discussed methodologies, we convert each source's emission run values to an upper 99% confidence level value. Emissions information from each source is then grouped based on the type of MACT control each source uses. The first group contains emissions information from sources equipped with the best ranked MACT control device; the second group includes emissions information from sources equipped with the second best ranked MACT control technology (if there is more than MACT control technology), and so on.

We then array and rank each source's 99% upper confidence emission levels from best to worst (*i.e.*, lowest to highest) within each of these groups. If there is only one defined MACT control technology, the best performing sources are those sources with the lowest 99% upper confidence emission levels amongst the sources using this MACT control technology. The lowest emitting sources are added to a list of best performers up until the number of sources that are included in this list is representative of 12 percent of sources within the source category (for the existing source floor determination). If there is more than one defined MACT control technology, the list of best performers first considers sources with the lowest 99% upper confidence emission levels that are equipped with the best ranked control device up until the number of sources that are included in this list is representative of 12 percent of sources within the sources category. If additional sources need to be added to this list to appropriately represent 12% of the sources within the source category, then sources with the lowest emissions that are equipped with the second best MACT control device are added until the appropriate number of best performing sources are obtained.[68] For the new source floor, the best performer is simply the single source equipped with the best ranked MACT control device with the lowest 99% upper confidence emission level.

4. Technology Approach Ranking Procedure for the Total Chlorine Floor for Hydrochloric Acid Production Furnaces

As previously discussed in Part Two, Section VI.A.2.b, the technology approach used to determine the total chlorine floor levels for hydrochloric acid production furnaces defines best performers as those sources with the best total chlorine system removal efficiency. The ranking procedure used for this methodology is identical to that used in the emissions-based approach with the exception that system removal efficiencies are ranked instead of emissions. Each source's total chlorine system removal efficiency run values are first converted to an upper 99% confidence level. We then array and rank each source's 99% upper confidence system removal efficiencies from best to worst (*i.e.*, highest to lowest). For existing source floors, we define best performers as either: (1) Sources at the 12th percentile ranking and below; or (2) sources with the lowest 5 rankings if we have data from less than 30 sources. The best performing source for the new source floor is simply the source with the single highest 99% upper confidence system removal efficiency.

5. Description of the Statistical Procedures Used To Identify the 99% Confidence Levels

As previously discussed, each source's performance level is first converted to an upper 99% confidence level in order to rank performance not only on the average performance level each source achieves, but also on the emissions variability each source demonstrates during the emissions tests. We believe this is appropriate because a source's ability to consistently control its emissions below the MACT floor levels is important in determining whether a source is in fact a well designed and operated source.

Sources are ranked based on their projected "upper 99% confidence limit'' (or lower 99% confidence limit for system removal efficiency). For emissions and feedrates, upper 99% confidence limits are determined using a "prediction limit'' calculation procedure. The prediction limit is an estimate of the level which will capture 99 out of 100 future test condition averages (where each average comprise three individual test runs). HAP emissions data within each source are determined to be normally distributed. The prediction limit is calculated for each source based on the average, standard deviation, and number of individual test runs.

For system removal efficiencies, the lower 99% confidence limit is determined using the "two parameter Beta distribution''. The beta distribution is used for modeling proportions, *i.e.*, system removal efficiencies, is highly robust, and appropriately bounded by zero and 1. Beta distribution modeling parameters are determined based on the "method of moments'' using the average and standard deviation of the individual source data. The lower 99% estimate comes directly from the Beta distribution model. *See* USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,''

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[68] Note that this methodolgy does not base the floor on the highest emitting source amongst these best performers (as did the "expanded MACT pool'' did for 1999 rule). Rather, the floor is determined by calculating the average performance of all best performing sources.

March 2004, Chapter 8, for further discussion.

E. How Did EPA Calculate Floor Levels That Are Achievable for the Average of the Best Performing Sources?

The emissions data we used to establish MACT floor were obtained by manual sampling of stack gas. To ensure that the average of the best performing sources can routinely achieve the floor during future performance testing under the MACT standards, we must account for emissions variability.

We account for long-term emissions variability by: (1) Using compliance test emissions data, when available, to establish floors; (2) when other than compliance test data must be used to establish the floor, basing compliance on an annual average. In addition, we add a statistically-derived variability factor to the floor to account for run-to-run variability. This variability factor ensures that the average of the best performing sources can achieve the floor level in 99 of 100 future tests if the best performing sources replicate the operating conditions and other factors that affect the emissions we use to represent the performance of those sources.

1. How Does Using Compliance Test Data Account for Variability?

We use RCRA compliance test emissions data, when available, to establish the floors because compliance test data largely account for emissions variability. Under RCRA compliance testing, sources must establish operating limits based on operating conditions demonstrated during the test. Each source designs the compliance test such that the operating limits it establishes account for the variability of operating parameter levels it expects to encounter during its normal operations (*e.g.*, feedrate of metals and chlorine; air pollution control device operating parameters, production rate). Thus, operating conditions during these tests generally reflect the upper range of emissions from these sources. Using a source's compliance test emissions to establish the floor accounts largely for long-term emissions variability. However, this does not necessarily account for factors that affect variability. As previously discussed, our snap-shot data base emissions information does not necessarily account for inherent variability such as feedrate fluctuation over time due to production process changes, uncertainties associated with correlations between operating parameter levels and emissions, precision and accuracy differences that may result from using different stack sampling crews and analytical laboratories, and changes in emission of materials (SO_2 being an example) that may cause test method interferences.

Use of compliance test data also does not account for run-to-run variability. We thus use a statistically-derived variability factor to account for the variability in emissions that would result if the best performing sources were to replicate their compliance tests, as discussed below.[69]

In addition, use of compliance test data may not account for long-term variability of particulate matter emissions from sources equipped with a fabric filter. Accordingly, we also use a statistically-derived variability factor to account for this variability, as discussed below.

2. How Does Using Long-Term Averaging Account for Emissions Variability When Using Other Than Compliance Test Data?

RCRA compliance test emissions data are not available for some metals (mercury in particular) for some source categories. In these cases, we use other emissions test data to establish the floor. These other test data are snap shots of emissions within the range of normal emissions. To largely account for emissions variability when using emissions data assumed to represent the average of normal emissions, we propose to express the floor as a long-term, yearly, average. Sources would comply with the floor by establishing limits on metal feedrate and air pollution control device operating parameters. Compliance with the metal feedrate limits would be based on an annual average feedrate, while compliance with the air pollution control device operating limits would be based on short-term limits (*e.g.*, hourly rolling average). We propose short-term averages for air pollution control device operating parameters because the parameters may not correlate with emissions linearly; emissions resulting when an air pollution control device parameter is above the limit thus may not be offset by emissions resulting when the air pollution control device parameter is below the limit. *See* 1999 rule, 64 FR at 52920.

As discussed above, we also use a statistically derived variability factor to account for the variability in emissions that would result if the best performing sources were to replicate the emissions tests we use to establish the floor, as discussed below.

We use the normal emissions data to represent the average emissions from a source even though we do not know where the emissions may fall within the range of normal emissions; the emissions may be at the high end, low end, or close to the average emissions. It may be reasonable to assume the emissions represent average emissions, given that we have emissions data from several sources, and that emissions for these sources in the aggregate could be expected to fall anywhere within the range of normal emissions. Note that, as previously discussed, we have not applied the concept of using the most recent emissions test information to normal emissions data because we are concerned a source's most recent normal emissions may not be representative of a source's true average emissions. These emissions could reflect emissions at the upper range of normal operations, or instead, could reflect emissions at the lower end of normal operations. If we were to use only the most recent normal emissions information, the MACT standard setting process may identify best performers as those sources that operate below their normal levels. This may be inappropriate because the floor level may be unachievable even by the best performing sources. We invite comment as to whether floors that are based on normal data are in fact achievable by the best performing sources, and whether there is perhaps a more appropriate method to identify floors that are based on normal data.

3. What Statistical Procedures Did EPA Use To Calculate Floor Levels?

In order to calculate a floor that would be achievable by the average of the best performing sources, we considered the variability in emissions across runs of the test conditions of the best performing sources. We also use statistical procedures to account for long-term variability in particulate matter emissions for sources equipped with fabric filters. We discuss these procedures and the rationale for using them below.

a. Run-to-Run Variability. The MACT floor level is determined by modeling a normally distributed population that has an average and variability that are equal to that of the "average'' of the best performing MACT pool sources. The MACT floor is calculated using a

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[69] EPA did not statistically assess run-to-run variability in the 1999 rule (although we noted that it existed; *see* 64 FR at 52857. The reason is that by using the expanded MACT pool approach to account for variability (using surrogate sources from outside the best performing to assess the best performing sources' variability) we felt we had accounted for all such run-to-run variability. *Id.* Since we are not proposing to expand the MACT pool here, it is necessary to account for run-to-run variability by some other means.

modified prediction limit procedure. The prediction limit is designed to capture 99 out of 100 future three-run averages from the "average'' of the best performing MACT sources.

Specifically, the modified prediction limit for calculating the MACT floor is the sum of the average of the best performing sources and the "pooled'' variability of the best performing sources. The pooled variability term accounts for the expected variability in future measurements due to variations resulting from system operation and measurement activities. The pooled variability term is based in part on the observed variance of individual runs within test conditions from the best performing MACT pool sources. The pooled variability term assumes that variability from the individual best performing sources are independent (not related), and thus are additive (and not averaged). The pooled variability term is a function of the variances of the individual MACT pool sources, the number of MACT pool sources, the desired 99% confidence level, and the number of future test runs for demonstrating compliance (assumed to be 3). *See* USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapter 7, for discussion of the detailed steps and prediction limit formula used to calculate the MACT floors.

b. Particulate Matter Variability for Fabric Filters. Compliance test emissions of particulate matter from sources that are equipped with a fabric filter may not account for long-term variability because it is difficult to maximize emissions during the compliance test.[70] Fabric filters control particulate matter emissions generally to the same concentration irrespective of the particulate matter loading at the inlet to the fabric filter. Because there are no operating parameters that can be readily changed to increase emissions, it is difficult to maximize emissions of particulate matter from a fabric filter during compliance testing.[71]

To address long-term variability in particulate matter emissions for fabric filters we developed a universal variability factor (UVF). The UVF represents the standard deviation of the pooled runs from multiple compliance tests for a source, and is imputed as a function of the source's emission concentration. We use the UVF to account for both long-term and run-to-run variability to calculate the floor using the procedures discussed above in lieu of the pooled variability term for the most-recent test condition run variability.

To develop the data base to calculate the UVF, we considered each best performing source that is equipped with a fabric filter and for which we have two or more compliance tests for particulate matter. We considered all compliance test particulate matter emissions data for these sources, including those test conditions we previously labeled as "IB'' (representing in-between), indicating that emissions levels are lower than for another test condition of the compliance test campaign. We include historical test campaign data where available for incinerators, cement kilns, and lightweight aggregate kilns. Considering historical compliance test data and compliance test data labeled IB is appropriate because any differences in emission levels (over time or among compliance test results for a test campaign) should be indicative of emissions variability given that fabric filters generally produce constant emission concentrations and are difficult to detune to increase emissions for compliance testing. Finally, we combined test conditions for multiple on-site sources where both the combustor and fabric filter have similar design and operating characteristics. Combining the test conditions for such sources as if they represent emissions from a single source better accounts for emissions variability.

To calculate the UVF, we calculated the pooled standard deviation of the runs for each source for which we have data for two or more compliance tests and plotted this standard deviation versus particulate matter emission concentration for all such sources. It is reasonable to aggregate the data for sources across all source categories given that there is no reason to believe that the standard deviation/emissions relationship would vary from source category to source category. We then identified the best-fit curve for the data. The best fit curve is a power function that achieved a R^2 of 0.83, indicating a good power function correlation between standard deviation and emission concentration.[72]

We use the best-fit curve to impute a standard deviation for each best performing source (that is equipped with a fabric filter) as a function of the source's particulate matter emissions. We use the source's average compliance test emissions (*i.e.*, including historical compliance test emissions that we label in the data base as "WC'' and "IB'') to represent average emissions.

F. Why Did EPA Default to the Interim Standards When Establishing Floors?

When we calculate floor levels for several standards for the Phase I sources, the floor levels would be higher than the currently applicable interim standards at §§ 63.1203, 63.1204, and 63.1205. As explained earlier, we conclude that today's proposed floor levels can be no higher than the interim standards because all sources, not just the best performing sources, are achieving the interim standards. The most recent emissions data in our data base are from compliance testing in 2001 and do not represent emissions tests from sources used to demonstrate compliance with the interim standards, thus the data we used to calculate the proposed floor levels generally does not reflect the control upgrades necessary for compliance with the interim standards. The fact that we are "capping'' the floor at the interim standard level does not mean our proposed methodology is less conservative than the methodology used in the 1999 rule. Our calculated floor levels can be higher than the interim standards for several reasons. As a result of our data collection effort, we have compiled more emissions information from some source categories that result in higher calculated floor levels (*e.g.*, dioxin/furans for lightweight aggregate

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[70] We note that semivolatile and low volatile metal emissions, however, can be maximized during compliance testing for sources equipped with a fabric filter. Metals may be spiked in the hazardous waste feed to levels that account for long-term feedrate variability. Although the particulate matter emission concentration would not be expected to increase during a metals compliance test for a source equipped with a fabric filter, the semivolatile and low volatile metals emissions concentrations would increase. This is because the concentration of metals in the emitted particulate matter would increase.

[71] We note that this situation is unique for fabric filters. Sources equipped with other control devices—electrostatic precipitators, ionizing wet scrubbers, and wet scrubbers—can readily change the device's operating conditions (*e.g.*, power input to an electrostatic precipitator; pressure drop across a wet scrubber) during compliance testing to "detune'' collection efficiency and increase emissions. In addition, these other control devices provide "percent reduction'' control of pollutants whereby as inlet loading increases, emission concentrations also increase. Thus, increasing the inlet loading (*e.g.*, by spiking the ash feedrate to an incinerator) even without detuning the control device would also increase emissions of particulate matter for devices other than a fabric filter.

[72] The procedure we use to identify the universal variability factor for particulate matter emissions for sources equipped with fabric filters is discussed in detail in USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapter 5.3. Please note that we consider alternative approaches to identify the universal variability factor as discussed in the technical support document, and request comment on those alternatives.

kilns). Some of the instances where we "capped'' the floor at the interim standard level occurred when the interim standard was a beyond-the-floor standard promulgated in 1999 (*e.g.*, semivolatile metals for lightweight aggregate kilns). Finally, some standards are "capped'' because we used different types of data to calculate the proposed floors (*e.g.*, the 1999 rule generally considered normal mercury data to establish the mercury floor for incinerators, whereas today's proposed approach used compliance test data to calculate the mercury floor).

G. What Other Options Did EPA Consider?

We considered five other alternative approaches to establish the full suite of floor levels for each source category. The first two alternative options use different combinations of the three main methodology options to determine the proposed floors. Note that we also conducted a complete economics and benefits analysis for these first two alternative options. *See* USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume V: Emission Estimates and Engineering Costs,'' March, 2004 for more information. The third option identifies best performing sources by considering emissions of metals and particulate matter simultaneously, instead of pollutant by pollutant. The fourth option is an approach recommended by the Environmental Treatment Council. Finally, the fifth option identifies best performing sources as those sources with the best back-end control efficiencies, as measured by their associated system removal efficiencies. After review of comments we may use one or more of these approaches in toto or part to establish final standards. We explain below how these approaches work and the rationale for considering them.

1. What Is Alternative Option 1, and What Is the Rationale?

Under alternative option 1, we do not use the SRE/Feed methodology to calculate any floors. We use the emissions-based approach to establish all the floors, other than the exceptions that are explained below. We express emission standards for energy recovery units in units of hazardous waste thermal emissions when appropriate. All other emission standards under this approach are expressed as stack gas emission concentrations. The two exceptions under this option uses the technology-based approach for the particulate matter standard (for all source categories) and the total chlorine standard for hydrochloric acid production furnaces, as was done for today's proposed standards.

We evaluated this option because it is simpler and more straightforward to use than the SRE/Feed Approach. The best performing sources simply are those with the lowest emissions in our data base, irrespective of the level of feed control or back-end control a source achieves. The advantages of using the air pollution control technology approach and expressing emission standards using the hazardous waste thermal emissions format for energy recovery units are retained. Although we have doubts that standards based on these limits are achievable even by the best performing sources (as noted earlier) and that this approach could be based on unrepresentatively low hazardous waste feedrates, we invite comment as to whether this approach is appropriate. We present the results of using alternative option 1 to identify floor levels for existing sources in Table 3 below. *See* U.S. EPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapters 16, 17, and 18 for documentation of the floor levels.

TABLE 3.—FLOOR LEVELS FOR EXISTING SOURCES UNDER ALTERNATIVE OPTION 1

	Incinerators	Cement kilns	Lightweight aggregate kilns	Solid fuel-fired boilers [1]	Liquid fuel-fired boilers [1]	Hydrochloric acid production furnaces [1]
Dioxin/Furans (ng TEQ/dscm).	0.28 for dry APCD and WHB sources,[6] 0.20 or 0.40 + 400°F at APCD inlet for others.[7]	0.20 or 0.40 + 400°F at APCD inlet.[7]	0.20 or 400°F at kiln outlet.[7]	CO or THC standard as a surrogate.	3.0 or 400°F at APCD inlet for dry APCD sources; CO or THC standard as surrogate for others.	CO or THC standard as a surrogate.
Mercury	130 µg/dscm [7]	31 µg/dscm [2]	19 µg/dscm [2]	10 µg/dscm	3.7E–6 lb/MMBtu [2, 5].	Total chlorine standard as surrogate.
Particulate Matter	0.015 gr/dscf [7]	0.028 gr/dscf	0.025 gr/dscf [7]	0.063 gr/dscf	0.032 gr/dscf	Total chlorine standard as surrogate.
Semivolatile Metals (lead +cadmium).	19 µg/dscm	1.3E–4 lb/MMBtu [5].	3.1E–4 lb/MMBtu [5] and 250 µg/dscm.[3]	170 µg/dscm	1.1E–5 lb/MMBtu [2, 5].	Total chlorine standards as surrogate.
Low Volatile Metals (arsenic + beryllium + chromium).	14 µg/dscm	1.1E–5 lbs/MMBtu [5].	9.5E–5 lb/MMBtu [5] and 100 µg/dscm.[3]	210 µg/dscm	7.7E–5 lb/MMBtu [4, 5].	Total chlorine standard as surrogate.
Total Chlorine (hydrogen chloride + chlorine gas).	0.93 ppmv	41 ppmv	600 ppmv [7]	440 ppmv	5.7E–3 lb/MMBtu [5].	14 ppmv or 99.9927% system removal efficiency.

Notes:

[1] Particulate matter, semivolatile metal, low volatile metal, and total chlorine standards apply to major sources only for solid fuel-fired boilers, liquid fuel-fired boilers, and hydrochloric acid production furnaces.

[2] Standard is based on normal emissions data.

[3] Sources must comply with both the thermal emissions and emission concentration standards.

[4] Low volatile metal standard for liquid fuel-fired boilers is for chromium only. Arsenic and beryllium are not included in the low volatile metal total for liquid fuel-fired boilers.

[5] Standards are expressed as mass of pollutant contributed by hazardous waste per million Btu contributed by the hazardous waste.

[6] APCD denotes "air pollution control device,'' WHB denotes "waste heat boiler.''

[7] Floor level represents the “capped interim standard level,” which means the floor level determined by the associated methodology was less stringent than the interim standard level.

2. What Is Alternative Option 2, and What Is the Rationale?

Under alternative option 2, we use the emissions-based approach to establish all floors and there are no exceptions. All floor levels are expressed in units of stack gas concentrations (we do not express any floors for energy recovery units in terms of thermal emissions). The best performing sources for all floors are those with the lowest emissions, on a stack gas concentration basis.

We are not proposing this alternative option because it has the disadvantages that the more complicated provisions of Option 1 (and to some extent Option 2) address: (1) By not using the SRE/Feed Approach for metals and total chlorine, it does not ensure that sources could use either feedrate control or back-end control to achieve the floor; (2) the approach may be inappropriately biased against sources that burn hazardous waste fuel at high firing rates because it does not express the standards in units of hazardous waste thermal emissions; (3) it inappropriately considers feed control for particulate matter and for hydrochloric acid production furnaces by not using the Air Pollution Control Device Approach for those floors; and (4) it may not appropriately estimate the performance of the average of the 12 percent best performing sources given that those best performers may have low emissions in part because their raw material and/or fossil fuels contained low levels of HAP during the emissions test (and because we do not believe feed control of HAP in raw material and fossil fuel should be assessed as a MACT floor control because it could result in floor levels that are not replicable by the best performing sources, nor duplicable by other sources).

We invite comment as to whether this alternative approach is appropriate, noting the doubts we have voiced above. We present the results of using this alternative option 2 to identify floor levels for existing sources in Table 4 below. *See* USEPA “Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,’’ March 2004, Chapter 16, for more information.

TABLE 4.—FLOOR LEVELS FOR EXISTING SOURCES UNDER ALTERNATIVE OPTION 2

	Incinerators	Cement kilns	Lightweight aggregate kilns	Solid fuel-fired boilers [1]	Liquid fuel-fired boilers [1]	Hydrochloric acid production furnaces [1]
Dioxin/Furans (ng TEQ/dscm).	0.28 for dry APCD and WHB sources; [5] 0.20 or 0.40 + 400°F at APCD inlet for others. [6]	0.20 or 0.40 + 400°F at APCD inlet. [6]	0.20 or 400°F at kiln outlet. [6]	CO or THC standard as a surrogate.	3.0 or 400°F at APCD inlet for dry APCD sources; CO or THC standard as surrogate for others.	CO or THC standard as a surrogate.
Mercury	130 µg/dscm [6]	31 µg/dscm [2]	19 µg/dscm [2]	10 µg/dscm	0.47 µg/dscm [2]	Total chlorine standard as surrogate.
Particulate Matter	0.0040 gr/dscf	0.016 gr/dscf	0.025 gr/dscf [6]	0.065 gr/dscf	0.0028 gr/dscf	Total chlorine standard as surrogate.
Semivolatile Metals (lead + cadmium).	19 µg/dscm	68 µg/dscm	130 µg/dscm	170 µg/dscm	8.7 µg/dscm [2]	Total chlorine standard as surrogate.
Low Volatile Metals (arsenic + beryllium + chromium).	14 µg/dscm	8.9 µg/dscm	82 µg/dscm	210 µg/dscm	28 µg/dscm [4]	Total chlorine standards as surrogate.
Total Chlorine (hydrogen chloride + chlorine gas).	0.93 ppmv	41 ppmv	600 ppmv [6]	440 ppmv	2.4 ppmv	2.0 ppmv.

Notes:

[1] Particulate matter, semivolatile metal, low volatile metal, and total chlorine standards apply to major sources only for solid fuel-fired boilers, liquid fuel-fired boilers, and hydrochloric acid production furnaces.

[2] Standard is based on normal emissions data.

[3] Sources must comply with both the thermal emissions and emission concentration standards.

[4] Low volatile metal standard for liquid fuel-fired boilers is for chromium only. Arsenic and beryllium are not included in the low volatile metal total for liquid fuel-fired boilers.

[5] APCD denotes “air pollution control device”, WHB denotes “waste heat boiler’.

[6] Floor level represents the “capped interim standard level”, which means the floor level determined by the associated methodology was less stringent than the interim standard level.

3. What Is Alternative Option 3, and What Is the Rationale?

Under alternative option 3, we evaluated an approach to identify the best performing sources for particulate matter, semivolatile metals, and low volatile metals that considers how well a source is controlling these pollutants simultaneously. Simultaneous control of these pollutants is an appropriate consideration because these pollutants are controlled by the same emission control device, the particulate matter control device (*e.g.,* a wet scrubber, electrostatic precipitator, or fabric filter). We call this alternative approach the Simultaneous Achievability for Particulates (SAP) Approach. *See* USEPA, “Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,’’ March 2004, Chapters 10 and 19.

We evaluated semivolatile metal and low volatile metal emissions for energy recovery sources—cement kilns, lightweight aggregate kilns, and liquid fuel-fired boiler—under two emissions-based SAP alternatives: hazardous waste thermal emissions, and stack gas concentrations. The hazardous waste thermal emissions option assesses semivolatile metal and low volatile metal thermal emissions for energy recovery units, while assessing particulate matter using the emissions-based stack gas concentration approach. The emissions-based stack-gas concentration approach assesses stack gas concentrations (as opposed to thermal emissions) for all HAP. Note that we did not evaluate hydrochloric acid production furnaces under this SAP approach because we propose to use the total chlorine standard as a surrogate to control emissions of particulate matter and metals for these sources.

Under the SAP approach, we rank emissions for each pollutant across the sources for which we have emissions data for that pollutant. For ranking, we use the upper 99% confidence interval for the average of the runs of the test condition for a source. For example, if we have semivolatile metal emissions data for 15 sources, the lowest semivolatile metal emissions level is ranked one and the highest is ranked 15. To identify the best performing sources for all three pollutants simultaneously, we calculate an aggregate rank score for each source. For example, if source A has a rank of 5 for particulate matter, a rank of 10 for semivolatile metals, a rank of 15 for low volatile metals, the aggregate rank score for that source is 10, the average rank across the pollutants. If we do not have emissions data for a pollutant for a source, there is no rank score for that pollutant, and that pollutant is not considered in the aggregate rank score for the source.

To identify the best performing sources in the aggregate, we rank the aggregate rank scores for the sources from lowest to highest. If we have emissions data for all three pollutants for all sources, the 5 (or 12% if we have data for more than 30 sources) sources with the lowest aggregate rank scores are the best performing sources. If we have incomplete data sets for some sources for a source category, the best performing sources for a pollutant (*i.e.,* particulate matter, semivolatile metals, or low volatile metals) are the sources with the lowest aggregate rank scores and for which we have emissions data.

We present the alternative MACT floors for existing sources under the SAP approach in Table 5 below.

Table 5.—Floor Levels for Existing Sources Under the SAP Approach

Source category	Emissions-based approach	Particulate matter floor (gr/dscf)	Semivolatile metals floor	Low volatile metals floor
Incinerators	Stack Gas Conc.	0.0040	53 µg/dscm	50 µg/dscm.
Cement Kilns	Thermal Emissions	0.027	190 lb/trillion Btu	20 lb/trillion Btu.
	Stack Gas Con.	0.015	103 µg/dscm	14 µg/dscm.
Lightweight Aggregate Kilns	Thermal Emissions	0.019	300 lb/trillion Btu	95 lb/trillion Btu.
	Stack Gas Conc.	0.019	120 µg/dscm	89 µg/dscm.
Solid Fuel-Fired Boilers	Stack Gas Conc.	0.090	180 µg/dscm	230 µg/dscm.
Liquid Fuel-Fired Boilers	Thermal Emissions	0.0039	81 lb/trillion Btu	180 lb/trillion Btu.
	Stack Gas Conc.	0.0039	26 µg/dscm	210 µg/dscm.

We request comment on this alternative approach for identifying MACT floors. If we use this approach in the final rule to identify MACT floors, we would promulgate a beyond-the-floor standard for particulate matter of 0.030 gr/dscf for existing solid fuel-fired boilers for the same reasons we are proposing today a beyond-the-floor standard. *See* Part Two, Section X.C for a discussion of today's proposed beyond-the-floor particulate matter standard for solid fuel-fired boilers.

See USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapters 10 and 19, for a more detailed explanation of this SAP analysis.

4. What Is Alternative Option 4, and What Is the Rationale?

The Environmental Technology Council (ETC) recommends an approach to calculate floor levels for metals and chlorine that uses a low feedrate screen and addresses emissions variability differently than the options we evaluated.[73] We may use this approach in total or in part to support a final rule, and therefore request comment on the approach.

Under ETC's approach, test conditions are screened from further consideration if metals or chlorine were not fed at levels that challenge the emissions control system.[74] Feedrates of metals and chlorine in hazardous waste are normalized to account for size of the combustor by converting feedrates to maximum theoretical emissions concentrations. A low maximum theoretical emissions concentration filter is used to screen out emissions from low feed test conditions, where the filter is the lower 99% confidence limit of the mean of the maximum theoretical emissions concentrations for all test conditions for all sources within a source category.

ETC's approach also excludes specialty units, defined as sources that burn munitions and radiological waste (*i.e.,* Department of Defense and Department of Energy sources). ETC believes that these sources burn wastes with atypical concentrations of ash and metals that may inappropriately skew the calculation of floor levels. Under this approach, we would either subcategorize and issue separate emission standards for these specialty units, or omit these speciality units from the MACT analysis and require the specialty units to comply with the floor levels that are determined from emissions of the non-specialty units.

After applying the low maximum theoretical emissions concentration filter and excluding specialty units, this approach identifies the best performing sources by ranking emissions from

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[73] Update on MACT Floor Evaluations Revised Data Base, Environmental Technology Council, February 2003.

[74] This approach therefore identifies a *de minimis* feed control level for each source category and does not evaluate emissions from these *de minimus* feeders in the MACT analysis because these *de minimis* feed control levels may not be feasible for other sources to duplicate. The screen is performed individually by pollutant so that if semivolatile metals were fed at rates that challenged the emissions control system but low volatile metals were not, only the low volatile metal emissions data for that test condition would be screened from further analysis.

lowest to highest.[75] Run variability is not considered at this point. For incinerators, cement kilns, and lightweight aggregate kilns where we may have historical compliance test emissions from several test campaigns for a source, test conditions from the campaign with the lowest compliance test emissions are used to identify the best performers.

The average of the emissions from the best performing sources are used to calculate the floor, and an emissions variability factor is added. For incinerators, cement kilns, and lightweight aggregate kilns where we may have historical compliance test emissions data from several test campaigns for a source, three approaches are considered to select representative emissions for each best performing source: (1) The highest compliance test emissions from any test campaign; (2) the average of the highest compliance test emissions from all test campaigns; and (3) the highest emissions during the most recent compliance test campaign. By identifying the best performers based on compliance test emissions from the test campaign with the lowest emissions and calculating the floor using compliance test emissions under these alternative approaches, emissions variability is addressed in part.[76]

Emissions variability is accounted for by adding an emissions variability factor to the average emissions for the best performing sources. The variability factor is a measure of the average run-to-run variability for the test conditions for the best performing sources. The variability factor is determined as the upper confidence limit (calculated at the 99% confidence interval) around the mean of the runs for each test condition for each best performer. (For sources with more than one compliance test condition, the variability factor for each source is first determined as the average of the variabilities associated with each compliance test condition).[77] The upper confidence limits are averaged across the best performing sources, and the average confidence limit is added to the average emissions from the best performers to identify the floor.

We invite comment as to whether this alternative approach is appropriate. We calculated alternative floor levels for new and existing sources with minor adjustments.[78] We present the results of applying that approach in Table 6 below. *See* USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapters 12 and 21, for more information on how we applied this approach to our data base.

TABLE 6.—FLOOR LEVELS FOR EXISTING SOURCES UNDER THE MODIFIED ETC APPROACH

	Data base	Incinerators		Cement kilns	Lightweight aggregate kilns	Solid fuel-fired boilers	Liquid fuel-fired boilers
		All	Excluding speciality units				
Mercury (µg/dscm)	Avg of historical CT data.	130 (308) [1]	130 (308) [1]	48	37	14	4.8
	Most recent CT data ...	130 (308) [1]	130 (308) [1]	40	31		
	Highest of historical CT data.	130 (308) [1]	130 (308) [1]	68	45		
Particulate Matter (gr/dscf).	Avg of historical CT data.	0.0043	0.0043	0.025	0.017	0.11	0.0090
	Most recent CT data ...	0.0043	0.0043	0.025	0.017		
	Highest of historical CT data.	0.0043	0.0043	0.030 (0.032) [1]	0.017		
Semivolatile Metals (µg/dscm).	Avg of historical CT data.	53	32	230	250 (901) [1]	230	8.2
	Most recent CT data ...	53	32	160	250 (746) [1]		
	Highest of historical CT data.	53	32	300	250 (1208) [1]		
Low Volatile Metals (µg/dscm).	Avg of historical CT data.	39	46	51	110 (119) [1]	320	52
	Most recent CT data ...	39	36	42	110 (129) [1]		
	Highest of historical CT data.	39	56	56 [1]	110 (133) [1]		
Total Chlorine (ppmv)	Avg of historical CT data.	1.4	1.8	85	600 (1655) [1]	410	3.2
	Most recent CT data ...	1.4	1.8	86	600 (1811) [1]		
	Highest of historical CT data.	1.4	1.8	89	600 (1823) [1]		

Notes: "CT" means Compliance Test.

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[75] This low feed screen is not applied to cement kilns and lightweight aggregate kilns for the particulate matter standard because ash feedrate is not considered to be a dominant factor that influences particulate matter emissions (rather, particulate matter emissions are more a function of the back-end control device efficiency).

[76] This approach for partially accounting for emissions variability is effective only for those incinerators, cement kilns, and lightweight aggregate kilns for which we have emissions data for more than one test campaign.

[77] We do not use this step in our statistical analysis because we identify one test condition only as being representative of the emissions for each source. Alternatively, ETC's approach includes an option where the average of the historical compliance test conditions is considered for Phase I sources. Under this option, ETC's approach considers the average run-to-run variability for those historical compliance tests.

[78] Note that we modified part of ETC's suggested methodology in some instances, which has resulted in our calculated floor levels to differ from ETC's calculated floor levels. These modifications are discussed in USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapter 12.

[1] Floor would be capped by the Interim Standards. Number in parentheses represents the calculated floor level, the number preceding is the "capped" interim standard level.

5. What Is Alternative Option 5, and What Is the Rationale?

Alternative Option 5 would use system removal efficiency (SRE) to identify the best performing sources for the mercury, semivolatile metals, low volatile metals, and total chlorine floor levels. This is similar to the approach we propose to establish the total chlorine standard for hydrochloric acid production furnaces. *See* discussion in Part Two, Section VI.A.2.b.

Floor levels would be expressed as an SRE or an emission concentration where the emission concentration is based on the emissions achieved by the best performing SRE sources.[79] A source could elect to comply with either floor. An emissions floor as an alternative to the SRE floor is appropriate because a source may be achieving emission levels lower than those achieved by the best performing SRE sources even though it may not be achieving MACT floor SRE. For example, a source may be achieving low emissions without achieving MACT SRE by using superior feedrate control.

The SRE floor is an SRE that the average of the best performing SRE sources could be expected to achieve in 99 of 100 future tests when operating under the conditions used to establish the SRE.[80] The emissions floor is a stack gas concentration, or thermal emission concentration for source categories that burn hazardous waste fuels, that the average of the best performing SRE sources could be expected to achieve in 99 of 100 future tests when operating under the conditions used to establish the SRE and emission level.

We note that this approach is not applicable for situations where sources in a source category do not use back-end control to control metals or total chlorine. For example, cement kilns do not use back-end control to control mercury or total chlorine.[81]

This approach is also not applicable for situations where our data base is comprised of normal emissions data. As discussed previously, SREs calculated from normal test conditions may be unreliable because a small error in the feedrate calculation at low feedrates can have a substantial impact on the calculated SRE.

In situations where this SRE-based approach is not applicable, we would use an alternative approach to identify MACT floor, such as the Emissions approach.

Floor levels for existing sources under this approach are presented in Table 7.

We also investigated a variation of this approach where sources with atypically high feedrates for metals or chlorine are excluded from the calculation of the alternative emission level. This variation may be appropriate to ensure that sources with high feedrates do not drive the alternative emission concentration-based floor inappropriately high even though the source may be a best performing SRE source. Under this variation, note that sources with high feedrates are used, however, to identify the best performing SRE sources and MACT SRE. This is because sources with the highest feedrates may employ the best performing back-end control systems to meet current standards or otherwise control emissions. As a measure of atypically high feedrates, we use the 99th upper percentile feedrate around the mean of feedrate data in the data set available for the analysis. To ensure that we continue to use 5 sources or 12 percent of sources to calculate the emission concentration-based floor under this variation, we replace a best performing SRE source that is screened out of the concentration-based floor analysis because of high feedrates with the source with the next best SRE.[82]

Floor levels for existing sources under this feedrate-screened variation are presented in Table 8.

We invite comment on these alternative floor approaches. For more information on how the approach would work, *see* USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapters 13 and 22.

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[79] We note that an SRE option, in some form, could be added to any of the emission-based approaches previously discussed.

[80] Note that we only considered SREs associated with emission values designated as compliance test (CT) in the database. *See* USEPA "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapters 11 and 20, for more information.

[81] Although the alkalinity in cement kiln raw materials helps control total chlorine emissions, we are concerned that the system removal efficiencies achieved may not be readily reproducible.

[82] Since sources with atypically high feedrates may still have low emissions, sources with hazardous waste feed control levels above the threshold are flagged, but not immediately removed from the data set. Sources' SREs are ranked from best to worst, initially choosing the best ranked 5 or 12% of sources as the interim MACT pool. The remaining sources are temporarily set aside, and the sources comprising the interim MACT pool are ranked again from lowest to highest emissions. Sources from the interim MACT pool that have been flagged due to having feedrates above the upper 99th percentile are systematically (from highest to lowest emissions) removed from the MACT pool and replaced with sources with the next highest ranked SREs if the emissions from the next best source initially excluded from the interim MACT pool has lower emissions. The sources comprising the revised interim MACT pool now become the final MACT pool. Emissions from those sources are again used to calculate the MACT floor, with the resulting MACT floor again expressed as an emission standard.

TABLE 7.—FLOOR LEVELS FOR EXISTING SOURCES UNDER ALTERNATIVE OPTION 5

Source category	Mercury			Semivolatile metals			Low volatile metals			Total chlorine		
	SRE[1]	Emissions		SRE[1]	Emission concentration		SRE[1]	Emission concentration		SRE[1]	Emission concentration	
		Stack gas[2]	Thermal[3]		Stack gas[2]	Thermal[3]		Stack gas[2]	Thermal[3]		Stack gas[2]	Thermal[3]
Incinerators	27	20,000[9]	n/a[8]	99.89	74	n/a[8]	99.969	33	n/a[8]	99.990	3.1	n/a[8]
Cement Kilns	n/a[4,5]			99.966	71	140	99.989	11	22	n/a[4,5]		
Lightweight Aggregate Kilns	n/a[4,6]			99.78	330	310	99.89	100	95	n/a[4,6]		
Solid Fuel-Fired Boilers	11		n/a[8]	99.78	180	n/a[8]	97.9	230	n/a[8]	n/a[4,5]		
Liquid Fuel-Fired Boilers	n/a[4]			n/a[4]			90.4[7]	27[7]	45[7]	99.70	25	55

[1] SRE is system removal efficiency expressed as a percent.
[2] Stack gas concentration is expressed in µg/dscm for all except total chlorine, which is expressed as ppmv.
[3] Thermal emission is expressed in lb/trillion Btu, except total chlorine which is expressed in lb/billion Btu.
[4] Unable to determine SRE due to normal feedrate data.
[5] No SRE due to no reliable back-end control.
[6] Only one source has back-end control.
[7] LVM Standards for liquid fuel-fired boilers are for Chromium, only.
[8] Thermal emissions not appropriate for source categories with sources that do not burn hazardous waste fuels.
[9] We believe this methodology yields inappropriate MACT mercury floors for incinerators because we have only 11 compliance test conditions, and the best performers spiked uncharacteristically high levels of mercury during their compliance test.

TABLE 8.—FLOOR LEVELS FOR EXISTING SOURCES UNDER ALTERNATIVE OPTION 5 WITH HIGH FEEDRATE SCREEN

Source category	Mercury			Semivolatile metals			Low volatile metals			Total chlorine		
	SRE[1]	Emissions		SRE[1]	Emission concentration		SRE[1]	Emission concentration		SRE[1]	Emission concentration	
		Stack gas[2]	Thermal[3]		Stack gas[2]	Thermal[3]		Stack gas[2]	Thermal[3]		Stack gas[2]	Thermal[3]
Incinerators	27	7,500[9]	n/a[8]	99.89	64	n/a[8]	99.969	29	n/a[8]	99.990	1.3	n/a[8]
Cement Kilns	n/a[4,5]			99.966	65	130	99.989	11	18	n/a[4,5]		
Lightweight Aggregate Kilns	n/a[4,6]			99.78	330	310	99.89	100	95	n/a[4,6]		
Solid Fuel-Fired Boilers	11		n/a[8]	99.78	180	n/a[8]	97.9	230	n/a[8]	n/a[4,5]		
Liquid Fuel-Fired Boilers	n/a[4]			n/a[4]			90.4[7]	27[7]	110[7]	99.70	23	55

[1] SRE is system removal efficiency expressed as a percent.
[2] Stack gas concentration is expressed in µg/dscm for all except total chlorine, which is expressed as ppmv.
[3] Thermal emission is expressed in lb/trillion Btu, except total chlorine which is expressed in lb/billion Btu.
[4] Unable to determine SRE due to normal feedrate data.
[5] No SRE due to no reliable back-end control.
[6] Only one source has back-end control.
[7] LVM Standards for liquid fuel-fired boilers are for Chromium, only.
[8] Thermal emissions not appropriate for source categories with sources that do not burn hazardous waste fuels.
[9] We believe this methodology yields inappropriate MACT mercury floors for incinerators because we have only 11 compliance test conditions, and the best performers spiked uncharacteristically high levels of mercury during the their compliance test.

VII. How Did EPA Determine the Proposed Emission Standards for Hazardous Waste Burning Incinerators?

The proposed standards for existing and new incinerators that burn hazardous waste are summarized in the table below. See proposed § 63.1219.

PROPOSED STANDARDS FOR EXISTING AND NEW INCINERATORS

Hazardous air pollutant or surrogate	Emission standard [1]	
	Existing sources	New sources
Dioxin and furan—sources equipped with waste heat boilers or dry air pollution control system [2].	0.28 ng TEQ/dscm	0.11 ng TEQ/dscm.
Dioxin and furan—sources not equipped with waste heat boilers or dry air pollution control system [2].	0.2 ng TEQ/dscm; or 0.40 ng TEQ/dscm and temperature at inlet to the initial particulate matter control device ≤400°F.	0.20 ng TEQ/dscm.
Mercury	130 µg/dscm	8.0 µg/dscm.
Particulate matter	34 mg/dscm (0.015 gr/dscf)	1.6 mg/dscm (0.00070 gr/dscf).
Semivolatile metals	59 µg/dscm	6.5 µg/dscm.
Low volatile metals	84 µg/dscm	8.9 µg/dscm.
Hydrogen chloride and chlorine gas [3]	1.5 ppmv or the alternative emission limits under § 63.1215.	0.18 ppmv or the alternative emission limits under § 63.1215.
Hydrocarbons [4,5]	10 ppmv (or 100 ppmv carbon monoxide)	10 ppmv (or 100 ppmv carbon monoxide).
Destruction and removal efficiency	For existing and new sources, 99.99% for each principal organic hazardous constituent (POHC). For sources burning hazardous wastes F020, F021, F022, F023, F026, or F027, however, 99.9999% for each POHC.	

[1] All emission standards are corrected to 7% oxygen dry basis.

[2] A wet air pollution system followed by a dry air pollution control system is not considered to be a dry air pollution control system for purposes of this standard. A dry air pollution systems followed a wet air pollution control system is considered to be a dry air pollution control system for purposes of this standard.

[3] Combined standard, reported as a chloride ($Cl^{(-)}$) equivalent.

[4] Sources that elect to comply with the carbon monoxide standard must demonstrate compliance with the hydrocarbon standard during the comprehensive performance test.

[5] Hourly rolling average. Hydrocarbons reported as propane.

A. What Are the Proposed Standards for Dioxin and Furan?

The proposed standards for dioxin/furan for sources equipped with dry air pollution control devices and/or waste heat boilers are 0.28 ng TEQ/dscm for existing sources and 0.11 ng TEQ/dscm for new sources. For incinerators using either wet air pollution control or no air pollution control devices, the proposed standards for dioxin/furan are 0.20 ng TEQ/dscm or 0.40 ng TEQ/dscm while limiting the temperature at the inlet to the particulate matter control device to less than 400 °F for existing sources and 0.20 ng TEQ/dscm for new sources.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Dioxin and furan emissions for existing incinerators are currently limited by § 63.1203(a)(1) to 0.20 ng TEQ/dscm; or 0.40 ng TEQ/dscm provided that the combustion gas temperature at the inlet to the initial particulate matter control device is limited to 400 °F or less. (For purposes of compliance, operation of a wet air pollution control system is presumed to meet the 400 °F or lower requirement.) This standard was promulgated in the Interim Standards Rule (See 67 FR at 6796, February 13, 2002).

Since promulgation of the September 1999 final rule, we have obtained additional dioxin/furan emissions data. We now have dioxin/furan emissions data for over 55 sources. The emissions in our data base range from less than 0.001 to 34 ng TEQ/dscm.

As discussed in Part Two, Section II, we assessed whether incinerators equipped with dry air pollution control devices and/or waste heat boilers have statistically different emissions than sources with either wet air pollution control or no air pollution control equipment.[83] Our statistical analysis indicates dioxin/furan emissions between these types of incinerators are significantly different. (As we explained there, these differences relate to differences in dioxin/furan formation mechanisms, not pollution control device efficiency.) Therefore, we believe subcategorization is warranted for this emission standard and we are proposing separate floor levels.

To identify the floor level for incinerators equipped with dry air pollution control equipment and/or waste heat boilers, we evaluated the compliance test emissions data associated with the most recent test campaign using the Emissions Approach described in Part Two, Section VI. The calculated floor is 0.28 ng TEQ/dscm, which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. The calculated floor level of 0.28 ng TEQ/dscm is based on five best performing sources that achieved this floor level either by the use of temperature control at the inlet to dry air pollution control device and good combustion or by the use of activated carbon injection. The single best performer is equipped with a dry air pollution control system and a waste heat boiler, and uses activated carbon injection, good combustion, and temperature control to control dioxin/furan emissions. The remaining four

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[83] A source with a wet air pollution system followed by a dry air pollution control system is not considered to be a dry air pollution control system for purposes of this standard, while a source with a dry air pollution system followed a wet air pollution control system is considered to be a dry air pollution control system. In addition, we note that a spray dryer is not considered to be a wet air pollution control system for purposes of subcategorization.

best performers are equipped with dry air pollution systems but do not have waste heat recovery boilers. Two of these sources use activated carbon, good combustion, and temperature control to control dioxin/furan emissions.[84] The other two without waste heat recovery boilers use a combination of good combustion and temperature control to control emissions.

We then judged the relative stringency of the calculated floor level to the interim standard to determine if the proposed floor level needed to be "capped'' by the current interim standard to ensure the proposed floor level is not less stringent than an existing federal emission standard. A comparison of the calculated floor level of 0.28 ng TEQ/dscm to the interim standard—0.20 ng TEQ/dscm or 0.40 ng TEQ/dscm provided that the combustion gas temperature at the inlet to the initial particulate matter control device is limited to less than 400 °F—indicates that a floor level of 0.28 ng TEQ/dscm is more stringent than the current interim standard. This judgment is based on our belief that the majority of these incinerators are currently complying with the 0.40 ng TEQ/dscm and temperature limitation portion of the interim standard.[85] We estimate that this emission level is being achieved by 71% of sources and would reduce dioxin/furan emissions by 0.28 grams per year.

We also considered whether to further subcategorize based on whether the incinerator is equipped with a waste heat recovery boiler or dry air pollution control device. Our analysis determined that the dioxin/furan emissions from incinerators with waste heat recovery boilers are not statistically different from those equipped with dry air pollution control systems. We propose, therefore, that further subcategorization is not necessary given that incinerators using either waste heat recovery boilers or dry air pollution control systems can readily achieve the calculated floor level using control technologies demonstrated by the best performing sources.

For sources with either wet air pollution control systems or no air pollution control equipment, but are not equipped with a heat recovery boiler, we contemplated identifying an emission limit but instead rely on surrogates for control of organic HAP, namely good combustion practices, to be demonstrated by complying with the carbon monoxide or hydrocarbon emissions standard and compliance with the destruction and removal efficiency standard.[86] We believe that it would be inappropriate to establish a numerical dioxin/furan floor level for sources with wet or no air pollution control systems because the floor emission level would not be replicable by the best performing sources nor duplicable by other sources. Dioxin/furan formation mechanisms are complex. Sources with wet or no air pollution control devices may have difficulty complying with a numerical dioxin/furan limit that is based on the lowest emitting dioxin/furan sources within this subcategory because there is not a demonstrated floor control technology that these sources can use to "dial in'' to achieve a given emission level. Moreover, dioxin/furan emissions could result from operation under poor combustion conditions and formation on particulate matter surfaces in duct work, on heat recovery boiler tubes, and on particulates entrained in the combustion gas stream. As a result, we would instead identify floor control for these sources to be operating under good combustion practices by complying with the destruction and removal efficiency and carbon monoxide/hydrocarbon standards.

Though MACT floor for these units is operating under good combustion practices, there is a regulatory limit which is relevant in identifying the floor level. Hazardous waste incinerators are complying with an interim standard for dioxin/furan—an emission limit of 0.20 ng TEQ/dscm or, alternatively, 0.40 ng TEQ/dscm provided that the combustion gas temperature at the inlet to the initial particulate matter control device is limited to 400 °F or less—that fixes a level of performance for the source category. Given that all sources are meeting this interim standard and that the interim standard is judged as more stringent than a MACT floor of "good combustion practices,'' the dioxin/furan floor level can be no less stringent than the current regulatory limit.[87] Therefore, the proposed floor level for incinerators with either wet air pollution control systems or no air pollution control equipment that are not equipped with a heat recovery boiler is either 0.20 ng TEQ/dscm or 0.40 ng TEQ/dscm provided that the combustion gas temperature at the inlet to the initial particulate matter control device is limited to 400 °F or less. This emission level is currently being achieved by all sources because the interim standard is an enforceable standard currently in effect.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We evaluated beyond-the-floor standards based on the use of control technology which removes dioxin/furan, namely use of an activated carbon injection system or a carbon bed system as beyond-the-floor control for further reduction of dioxin/furan emissions. Activated carbon is currently used at three incinerators to control dioxin/furan. We evaluated a beyond-the-floor level of 0.10 ng TEQ/dscm for all incinerators, which represents a 65–75% reduction in dioxin/furan emissions from the floor level. We selected this level because it represents a level that is considered routinely achievable with activated carbon.[88]

For incinerators equipped with dry air pollution control equipment and/or waste heat boilers, the national incremental annualized compliance cost for these sources to meet the beyond-the-floor level rather than comply with the floor controls would be approximately $2.2 million and would provide an incremental reduction in dioxin/furan emissions beyond the floor level controls of 0.5 grams TEQ per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the impacts between activated carbon injection and carbon beds and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of hazardous waste generated by 1,500 tons per year in addition to using an additional 3 million kW-hours per year beyond the requirements to achieve the floor level. The costs associated with these hazardous waste treatment/disposal and energy impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $4.4 million per

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[84] One source uses an activated carbon injection system, and the other uses a carbon bed.

[85] We request comment, however, on whether this judgment is correct. If an incinerator is operated with a dry air pollution control device inlet temperature greater than 400 °F, then it may be appropriate to instead require sources to comply with the more stringent of the two standards, that is, 0.20 ng TEQ/dscm.

[86] Use of "good combustion practices'' does not necessarily preclude significant dioxin/furan formation. Our data base suggests, however, that incinerators using wet air pollution control systems achieve dioxin/furan emissions less than 0.40 ng TEQ/dscm. *See* USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapter 2.

[87] Even though all sources have recently demonstrated compliance with the interim standards, the dioxin/furan data in our data base preceded the compliance demonstration.

[88] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume V: Emissions Estimates and Engineering Costs,'' March 2004, Chapter 4.3.

additional gram of dioxin/furan removed, we are not proposing a beyond-the-floor standard based on activated carbon injection and carbon bed systems.

For sources with either wet air pollution control systems or no air pollution control equipment that are not equipped with a heat recovery boiler, the national incremental annualized compliance cost for these sources to meet the beyond-the-floor level would be approximately $3.9 million and would provide an incremental reduction in dioxin/furan emissions beyond the MACT floor controls of 0.35 grams TEQ per year. Nonair quality health and environmental impacts and energy effects were also evaluated. We estimate that this beyond-the-floor option would increase the amount of hazardous waste generated by 700 tons per year. The option would also require sources to use an additional 2 million kW-hours per year and 70 million gallons of water beyond the requirements to achieve the floor level. Therefore, based on these factors and costs of approximately $11 million per additional gram of dioxin/furan removed, we are not proposing a beyond-the-floor standard based on activated carbon injection and carbon bed systems.

3. What Is the Rationale for the MACT Floor for New Sources?

Dioxin and furan emissions for new incinerators are currently limited by § 63.1203(b)(1) to 0.20 ng TEQ/dscm. This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796, February 13, 2002).

For incinerators equipped with dry air pollution control equipment and/or waste heat boilers, the calculated floor level is 0.11 ng TEQ/dscm, which considers variability. This is an emission level that the single best performing source identified using the Emissions Approach could be expected to achieve in 99 out of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained.

For sources with either wet air pollution control systems or no air pollution control equipment that are not equipped with a heat recovery boiler, as previously discussed for existing sources, we believe that it would be inappropriate to establish numerical dioxin/furan emission for these sources. We would instead identify floor control for these sources to be operating under good combustion practices by complying with the destruction and removal efficiency and carbon monoxide/hydrocarbon standards.

Though MACT floor for these units is operating under good combustion practices, there is a regulatory limit which is relevant in identifying the floor level. New hazardous waste incinerators are subject to an interim emission standard for dioxin/furan of 0.20 ng TEQ/dscm. Given that the interim standard is judged more stringent than a MACT floor of "good combustion practices," the dioxin/furan floor level can be no less stringent than the current regulatory limit. Therefore, the proposed floor level for incinerators with either wet air pollution control systems or no air pollution control equipment that are not equipped with a heat recovery boiler is 0.20 ng TEQ/dscm. Therefore, we are proposing the current interim standard of 0.20 ng TEQ/dscm as the floor level for new sources.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated beyond-the-floor standards based on the use of a carbon bed system to achieve additional removal of dioxin/furan. Given the relatively low dioxin/furan levels at the floor, we made a conservative assumption that the use of a carbon bed will provide an additional 50% dioxin/furan control. We applied this removal efficiency to the dioxin/furan floor levels to identify the beyond-the-floor levels.

For a new incinerator with average gas flowrate equipped with dry air pollution control equipment and/or a waste heat boiler, the national incremental annualized compliance cost to meet the beyond-the-floor level of 0.06 ng TEQ/dscm rather than comply with the floor controls would be approximately $0.22 million and would provide an incremental reduction in dioxin/furan emissions beyond the floor level controls of 0.013 grams TEQ per year. Nonair quality health and environmental impacts and energy effects were evaluated. Therefore, based on these factors and costs of approximately $17 million per additional gram of dioxin/furan removed, we are not proposing a beyond-the-floor standard based on activated carbon bed systems.

For a source with either a wet air pollution control system or no air pollution control equipment that is not equipped with a heat recovery boiler, the national incremental annualized compliance cost for a new incinerator with an average gas flowrate to meet a beyond-the-floor level of 0.10 ng TEQ/dscm would be approximately $0.22 million and would provide an incremental reduction in dioxin/furan emissions beyond the MACT floor controls of 0.024 grams TEQ per year. Considering the nonair quality health and environmental impacts and energy effects in addition to costs of approximately $9.3 million per additional gram of dioxin/furan removed, we are not proposing a beyond-the-floor standard based on a carbon bed system.

B. What Are the Proposed Standards for Mercury?

We are proposing to establish standards for existing and new incinerators that limit emissions of mercury to 130 µg/dscm and 8 µg/dscm, respectively.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Mercury emissions for existing incinerators are currently limited to 130 µg/dscm by § 63.1203(a)(2). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796).

We have both normal and compliance test emissions data for over 50 sources. For several sources, we have emissions data from more than one test campaign. The mercury stack emissions in our data base range from less than 1 to 35,000 µg/dscm, which are expressed as mass of mercury per unit volume of stack gas.

To identify the floor level, we evaluated the compliance test emissions data associated with the most recent test campaign using the SRE/Feed Approach. The calculated floor is 610 µg/dscm, which considers emissions variability. Even though all sources have recently demonstrated compliance with the interim standard of 130 µg/dscm, all the mercury emissions data in our data base precede initial compliance with these interim standards. As a result, the calculated floor level of 610 µg/dscm is less stringent than the interim standard, which is a regulatory limit relevant in identifying the floor level (so as to avoid any backsliding from a current level of performance achieved by all incinerators, and hence, the level of minimal stringency at which EPA could calculate the MACT floor). Therefore, we are proposing the floor level as the current emission standard of 130 µg/dscm. This emission level is currently being achieved by all sources.

We invite comment on an alternative approach to identify the floor level using available normal emissions data instead of the compliance test data. For reasons we discussed above in Part Two, our floor-setting methodology favors compliance test data over normal emissions data. However, there are available more mercury emissions data characterized as normal—over 40 test conditions—than the eleven compliance test results. Given that the data base includes considerably more normal emissions than compliance test data, we invite comment on whether the floor analysis should be based on the normal emissions data instead of the compliance test data. The floor level considering the normal data using the Emissions Approach is 7.8 µg/dscm, which considers emissions variability. If we were to adopt such an approach, we would require sources to comply with the limit on an annual basis because the floor analysis is based on normal emissions data. Under this approach, compliance would not be based on the use of a total mercury continuous emissions monitoring system because these monitors have not been adequately demonstrated as a reliable compliance assurance tool at all types of incinerator sources. Instead, a source would maintain compliance with the mercury standard by establishing and complying with short-term limits on operating parameters for pollution control equipment and annual limits on maximum total mercury feedrate in all feedstreams.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified two potential beyond-the-floor techniques for control of mercury: (1) Activated carbon injection; and (2) control of mercury in the hazardous waste feed.

Use of Activated Carbon Injection. We evaluated activated carbon injection as beyond-the-floor control for further reduction of mercury emissions. Activated carbon injection is currently being used at three incinerators and has been demonstrated for controlling mercury and has achieved efficiencies ranging from 80% to greater than 90% depending on various factors such as injection rate, mercury speciation in the flue gas, flue gas temperature, and carbon type. Given the limited experience at hazardous waste combustion systems, we made a conservative assumption that the use of activated carbon will provide 70% mercury control. We evaluated a beyond-the-floor level of 39 µg/dscm.

The national incremental annualized compliance cost for incinerators to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $7.1 million and would provide an incremental reduction in mercury emissions beyond the MACT floor controls of 0.39 tons per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the impacts between activated carbon injection and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of hazardous waste generated by 1,800 tons per year and would require sources to use an additional 5.8 million kW-hours per year beyond the requirements to achieve the floor level. The costs associated with these hazardous waste treatment/disposal and energy impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $18 million per additional ton of mercury removed, we are not proposing a beyond-the-floor standard based on activated carbon injection.

Feed Control of Mercury in the Hazardous Waste. We also evaluated a beyond-the-floor level of 100 µg/dscm, which represents a 20% reduction from the floor level. We chose a 20% reduction as a level that represents the practicable extent that additional feedrate control of mercury in hazardous waste (beyond feedrate control that may be necessary to achieve the floor level) can be used and still achieve modest emissions reductions.[89] The national incremental annualized compliance cost for incinerators to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $1.8 million and would provide an incremental reduction in mercury emissions beyond the MACT floor controls of 0.11 tons per year. Nonair quality health and environmental impacts and energy effects were also evaluated. Therefore, based on these factors and costs of approximately $17 million per additional ton of mercury removed, we are not proposing a beyond-the-floor standard based on feed control of mercury in the hazardous waste.

For the reasons discussed above, we propose a mercury emissions standard of 130 µg/dscm for existing incinerators.

3. What Is the Rationale for the MACT Floor for New Sources?

Mercury emissions from new incinerators are currently limited to 45 µg/dscm by § 63.1203(b)(2). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796).

The MACT floor for new sources for mercury would be 8 µg/dscm, which considers emissions variability. This is an emission level that the single best performing source identified with the SRE/Feed Approach considering compliance test data could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the test conditions during which the emissions data were obtained.

As we did for existing sources, we also invite comment on basing the floor analysis on the normal emissions data using the Emissions Approach. The floor level using the normal data is 0.70 µg/dscm, which considers emissions variability. If we were to adopt such an approach, we would require sources to comply with the limit on an annual basis because it is based on normal emissions data.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We identified two potential beyond-the-floor techniques for control of mercury: (1) Use of a carbon bed; and (2) control of mercury in the hazardous waste feed.

Carbon Bed System. We evaluated a carbon bed system as beyond-the-floor control for further reduction of mercury emissions. Given the relatively low floor level, we made a conservative assumption that the use of a carbon bed system would provide 50% mercury control. The incremental annualized compliance cost for a new incinerator with average gas flow rate to meet a beyond-the-floor level of 4 µg/dscm, rather than comply with the floor level, would be approximately $0.22 million and would provide an incremental reduction in mercury emissions of approximately 2.1 pounds per year. Nonair quality health and environmental impacts and energy effects are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $200 million per additional ton of mercury removed, we are not proposing a beyond-the-floor standard based on a carbon bed system.

Feed Control of Mercury in the Hazardous Waste. We also believe that the expense for a reduction in mercury emissions based on further control of mercury concentrations in the

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[89] Ideally, a methodology to estimate costs of feed control should consider lost revenues associated with hazardous wastes not fired and costs to implement feed control of metals and chlorine. We attempted to conduct such an analysis; however, we concluded that there are too many uncertainties to do this analysis. Instead, we developed an alternative approach to cost feed control of metals and chlorine in the hazardous waste based on the assumption that a source would not implement a feed control strategy if the costs exceed the costs to retrofit an existing air pollution control device. Thus, our cost estimates of feed control represent an upper bound estimate on likely costs to control metals or chlorine in hazardous waste. See USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume V: Emission Estimates and Engineering Costs," March 2004, Chapter 4.

hazardous waste is not warranted. A beyond-the-floor level of 6.4 µg/dscm, which represents a 20% reduction from the floor level, would result in a small incremental reduction in mercury emissions. For similar reasons discussed above for existing sources, we likewise conclude that a beyond-the-floor standard based on controlling the mercury in the hazardous waste feed would not be justified because of the costs and emission reductions. Therefore, we propose a mercury standard of 8 µg/dscm for new sources.

C. What Are the Proposed Standards for Particulate Matter?

We are proposing to establish standards for existing and new incinerators that limit emissions of particulate matter to 0.015 and 0.00070 gr/dscf, respectively.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Particulate matter emissions for existing incinerators are currently limited to 0.015 gr/dscf (34 mg/dscm) by § 63.1203(a)(7). This standard was promulgated in the Interim Standards Rule (See 67 FR at 6796). The particulate matter standard is a surrogate control for the hazardous air pollutant metals antimony, cobalt, manganese, nickel, and selenium.

We have compliance test emissions data for most incinerators. For some sources, we have compliance test emissions data from more than one compliance test campaign. Our data base of particulate matter stack emission concentrations range from 0.0002 to 0.078 gr/dscf.

To identify the MACT floor for incinerators, we evaluated the compliance test emissions data associated with the most recent test campaign using the Air Pollution Control Technology Approach. The calculated floor is 0.020 gr/dscf (46 mg/dscm), which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. The calculated floor level of 0.020 gr/dscf is less stringent than the interim standard of 0.015 gr/dscf, which is a regulatory limit relevant in identifying the floor level (so as to avoid any backsliding from a current level of performance achieved by all incinerators, and hence, the level of minimal stringency at which EPA could calculate the MACT floor). Therefore, we are proposing the floor level as the current emission standard of 0.015 gr/dscf. This emission level is currently being achieved by all sources.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We evaluated improved particulate matter control to achieve a beyond-the-floor standard of 17 mg/dscm (0.0075 gr/dscf). For an existing incinerator that needs a significant reduction in particulate matter emissions, we assumed and costed a new baghouse to achieve the beyond-the-floor level. If little or modest emissions reductions were needed, then improved control was costed as design, operation, and maintenance modifications of the existing particulate matter control equipment.

The national incremental annualized compliance cost for incinerators to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $3.9 million and would provide an incremental reduction in particulate matter emissions beyond the MACT floor of 48 tons per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the nonair quality health and environmental impacts between further improvements to control particulate matter and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of hazardous waste generated by 48 tons per year and would also require sources to use an additional 2.7 million kW-hours per year beyond the requirements to achieve the floor level. The costs associated with these impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $81,000 per additional ton of particulate matter removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control.

3. What Is the Rationale for the MACT Floor for New Sources?

Particulate matter emissions from new incinerators are currently limited to 0.015 gr/dscf (34 mg/dscm) by § 63.1203(b)(7). This standard was promulgated in the Interim Standards Rule (See 67 FR at 6796).

The MACT floor for new sources for particulate matter would be 1.6 mg/dscm (0.00070 gr/dscf), which considers emissions variability. This is an emission level that the single best performing source identified with the Air Pollution Control Technology Approach could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the test conditions during which the emissions data were obtained.

As discussed in Part Two, Section II, we considered whether to propose separate standards (subcategorize) for particulate matter for several different potential subcategories such as government-owned versus non-government incinerators and liquid injection versus solid fuel-fired incinerators. We determined that the emission characteristics from these potential subcategories are not statistically different, and, therefore, separate standards for particulate matter are not warranted. We request comment on whether these subcategorization considerations capture the appropriate differences in manufacturing process, emission characteristics, or technical feasibility for particulate matter. We note, for example, the single best performing source, which is the basis of the floor level for new incinerators, is an incinerator used to decontaminate scrap metal. Though we believe these sources are best performers because they use highly efficient baghouses for the capture of particulate matter, and, therefore, appropriate for inclusion in the analysis, we invite comment on whether we have considered the appropriate subcategories for particulate matter. We note that a floor level based on the second best performing incinerator source would be 0.0021 gr/dscf.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated improved emissions control based on a state-of-the-art baghouse using a high quality fabric filter bag material to achieve a beyond-the-floor standard of 1.2 mg/dscm (0.0005 gr/dscf). The incremental annualized compliance cost for a new incinerator to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $80,000 and would provide an incremental reduction in particulate matter emissions of approximately 0.15 tons per year. Nonair quality health and environmental impacts and energy effects were also evaluated and are accounted for in the national annualized compliance cost estimates. We estimate that this option would require a new source to use an additional 0.2 million kW-hours per year. For these reasons and a cost-effectiveness of $0.53 million per ton of particulate matter removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control for new incinerators. Therefore, we propose a particulate matter standard of 1.6 mg/dscm for new sources.

D. What Are the Proposed Standards for Semivolatile Metals?

We are proposing to establish standards for existing and new incinerators that limit emissions of semivolatile metals (cadmium and lead) to 59 ug/dscm and 6.5 ug/dscm, respectively.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Semivolatile metals emissions from existing incinerators are currently limited to 240 ug/dscm by § 63.1203(a)(3). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796). Incinerators control emissions of semivolatile metals with air pollution control equipment and/or by controlling the feed concentration of semivolatile metals in the hazardous waste.

We have compliance test emissions data for nearly 30 incinerators. Semivolatile metal stack emissions range from approximately 4 to 29,000 ug/dscm. These emissions are expressed as mass of semivolatile metals per unit volume of stack gas. Lead was usually the most significant contributor to semivolatile emissions during compliance test conditions.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using the SRE/Feed Approach. The calculated floor is 59 ug/dscm, which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 52% of sources. The floor level would reduce semivolatile metals emissions by 0.43 tons per year.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified two potential beyond-the-floor techniques for control of semivolatile metals: (1) Improved particulate matter control; and (2) control of semivolatile metals in the hazardous waste feed.

Improved Particulate Matter Control. Controlling particulate matter also controls emissions of semivolatile metals. We evaluated a beyond-the-floor level of 30 µg/dscm, which is a 50% reduction from the floor level, based on additional reductions of particulate matter emissions by operating and maintaining existing control equipment to have improved collection efficiency. The national incremental annualized compliance cost for incinerators to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $3.0 million and would provide an incremental reduction in semivolatile metals emissions beyond the MACT floor controls of 190 pounds per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the impacts between further improvements to control particulate matter and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of hazardous waste generated by 50 tons per year and would require sources to use an additional 3.4 million kW-hours per year beyond the requirements to achieve the floor level. The costs associated with these hazardous waste treatment and energy impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $31 million per additional ton of semivolatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control.

Feed Control of Semivolatile Metals in the Hazardous Waste. We also evaluated a beyond-the-floor level of 47 µg/dscm, which represents a 20% reduction from the floor level. We chose a 20% reduction as a level that represents the practicable extent that additional feedrate control of semivolatile metals in the hazardous waste can be used and still achieve modest emissions reductions. The national incremental annualized compliance cost for incinerators to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $1.7 million and would provide an incremental reduction in semivolatile metals emissions beyond the MACT floor of 90 pounds per year. Nonair quality health and environmental impacts and energy effects were also evaluated and are accounted for in the national annualized compliance cost estimates. For these reasons and costs of approximately $39 million per additional ton of semivolatile metals removed, we are not proposing a beyond-the-floor standard based on feed control of semivolatile metals in the hazardous waste.

For the reasons discussed above, we propose to establish the emission standard for existing incinerators at 59 µg/dscm.

3. What Is the Rationale for the MACT Floor for New Sources?

Semivolatile metals emissions from new incinerators are currently limited to 120 µg/dscm by § 63.1203(b)(3). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796).

The MACT floor for new sources for semivolatile metals would be 6.5 µg/dscm, which considers emissions variability. This is an emission level that the single best performing source identified with the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We identified two potential beyond-the-floor techniques for control of semivolatile metals: (1) Improved control of particulate matter; and (2) control of semivolatile metals in the hazardous waste feed.

Improved Particulate Matter Control. We evaluated a standard of 3.3 µg/dscm, which is a 50% reduction from the floor level, based on a state-of-the-art baghouse using a high quality fabric filter bag material as beyond-the-floor control for further reductions in semivolatile metals emissions. The incremental annualized compliance cost for a new incinerator with an average gas flow rate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $80,000 and would provide an incremental reduction in semivolatile metals emissions of approximately 2 pounds per year. Nonair quality health and environmental impacts and energy effects were also evaluated and are included in the cost estimates. We estimate that this option would require a new source to use an additional 0.2 million kW-hours per year. For these reasons and costs of $94 million per ton of semivolatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control for new sources.

Feed Control of Semivolatile Metals in the Hazardous Waste. We also believe that the expense for a reduction in semivolatile metals emissions based on further control of semivolatile metals concentrations in the hazardous waste is not warranted. A beyond-the-floor level of 5.2 µg/dscm, which represents a 20% reduction from the floor level, would result in little additional semivolatile metals reductions. For similar reasons discussed above for existing sources, we judge that a beyond-the-floor standard based on controlling the semivolatile metals in the hazardous waste feed would not be justified because of the costs and expected emission reductions. Therefore, we propose a semivolatile metals standard of 6.5 µg/dscm for new sources.

E. What Are the Proposed Standards for Low Volatile Metals?

We are proposing to establish standards for existing and new incinerators that limit emissions of low volatile metals (arsenic, beryllium, and chromium) to 84 µg/dscm and 8.9 µg/dscm, respectively.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Low volatile metals emissions from existing incinerators are currently limited to 97 µg/dscm by § 63.1203(a)(4). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796). Incinerators control emissions of low volatile metals with air pollution control equipment and/or by controlling the feed concentration of low volatile metals in the hazardous waste.

We have compliance test emissions data for nearly 30 incinerators. Low volatile metal stack emissions range from approximately 1 to 4,300 µg/dscm. These emissions are expressed as mass of low volatile metals per unit volume of stack gas.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using the SRE/Feed Approach. The calculated floor is 84 µg/dscm, which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 85% of sources and would reduce low volatile metals emissions by 56 pounds per year.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified two potential beyond-the-floor techniques for control of low volatile metals: (1) Improved particulate matter control; and (2) control of low volatile metals in the hazardous waste feed.

Improved Particulate Matter Control. Controlling particulate matter also controls emissions of low volatile metals. We evaluated a beyond-the-floor level of 42 µg/dscm, which is a 50% reduction from the floor level, based on additional reductions of particulate matter emissions by operating and maintaining existing control equipment to have improved collection efficiency. The national incremental annualized compliance cost for incinerators to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $0.88 million and would provide an incremental reduction in low volatile metals emissions beyond the MACT floor controls of 365 pounds per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the impacts between further improvements to control particulate matter and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of hazardous waste generated by 100 tons per year and would require sources to use an additional 0.7 million kW-hours per year beyond the requirements to achieve the floor level. The costs associated with these impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $4.8 million per additional ton of low volatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control.

Feed Control of Low Volatile Metals in the Hazardous Waste. We also evaluated a beyond-the-floor level of 67 µg/dscm, which represents a 20% reduction from the floor level. We chose a 20% reduction as a level that represents the practicable extent that additional feedrate control of low volatile metals in the hazardous waste can be used and still achieve modest emissions reductions. The national incremental annualized compliance cost for incinerators to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $0.25 million and would provide an incremental reduction in low volatile metals emissions beyond the MACT floor controls of 0.11 tons per year. Nonair quality health and environmental impacts and energy effects were also evaluated and are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $2.2 million per additional ton of low volatile metals removed, we are not proposing a beyond-the-floor standard based on feed control of low volatile metals in the hazardous waste.

For the reasons discussed above, we propose to establish the emission standard for existing incinerators at 84 µg/dscm.

3. What Is the Rationale for the MACT Floor for New Sources?

Low volatile metal emissions from new incinerators are currently limited to 97 µg/dscm by § 63.1203(b)(4). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796).

The MACT floor for new sources for low volatile metals would be 8.9 µg/dscm, which considers emissions variability. This is an emission level that the single best performing source identified with the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We identified two potential beyond-the-floor techniques for control of low volatile metals: (1) Improved control of particulate matter; and (2) control of low volatile metals in the hazardous waste feed.

Improved Particulate Matter Control. We evaluated a standard of 4.5 µg/dscm, which is a 50% reduction from the floor level, based on a state-of-the-art baghouse using a high quality fabric filter bag material as beyond-the-floor control for further reductions in low volatile metals emissions. The incremental annualized compliance cost for a new incinerator with average gas flowrate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $80,000 and would provide an incremental reduction in low volatile metals emissions of approximately 2.3 pounds per year. Nonair quality health and environmental impacts and energy effects were also evaluated and are included in the cost estimates. For these reasons and costs of $69 million per ton of low volatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control for new sources.

Feed Control of Low Volatile Metals in the Hazardous Waste. We also believe that the expense associated with a reduction in low volatile metals emissions based on further control of low volatile metals concentrations in the hazardous waste is not warranted. A beyond-the-floor level of 7.1 µg/dscm, which represents a 20% reduction from the floor level, would result in little additional low volatile metals reductions. For similar reasons discussed above for existing sources, we judge that a beyond-the-floor standard based on controlling the low volatile metals in the hazardous waste feed would not be cost-effective or otherwise appropriate. Therefore, we propose a low volatile metals standard of 8.9 µg/dscm for new sources.

F. What Are the Proposed Standards for Hydrogen Chloride and Chlorine Gas?

We are proposing to establish standards for existing and new incinerators that limit total chlorine emissions (hydrogen chloride and chlorine gas, combined, reported as a chloride equivalent) to 1.5 and 0.18 ppmv, respectively. However, we are also proposing to establish alternative risk-based standards, pursuant to CAA section 112(d)(4), which a source could elect to comply with by in lieu of the MACT emission standards for total chlorine. The emission limits would be based on national exposure standards that ensure protection of public health with an ample margin of safety. *See* Part Two, Section XIII for additional details.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Total chlorine emissions from existing incinerators are limited to 77 ppmv by § 63.1203(a)(6). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796). Incinerators control emissions of total chlorine with air pollution control equipment and/or by controlling the feed concentration of chlorine in the hazardous waste.

We have compliance test emissions data for most incinerators. Total chlorine emissions range from less than 1 ppmv to 460 ppmv.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using the SRE/Feed Approach. The calculated floor is 1.5 ppmv, which considers emissions variability. This is an emission level that the best performing feed control sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 11% of sources and reductions to the floor level would reduce total chlorine emissions by 286 tons per year.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified two potential beyond-the-floor techniques for control of total chlorine: (1) Improved control with wet scrubbing; and (2) control of chlorine in the hazardous waste feed.

Use of Wet Scrubbing. We evaluated a beyond-the-floor level of 0.8 ppmv based on improved wet scrubbers that would include increasing the liquid to gas ratio, increasing the liquor pH, and replacing the existing packing material with new more efficient packing material. We made a conservative assumption that an improved wet scrubber will provide 50% total chlorine control beyond the controls needed to achieve the floor level given the low total chlorine levels at the floor. Applying this wet scrubbing removal efficiency to the total chlorine floor level of 1.5 ppmv leads to a beyond-the-floor level 0.8 ppmv. The national incremental annualized compliance cost for incinerators to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $1.7 million and would provide an incremental reduction in total chlorine emissions beyond the MACT floor controls of 6 tons per year. We also evaluated nonair quality health and environmental impacts and energy effects between improved wet scrubbers and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of waste water generated by 270 million gallons per year. The option would also require sources to use an additional 3.2 million kW-hours per year and 270 million gallons of water beyond the requirements to achieve the floor level. The costs associated with these impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $0.29 million per additional ton of total chlorine removed, we are not proposing a beyond-the-floor standard based on improved wet scrubbing.

Feed Control of Chlorine in the Hazardous Waste. We also evaluated a beyond-the-floor level of 1.2 ppmv, which represents a 20% reduction from the floor level. We chose a 20% reduction as a level that represents the practicable extent that additional feedrate control of chlorine in hazardous waste can be used and still achieve appreciable emissions reductions. The national incremental annualized compliance cost for incinerators to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $0.69 million and would provide an incremental reduction in total chlorine emissions beyond the MACT floor controls of 2.5 tons per year. Nonair quality health and environmental impacts and energy effects were also evaluated and are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $0.28 million per additional ton of total chlorine removed, we are not proposing a beyond-the-floor standard based on feed control of chlorine in the hazardous waste.

For the reasons discussed above, we propose to establish the emission standard for existing incinerators at 1.5 ppmv.

3. What Is the Rationale for the MACT Floor for New Sources?

Total chlorine emissions from incinerators are currently limited to 21 ppmv by § 63.1203(b)(6). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796). The MACT floor for new sources for total chlorine would be 0.18 ppmv, which considers emissions variability. This is an emission level that the single best performing source identified with the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We identified similar potential beyond-the-floor techniques for control of total chlorine for new sources: (1) Use of improved wet scrubbers; and (2) control of chlorine in the hazardous waste feed.

Use of Wet Scrubbing. We evaluated a beyond-the-floor level of 0.1 ppmv using wet scrubbers as beyond-the-floor control for further reductions in total chlorine emissions. We made a conservative assumption that an improved wet scrubber will provide 50% total chlorine reductions beyond the controls needed to achieve the floor level given the low total chlorine levels at the floor. The incremental annualized compliance cost for a new incinerator with an average gas flowrate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $0.2 million and would provide an incremental reduction in total chlorine emissions of approximately 35 pounds per year. Nonair quality health and environmental impacts and energy effects were also evaluated and are included in the cost estimates. We estimate that this option would increase the amount of wastewater generated by 50 million gallons per year and would require a new source to use an additional 0.5 million kW-hours per year beyond the requirements to achieve the floor level. For these reasons and costs of $12 million per ton of chlorine removed, we are not proposing a beyond-the-floor standard based on improved wet scrubbing control for new sources.

Feed Control of Chlorine in the Hazardous Waste. We also believe that the expense associated with a reduction in chlorine emissions based on further control of chlorine concentrations in the hazardous waste is not warranted. We considered a beyond-the-floor level of 0.14 ppmv, which represents a 20% reduction from the floor level. For similar reasons discussed above for existing sources, we judge that a beyond-the-floor standard based on controlling the chlorine in the hazardous waste feed would not be cost-effective or otherwise appropriate. Therefore, we propose a chlorine standard of 0.18 ppmv for new sources.

G. What Are the Standards for Hydrocarbons and Carbon Monoxide?

Hydrocarbon and carbon monoxide standards are surrogates to control emissions of organic hazardous air pollutants for existing and new incinerators. The standards limit hydrocarbons and carbon monoxide concentrations to 10 ppmv or 100 ppmv. *See* §§ 63.1203(a)(5) and (b)(5). Existing and new incinerators can elect to comply with either the hydrocarbon limit or the carbon monoxide limit on a continuous basis. Sources that comply with the carbon monoxide limit on a continuous basis must also demonstrate compliance with the hydrocarbon standard during the comprehensive performance test. However, continuous hydrocarbon monitoring following the performance test is not required. The rationale for these decisions are discussed in the September 1999 final rule (64 FR at 52900). We view the standards for hydrocarbons and carbon monoxide as unaffected by the Court's vacature of the challenged regulations in its decision of July 24, 2001. We therefore are not proposing these standards for incinerators, but rather are mentioning them here for the reader's convenience.

H. What Are the Standards for Destruction and Removal Efficiency?

The destruction and removal efficiency (DRE) standard is a surrogate to control emissions of organic hazardous air pollutants other than dioxin/furans. The standard for existing and new incinerators requires 99.99% DRE for each principal organic hazardous constituent, except that 99.9999% DRE is required if specified dioxin-listed hazardous wastes are burned. *See* §§ 63.1203(c). The rationale for these decisions are discussed in the September 1999 final rule (64 FR at 52902). We view the standards for DRE as unaffected by the Court's vacature of the challenged regulations in its decision of July 24, 2001. We therefore are not proposing these standards for incinerators, but rather are mentioning them here for the reader's convenience.

VIII. How Did EPA Determine the Proposed Emission Standards for Hazardous Waste Burning Cement Kilns?

In this section, the basis for the proposed emission standards is discussed. *See* proposed § 63.1220 The proposed emission limits apply to the kiln stack gases, in-line kiln raw mill stack gases if combustion gases pass through the in-line raw mill, and kiln alkali bypass stack gases if discharged through a separate stack.[90] The proposed standards for existing and new cement kilns that burn hazardous waste are summarized in the table below:

PROPOSED STANDARDS FOR EXISTING AND NEW CEMENT KILNS

Hazardous air pollutant or surrogate	Emission standard [1]	
	Existing sources	New sources
Dioxin and furan [1]	0.20 ng TEQ/dscm; or 0.40 ng TEQ/dscm and control of flue gas temperature not to exceed 400°F at the inlet to the particulate matter control device.	
Mercury [2]	64 ug/dscm	35 ug/dscm.
Particulate Matter	65 mg/dscm (0.028 gr/dscf)	13 mg/dscm (0.0058 gr/dscf).
Semivolatile metals [3]	4.0 x 10^{-4} lb/MMBtu	6.2 x 10^{-5} lb/MMBtu.
Low volatile metals [3]	1.4 x 10^{-5} lb/MMBtu	1.4 x 10^{-5} lb/MMBtu.
Hydrogen chloride and chlorine gas [4]	110 ppmv or the alternative emission limits under § 63.1215.	78 ppmv or the alternative emission limits under § 63.1215.
Hydrocarbons: kilns without bypass [5, 6]	20 ppmv (or 100 ppmv carbon monoxide) [5]	Greenfield kilns: 20 ppmv (or 100 ppmv carbon monoxide and 50 ppmv [7] hydrocarbons). All others: 20 ppmv (or 100 ppmv carbon monoxide) [5].
Hydrocarbons: kilns with bypass; main stack [6, 8]	No main stack standard	50 ppmv [7].
Hydrocarbons: kilns with bypass; bypass duct and stack [5, 6, 8].	10 ppmv (or 100 ppmv carbon monoxide)	10 ppmv (or 100 ppmv carbon monoxide).
Destruction and removal efficiency	For existing and new sources, 99.99% for each principal organic hazardous constituent (POHC). For sources burning hazardous wastes F020, F021, F022, F023, F026, or F027, however, 99.9999% for each POHC.	

[1] All emission standards are corrected to 7% oxygen, dry basis. If there is a separate alkali bypass stack, then both the alkali bypass and main stack emissions must be less than the emission standard.

[2] Mercury standard is an annual limit.

[3] Standards are expressed as mass of pollutant stack emissions attributable to the hazardous waste per million British thermal unit heat input of the hazardous waste.

[4] Combined standard, reported as a chloride ($Cl^{(-)}$) equivalent.

[5] Sources that elect to comply with the carbon monoxide standard must demonstrate compliance with the hydrocarbon standard during the comprehensive performance test.

[6] Hourly rolling average. Hydrocarbons reported as propane.

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[90] Currently, we are not aware of any preheater/preacalciner kiln that vents its alkali bypass gases through a separate stack.

[7] Applicable only to newly-constructed cement kilns at greenfield sites (*see* 64 FR at 52885). The 50 ppmv standard is a 30-day block average limit.

[8] Measurement made in the bypass sampling system of any kiln (*e.g.*, alkali bypass of a preheater/precalciner kiln; midkiln gas sampling system of a long kiln).

A. What Are the Proposed Standards for Dioxin and Furan?

We are proposing to establish standards for existing and new cement kilns that limit emissions of dioxin and furans to either 0.20 ng TEQ/dscm or 0.40 ng TEQ/dscm and control of flue gas temperature not to exceed 400°F at the inlet to the particulate matter control device.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Dioxin and furan emissions for existing cement kilns are currently limited by § 63.1204(a)(1) to 0.20 ng TEQ/dscm or 0.40 ng TEQ/dscm and control of flue gas temperature not to exceed 400°F at the inlet to the particulate matter control device. This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796, February 13, 2002).

Since promulgation of the 1999 final rule, we have obtained additional dioxin/furan emissions data. We now have compliance test emissions data for all but one cement kiln that burns hazardous waste. The compliance test dioxin/furan emissions in our data base range from approximately 0.004 to 20 ng TEQ/dscm.[91] Cement kilns control dioxin by quenching kiln gas temperatures so that gas temperatures at the inlet to the particulate matter control device are below the range of optimum dioxin/furan formation.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using the Emissions Approach described in Part Two, Section VI.C above. The calculated floor is 0.22 ng TEQ/dscm, which considers emissions variability. These best performing sources controlled inlet temperatures to the particulate matter control device from 380°–475°F. Although some best performing sources had inlet temperatures to the particulate matter control device within the optimum temperature range (*i.e.,* >400°F) for formation of dioxin/furan, their emissions were lower than other non-best performing sources. Our data base shows that these other non-best performing sources, when operating within a temperature range up to 475°F, had emissions of dioxin/furan as high as 1.2 ng TEQ/dscm. We cannot explain why some sources emit dioxin/furan at significantly lower levels than other sources operating at similar control device inlet temperatures. As noted earlier, there are many uncertainties and imperfectly understood complexities relating to dioxin/furan formation.

The data generally support the relationship between inlet temperature to the particulate matter control device and dioxin/furan emissions: When inlet temperatures are below the optimum range of formation, dioxin/furan emissions are lower. However, the converse may not hold: When inlet temperatures are within the optimum range of formation, dioxin/furan emissions may or may not be higher (but in most cases are higher). Moreover, we are concerned that a floor level of 0.22 ng TEQ/dscm is not replicable by all sources using temperature control because we have emissions data from sources operating below the optimum temperature range of dioxin/furan formation that is higher than the calculated floor level of 0.22 ng TEQ/dscm. As a result of this concern, we would identify the floor level as 0.22 ng TEQ/dscm or controlling the inlet temperature to the particulate matter control device.

Allowing a source to comply with a temperature limit alone, however, absent a numerical dioxin/furan emission limit, is less stringent than the current interim standard of 0.20 ng TEQ/dscm, or 0.40 ng TEQ/dscm and control of flue gas temperature not to exceed 400°F at the inlet to the particulate matter control device. The current interim standard is a regulatory limit that is relevant in identifying the floor level because it fixes a level of performance for the source category. Given that all sources are achieving this interim standard and that the interim standard is judged as more stringent than the calculated MACT floor, the dioxin/furan floor level can be no less stringent than the current regulatory limit. We are, therefore, proposing the dioxin/furan floor level as 0.20 ng TEQ/dscm or 0.40 ng TEQ/dscm and control of flue gas temperature not to exceed 400°F at the inlet to the particulate matter control device. This emission level is being achieved by all sources because it is the current required interim standard.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We evaluated activated carbon injection as beyond-the-floor control for further reduction of dioxin/furan emissions. Activated carbon has been demonstrated for controlling dioxin/furans in various combustion applications. However, currently no cement kiln that burns hazardous waste uses activated carbon injection. We evaluated a beyond-the-floor level of 0.10 ng TEQ/dscm, which represents a 75% reduction in dioxin/furan emissions from the floor level. We selected this level because it represents a level that is considered routinely achievable with activated carbon injection. In addition, we assumed for costing purposes that cement kilns needing activated carbon injection to achieve the beyond-the-floor level would install the activated carbon injection system after the existing particulate matter control device and add a new, smaller baghouse to remove the injected carbon with the adsorbed dioxin/furan. We chose this costing approach to address potential concerns that injected carbon may interfere with cement kiln dust recycling practices.

The national incremental annualized compliance cost for cement kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $21 million and would provide an incremental reduction in dioxin/furan emissions beyond the MACT floor controls of 3.4 grams TEQ per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the impacts between activated carbon injection and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of solid waste[92] generated by 7,800 tons per year and would require sources to use an additional 2.6 million kW-hours per year beyond the requirements to achieve the floor level. The costs associated with these impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $6.2 million per additional gram of dioxin/furan removed, we are not proposing a

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[91] Even though all sources have recently demonstrated compliance with the interim standards, the dioxin/furan data in our data base preceded the compliance demonstration. This explains why we have emissions data that are higher than the interim standard.

[92] Under the exemption from hazardous waste status in § 261.4(b)(8), cement kiln dust is not currently classified as a hazardous waste.

beyond-the-floor standard based on use of activated carbon injection.

3. What Is the Rationale for the MACT Floor for New Sources?

Dioxin and furan emissions for new cement kilns are currently limited by § 63.1204(b)(1) to either 0.20 ng TEQ/dscm or 0.40 ng TEQ/dscm and control of flue gas temperature not to exceed 400°F at the inlet to the particulate matter control device. This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796).

The calculated MACT floor for new sources would be 0.21 ng TEQ/dscm, which considers emissions variability. This is an emission level that the single best performing source identified by the Emissions Approach could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the test conditions during which the emissions data were obtained. As discussed for existing sources, we are concerned that a floor level of 0.21 ng TEQ/dscm would not be reproducible by all sources using temperature control because we have emissions data from sources operating below the optimum temperature range of dioxin/furan formation that is higher than the calculated floor level of 0.21 ng TEQ/dscm. As a result of this concern, we would identify the MACT floor as 0.21 ng TEQ/dscm or controlling the inlet temperature to the particulate matter control device.

Allowing a source to comply with a temperature limit alone, however, absent a numerical dioxin/furan emission limit, is less stringent than the current interim standard of 0.20 ng TEQ/dscm, or 0.40 ng TEQ/dscm and control of flue gas temperature not to exceed 400°F at the inlet to the particulate matter control device. The current interim standard is a regulatory limit that is relevant in identifying the floor level because it fixes a level of performance for new cement kilns. Given that all sources are achieving this interim standard and that the interim standard is judged as more stringent than the calculated MACT floor, the dioxin/furan floor level can be no less stringent than the current regulatory limit. We are, therefore, proposing the dioxin/furan floor level as 0.20 ng TEQ/dscm or 0.40 ng TEQ/dscm and control of flue gas temperature not to exceed 400°F at the inlet to the particulate matter control device.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated activated carbon injection as beyond-the-floor control for further reduction of dioxin/furan emissions. We evaluated a beyond-the-floor level of 0.10 ng TEQ/dscm, which represents a 75% reduction in dioxin/furan emissions from the floor level. We selected this level because it represents a level that is considered routinely achievable with activated carbon injection. In addition, we assumed for costing purposes that a new cement kiln will install the activated carbon injection system after the existing particulate matter control device and add a new, smaller baghouse to remove the injected carbon with the adsorbed dioxin/furan. The incremental annualized compliance cost for a new cement kiln to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $1.0 million and would provide an incremental reduction in dioxin/furan emissions of approximately 0.17 grams TEQ per year, for a cost-effectiveness of $5.8 million per gram of dioxin/furan removed. Nonair quality health and environmental impacts and energy effects were not significant factors. For these reasons, we are not proposing a beyond-the-floor standard based on activated carbon injection for new cement kilns. Therefore, we are proposing the standard as 0.20 ng TEQ/dscm or 0.40 ng TEQ/dscm or control of flue gas temperature not to exceed 400°F at the inlet to the particulate matter control device.

B. What Are the Proposed Standards for Mercury?

We are proposing to establish standards for existing and new cement kilns that limit emissions of mercury to 64 and 35 µg/dscm, respectively. If we were to adopt these standards, then sources would comply with the limit on an annual basis because the standards are based on normal emissions data.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Mercury emissions for existing cement kilns are currently limited to 120 µg/dscm by § 63.1204(a)(2).[93] This standard was promulgated in the Interim Standards Rule (See 67 FR at 6796). None of the cement kilns burning hazardous waste use a dedicated control device to remove mercury from the gas stream; however, kilns control the feed concentration of mercury in the hazardous waste.

We have emissions data for all sources. All of these data are best classified as from normal operations, although, as explained below, there is a substantial range within these data. For most sources, we have normal emissions data from more than one test campaign. The normal mercury stack emissions in our data base range from less than 2 to 118 µg/dscm. These emissions are expressed as mass of mercury (from all feedstocks) per unit volume of stack gas.

To identify the MACT floor, we evaluated all normal emissions data using the SRE/Feed Approach. We considered normal emissions data from all test campaigns.[94] For example, one source in our data base has normal emissions data for three different testing campaigns: 1992, 1995, and 1998. Under this approach we would consider the emissions data from the three separate years or campaigns. We believe this approach better captures the range of average emissions for a source than only considering the most recent normal emissions. Given that no cement kilns burning hazardous waste use a control device which captures mercury from the flue gas stream, for purposes of this analysis we assumed all sources achieved a SRE of zero. The effect of this assumption is that the sources with the lowest mercury concentrations in the hazardous waste were identified as the best performing sources.

The calculated floor is 64 µg/dscm, which considers emissions variability, based on a hazardous waste maximum theoretical emissions concentration (MTEC) of 26 µg/dscm. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 59% of sources and would reduce mercury emissions by 0.23 tons per year. If we were to adopt such a floor level, we are proposing that sources comply with the limit on an annual basis because it is based on normal emissions data. Under this approach,

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[93] An alternative mercury standard is available for existing cement kilns whereby a source can elect to comply with a hazardous waste maximum theoretical emissions concentration or MTEC of mercury of 120 µg/dscm. MTEC is a term to compare metals and chlorine feedrates across sources of different sizes. MTEC is defined as the metals or chlorine feedrate divided by the gas flow rate and is expressed in units of µg/dscm.

[94] Given that we only have normal feedrate and emissions data for mercury for cement kilns, we do not believe it is appropriate to establish a hazardous waste thermal emissions-based standard. We prefer to establish emission standards under the hazardous waste thermal emissions format using compliance test data because the metals feedrate information from compliance tests that we use to apportion emissions to calculate emissions attributable to hazardous waste are more reliable than feedrate data measured during testing under normal, typical operations.

compliance would not be based on the use of a total mercury continuous emissions monitoring system because these monitors have not been adequately demonstrated as a reliable compliance assurance tool at cement kiln sources. Instead, a source would maintain compliance with the mercury standard by establishing and complying with short-term limits on operating parameters for pollution control equipment and annual limits on maximum total mercury feedrate in all feedstreams.

We did not use the stack emissions data of preheater/precalciner kilns in the floor analysis because we believe the mercury emissions are biased low when the in-line raw mill is on-line and biased high when the in-line raw mill is off-line. (*See* earlier discussion on why we are proposing not to subcategorize hazardous waste burning cement kilns for mercury between wet process kilns and preheater/precalciner kilns with in-line raw mills.) For either case, we believe the normal mercury data are not representative of average emissions and, therefore, not appropriate to include in the floor analysis. We request comment on this data handling decision.

In the September 1999 final rule, we acknowledged that a cement kiln using properly designed and operated MACT control technologies, including controlling the levels of metals in the hazardous waste, may not be capable of achieving a given emission standard because of mineral and process raw material contributions that might cause an exceedance of the emission standard. To address this concern, we promulgated a provision that allows kilns to petition for alternative standards provided they submit site-specific information that shows raw material hazardous air pollutant contributions to the emissions prevent the source from complying with the emission standard even though the kiln is using MACT control. *See* § 63.1206(b)(10).

Today's proposed floor of 64 µg/dscm, which was based on a hazardous waste MTEC of 26 µg/dscm, may likewise necessitate such an alternative because contributions of mercury in the raw materials and fossil fuels at some sources may cause an exceedance of the emission standard. The Agency intends to retain a source's ability to comply with an alternative standard, and we request comment on two approaches to accomplish this. The first approach would be to structure the alternative standard similar to the petitioning process used under § 63.1206(b)(10). In the case of mercury for an existing cement kiln, MACT would be defined as a hazardous waste feedrate corresponding to an MTEC of 26 µg/dscm. If we were to adopt this approach, we would require sources, upon approval of the petition by the Administrator, to comply with this hazardous waste MTEC on an annual basis because it is based on normal emissions data. Under the second approach, we would structure the alternative standard similar to the framework used for the alternative interim standards for mercury under § 63.1206(b)(15). The operating requirement would be an annual MTEC not to exceed 26 µg/dscm. We also request comment on whether there are other approaches that would more appropriately provide relief to sources that cannot achieve a total stack gas concentration standard because of emissions attributable to raw material and nonhazardous waste fuels.

In June 2003, the Cement Kiln Recycling Coalition (CKRC)[95] submitted to EPA information on actual mercury concentrations in the hazardous waste burn tanks of all 14 cement facilities for a three year period covering 1999 to 2001. In general, the information shows the mercury concentration (in parts per million) in the hazardous waste for each burn tank.[96] In total, approximately 20,000 mercury burn tank concentration data points are included in CKRC's submission.[97] The data show that approximately 50% of the individual burn tank measurements are 0.6 ppmw or less, 75% are less than 1.1 ppmw, 88% are less than 2 ppmw, and 97% of all burn tank measurements are less than 5 ppmw. For a hypothetical wet process cement kiln that gets 50% of its required heat input from hazardous waste, a hazardous waste with a mercury concentration of 0.6 ppmw equates approximately to an uncontrolled (*i.e.,* a system removal efficiency of zero) stack gas concentration of 24 µg/dscm. This estimated stack gas concentration, of course, does not include contributions to emissions from other mercury-containing feedstocks including raw materials and fossil fuels. Mercury concentrations of 1.1, 2, and 5 ppmw in the hazardous waste equate to uncontrolled stack gas concentrations of approximately 43, 79, and 196 µg/dscm.[98]

We compared the concentration of mercury in the hazardous waste associated with the normal emissions data in our data base to the 3-year historical burn tank concentration data to estimate whether the normal data in our data base—the basis of today's proposed floor of 64 µg/dscm—are likely to represent the high end, low end, or close to average emissions. Mercury feed concentration information is not available for every test condition; however, the mercury concentrations in the hazardous waste burned by the best performing sources during the tests that generated the normal emissions ranged from 0.1 to 0.44 ppmw. For the best performing sources comprising the MACT pool for which we can make a comparison, it appears that the normal concentrations in the hazardous waste during testing represent the low end (15th percentile or less) of average mercury concentrations. We invite comment on whether the normal emissions data in our data base are representative of average emissions in practice and whether evaluating the data to identify a floor level is appropriate.

In addition, we request comment on how to identify a floor level using the 3-year hazardous waste mercury concentration data. One potential approach would be to establish a hazardous waste feed concentration standard expressed in ppmw. To identify a floor level expressed as a hazardous waste feed concentration in ppmw, we identified and evaluated the 3-year historical burn tank concentration data of the five best performing facilities (those sources with the lowest mean concentration considering variability). The calculated alternative floor level is 2.2 ppmw in the hazardous waste. To put this in context for a hypothetical wet process cement kiln that gets 50% of its required heat input from hazardous waste, a mercury concentration of 2.2 ppmw in the hazardous waste equates approximately to an uncontrolled stack gas concentration of 86 µg/dscm.[99] This

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[95] Cement Kiln Recycling Coalition is a trade organization that represents cement companies that burn hazardous wastes as a fuel. CKRC also represents companies that manage and market hazardous waste fuels used in cement kilns.

[96] For two cement facilities, the mercury concentration data are only available on a monthly-averaged basis.

[97] Data from three of the facilities had a significant number of individual measurements reported as not detectable and also had relatively high analysis detection limits (compared to levels achieved by other cement plants). The detection limit for most cement kilns was typically 0.1 ppm or less. For purposes of today's preamble discussion, the measurements from these three cement plants are excluded from the data characterization conclusions.

[98] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapter 23.

[99] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume

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estimated stack gas concentration, of course, does not include contributions to emissions from other mercury-containing feedstocks such as raw materials and fossil fuels. If we were to adopt such an approach, we would require sources to comply with the feed concentration standard on a short term basis (*e.g.,* 12 hour average).

We also invite comment on whether we should judge an annual limit of 64 µg/dscm as less stringent than either the current emission standard of 120 µg/dscm or the hazardous waste MTEC of mercury of 120 µg/dscm for cement kilns (so as to avoid any backsliding from a current level of performance achieved by all sources, and hence, the level of minimal stringency at which EPA could calculate the MACT floor). In order to comply with the current emission standard, generally a source must conduct manual stack sampling to demonstrate compliance with the mercury emission standard and then establish a maximum mercury feedrate limit based on operations during the performance test. Following the performance test, the source complies with a limit on the maximum total mercury feedrate in all feedstreams on a 12-hour rolling average (not an annual average). Alternatively, a source can elect to comply with a hazardous waste MTEC of mercury of 120 µg/dscm that would require the source to limit the mercury feedrate in the hazardous waste on a 12-hour rolling average. The floor level of 64 µg/dscm proposed today would allow a source to feed more variable mercury-containing feedstreams (*e.g.,* a hazardous waste with an mercury MTEC greater than 120 µg/dscm) than the current 12-hour rolling average because today's proposed floor level is an annual limit. For example, we estimated a hazardous waste MTEC for each burn tank measurement associated with the 3-year historical concentration data submitted by CKRC. We found that approximately 5% of burn tank measurements would exceed a hazardous waste MTEC of 120 µg/dscm, including sources upon which the proposed floor is based.[100]

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified three potential beyond-the-floor techniques for control of mercury: (1) Activated carbon injection; (2) control of mercury in the hazardous waste feed; and (3) control of mercury in the raw materials and auxiliary fuels. For reasons discussed below, we are not proposing a beyond-the-floor standard for mercury.

Use of Activated Carbon Injection. We evaluated activated carbon injection as beyond-the-floor control for further reduction of mercury emissions. Activated carbon has been demonstrated for controlling mercury in several combustion applications; however, currently no cement kiln that burns hazardous waste uses activated carbon injection. Given this lack of experience using activated carbon injection, we made a conservative assumption that the use of activated carbon injection will provide 70% mercury control and evaluated a beyond-the-floor level of 19 µg/dscm. In addition, for costing purposes we assumed that cement kilns needing activated carbon injection to achieve the beyond-the-floor level would install the activated carbon injection system after the existing particulate matter control device and add a new, smaller baghouse to remove the injected carbon with the adsorbed mercury. We chose this costing approach to address potential concerns that injected carbon may interfere with cement kiln dust recycling practices.

The national incremental annualized compliance cost for cement kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $16.8 million and would provide an incremental reduction in mercury emissions beyond the MACT floor controls of 0.41 tons per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the impacts between activated carbon injection and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of solid waste generated by 4,400 tons per year and would require sources to use an additional 21 million kW-hours per year beyond the requirements to achieve the floor level. The costs associated with these impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $41 million per additional ton of mercury removed, we are not proposing a beyond-the-floor standard based on activated carbon injection.

Feed Control of Mercury in the Hazardous Waste. We also evaluated a beyond-the-floor level of 51 µg/dscm, which represents a 20% reduction from the floor level. We chose a 20% reduction as a level representing the practicable extent that additional feedrate control of mercury in hazardous waste (beyond feedrate control that may be necessary to achieve the floor level) can be used and still achieve modest emissions reductions.[101] The national incremental annualized compliance cost for cement kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $3.7 million and would provide an incremental reduction in mercury emissions beyond the MACT floor controls of 180 pounds per year. Nonair quality health and environmental impacts and energy effects were also evaluated. Therefore, based on these factors and costs of approximately $42 million per additional ton of mercury removed, we are not proposing a beyond-the-floor standard based on feed control of mercury in the hazardous waste.

Feed Control of Mercury in the Raw Materials and Auxiliary Fuels. Cement kilns could achieve a reduction in mercury emissions by substituting a raw material containing lower levels of mercury for a primary raw material with a higher level. We believe that this beyond-the-floor option would be even less cost-effective than either of the options discussed above, however. Given that sources are sited near the supply of the primary raw material, transporting large quantities of an alternate source of raw materials is likely to be cost-prohibitive, especially considering the small expected emissions reductions that would result.

We also considered whether fuel switching to an auxiliary fuel containing a lower concentration of mercury would be an appropriate control option for sources. Given that most cement kilns burning hazardous waste also burn coal as a fuel, we considered switching to natural gas as a potential beyond-the-floor option. We are concerned about the availability of natural gas to all cement kilns because natural gas pipelines are not available in all regions of the United States. See 68 FR 1673. Moreover, even where pipelines provide access to natural gas, supplies of natural gas may not be adequate. For example, it is common practice in cities during winter months (or periods of peak demand) to prioritize natural gas usage for residential areas before industrial usage. Requiring cement kilns to switch to natural gas would place an even greater strain on natural gas resources. Consequently, even where pipelines exist, some sources may not be able to use natural gas during times of limited

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III: Selection of MACT Standards'', March 2004, Chapter 23.

[100] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards'', March 2004, Chapter 23.

[101] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume V: Emission Estimates and Engineering Costs'', March 2004, Chapter 4.

supplies. Thus, natural gas may not be a viable control option for some sources. Therefore, we are not proposing a beyond-the-floor standard based on limiting mercury in the raw material feed and auxiliary fuels.

For the reasons discussed above, we propose not to adopt a beyond-the-floor standard for mercury and propose to establish the emission standard for existing cement kilns at 64 µg/dscm. If we were to adopt such a standard, we are proposing that sources comply with the standard on an annual basis because it is based on normal emissions data.

3. What Is the Rationale for the MACT Floor for New Sources?

Mercury emissions from new cement kilns are currently limited to 120 µg/dscm by § 63.1204(b)(2). New cement kilns can comply with an alternative mercury standard that limits the hazardous waste maximum theoretical emissions concentration or MTEC of mercury of 120 µg/dscm. This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796).

The MACT floor for new sources for mercury would be 35 µg/dscm, which considers emissions variability, based on a hazardous waste MTEC of 5.1 µg/dscm. This is an emission level that the single best performing source identified with the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the test conditions during which the emissions data were obtained. As for existing sources, we assumed all sources equally achieved a SRE of zero. The effect of this assumption is that the single source with the lowest mercury concentration in the hazardous waste was identified as the best performing source. We also invite comment on whether we should judge an annual limit of 35 µg/dscm as less stringent than either the current emission standard of 120 µg/dscm or the hazardous waste MTEC of mercury of 120 µg/dscm for cement kilns (so as to avoid any backsliding from a current level of performance achieved by all sources).

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We identified the same three potential beyond-the-floor techniques for control of mercury: (1) Use of activated carbon; (2) control of mercury in the hazardous waste feed; and (3) control of the mercury in the raw materials and auxiliary fuels.

Use of Activated Carbon Injection. We evaluated activated carbon injection as beyond-the-floor control for further reduction of mercury emissions. We made a conservative assumption that the use of activated carbon injection will provide 70% mercury control and evaluated a beyond-the-floor level of 11 µg/dscm. The incremental annualized compliance cost for a new cement kiln to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $1.0 million and would provide an incremental reduction in mercury emissions of approximately 88 pounds per year. We also estimate that this option would increase the amount of solid waste generated by 400 tons per year and would require sources to use an additional 1.9 million kW-hours per year. Nonair quality health and environmental impacts and energy effects are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of $23 million per ton of mercury removed, we are not proposing a beyond-the-floor standard based on activated carbon injection for new cement kilns.

Feed Control of Mercury in the Hazardous Waste. We also believe that the expense for further reduction in mercury emissions based on further control of mercury concentrations in the hazardous waste is not warranted. A beyond-the-floor level of 28 ug/dscm, which represents a 20% reduction from the floor level, would result in little additional mercury reductions. For similar reasons discussed above for existing sources, we conclude that a beyond-the-floor standard based on controlling the mercury in the hazardous waste feed would not be justified because of the costs coupled with estimated emission reductions.

Feed Control of Mercury in the Raw Materials and Auxiliary Fuels. Cement kilns could achieve a reduction in mercury emissions by substituting a raw material containing lower levels of mercury for a primary raw material with a higher level. For a new source at an existing cement plant, we believe that this beyond-the-floor option would not be cost-effective due to the costs of transporting large quantities of an alternate source of raw materials to the cement plant. Given that the plant site already exists and sited near the source of raw material, replacing the raw materials at the plant site with lower mercury-containing materials would be the source's only option. For a new cement kiln constructed at a new site—a greenfield site [102]—we are not aware of any information and data from a source that has undertaken or is currently located at a site whose raw materials are low in mercury which would consistently decrease mercury emissions. Further, we are uncertain as to what beyond-the-floor standard would be achievable using a lower, if it exists, mercury-containing raw material. Although we are doubtful that selecting a new plant site based on the content of metals in the raw material is a realistic beyond-the-floor option considering the numerous additional factors that go into such a decision, we solicit comment on whether and what level of a beyond-the-floor standard based on controlling the level of mercury in the raw materials is appropriate.

We also considered whether fuel switching to an auxiliary fuel containing a lower concentration of mercury would be an appropriate control option for sources. We considered using natural gas in lieu of a fossil fuel such as coal containing higher concentrations of mercury as a potential beyond-the-floor option. As discussed for existing sources, we are concerned about the availability of the natural gas infrastructure in all regions of the United States and believe that using natural gas would not be a viable control option for all new sources. Therefore, we are not proposing a beyond-the-floor standard based on limiting mercury in the raw material feed and auxiliary fuels.

Therefore, we propose a mercury standard of 35 ug/dscm for new sources. If we were to adopt such a standard, we are proposing that sources comply with the standard on an annual basis because it is based on normal emissions data.

C. What Are the Proposed Standards for Particulate Matter?

We are proposing to establish standards for existing and new cement kilns that limit emissions of particulate matter to 65 mg/dscm (0.028 gr/dscf) and 13 mg/dscm (0.0058 gr/dscf), respectively.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Particulate matter emissions for existing cement kilns are currently limited to 0.15 kilograms of particulate matter per megagram dry feed [103] and 20% opacity by § 63.1204(a)(7). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at

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[102] A greenfield cement kiln is a kiln constructed at a site where no cement kiln previously existed; however, a newly constructed or reconstructed cement kiln at an existing site would not be considered as a greenfield cement kiln.

[103] This standard equates approximately to a stack gas concentration level of 0.030 gr/dscf for wet process kilns and 0.040 gr/dscf for preheater/precalciner kilns. The conversion varies by process type because the amount of flue gas generated per ton of raw material feed varies by process type.

6796). The particulate matter standard is a surrogate control for the metals antimony, cobalt, manganese, nickel, and selenium in the hazardous waste and all HAP metals in the raw materials and auxiliary fuels which are controllable by particulate matter control. All cement kilns control particulate matter with baghouses and electrostatic precipitators.

We have compliance test emissions data for all cement kiln sources. For most sources, we have compliance test emissions data from more than one compliance test campaign. Our data base of particulate matter stack emission concentrations range from 0.0008 to 0.063 gr/dscf.

To identify the floor level, we evaluated the compliance test emissions data associated with the most recent test campaign using the Air Pollution Control Technology Approach. The calculated floor is 65 mg/dscm (0.028 gr/dscf), which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 44% of sources and would reduce particulate matter emissions by 43 tons per year.

We are also proposing to delete the current opacity standard in conjunction with revisions to the compliance assurance requirements for particulate matter for cement kilns. These proposed compliance assurance amendments include requiring a cement kiln source using a baghouse to comply with the same bag leak detection system requirements that are currently applicable to all other hazardous waste combustors (see § 63.1209(m)). A cement kiln source using an ESP has the option either to (1) use a particulate matter emissions detector as a process monitor in lieu of complying with operating parameter limits, as we are proposing for all other hazardous waste combustor sources; or (2) establish site-specific, enforceable operating parameter limits that are linked to the automatic waste feed cutoff system. See Part Three, Section III for a discussion of the proposed changes.

We also request comment on whether the particulate matter standard should be expressed on a concentration basis (as proposed today) or on a production-based format. A concentration-based standard is expressed as mass of particulate matter per dry standard volume of gas (*e.g.*, mg/dscm as proposed today) while a production-based standard is expressed as mass of particulate matter emitted per mass of dry raw material feed to the kiln (*e.g.*, the format of the interim standard). We evaluated the compliance test production-based data associated with the most recent test campaign to determine what the floor level would be under this approach. The calculated floor would be 0.10 kilograms of particulate matter per megagram dry feed. We note that a concentration format can be viewed as penalizing more energy efficient kilns, which burn less fuel and produce less kiln exhaust gas per megagram of dry feed. This is because with a concentration-based standard the more energy-efficient kilns would be restricted to a lower level of particulate matter emitted per unit of production.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We evaluated improved particulate matter control to achieve a beyond-the-floor standard of 32 mg/dscm (0.014 gr/dscf), which is a 50% reduction from MACT floor emissions.[104] For an existing source that needs a significant reduction in particulate matter emissions, we assumed and estimated costs for a new baghouse to achieve the beyond-the-floor level. If little or modest emissions reductions were needed, then improved control was costed as design, operation, and maintenance modifications of the existing particulate matter control equipment.

The national incremental annualized compliance cost for cement kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $4.8 million and would provide an incremental reduction in particulate matter emissions beyond the MACT floor controls of 385 tons per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the impacts between further improvements to control particulate matter and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of solid waste generated by 385 tons per year and would require sources to use an additional 15 million kW-hours per year beyond the requirements to achieve the floor level. The costs associated with these impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $12,400 per additional ton of particulate matter removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control.

3. What Is the Rationale for the MACT Floor for New Sources?

Particulate matter emissions from new cement kilns are currently limited to 0.15 kilograms of particulate matter per megagram dry feed and 20% opacity by § 63.1204(b)(7). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796).

The MACT floor for new sources for particulate matter would be 13 mg/dscm (0.0058 gr/dscf), which considers emissions variability. This is an emission level that the single best performing source identified with the Air Pollution Control Technology Approach could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the test conditions during which the emissions data were obtained. We are also proposing to delete the current opacity standard in conjunction with revisions to the compliance assurance requirements for particulate matter for cement kilns. *See* Part Three, Section III for details.

As discussed for existing sources, we also request comment on whether the particulate matter standard should be expressed on a concentration basis or on a production-based format. We evaluated the compliance test production-based data associated with the most recent test campaign to determine what the floor level would be under this approach. The calculated floor would be 0.028 kilograms of particulate matter per megagram dry feed.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated improved emissions control based on a state-of-the-art baghouse using a high quality fabric filter bag material to achieve a beyond-the-floor standard of 6.7 mg/dscm (0.0029 gr/dscf). This reduction represents a 50% reduction in particulate matter emissions from MACT floor levels. The incremental annualized compliance cost for a new cement kiln to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $0.38 million and would provide an incremental reduction in particulate matter emissions of approximately 2.6 tons per year. We estimate that this

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[104] We did not evaluate a beyond-the-floor standard based on fuel substitution because particulate matter emissions from cement kilns are primarily entrained raw material, not ash contributed by the hazardous waste fuel. There is, therefore, no correlation between particulate matter emissions and the level of ash in the hazardous waste.

beyond-the-floor option would increase the amount of solid waste generated by less than 6 tons per year and would require sources to use an additional 1.8 million kW-hours per year beyond the requirements to achieve the floor level. The costs associated with these impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $61,400 per additional ton of particulate matter removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control for new cement kilns. Therefore, we propose a particulate matter standard of 13 mg/dscm for new sources.

D. What Are the Proposed Standards for Semivolatile Metals?

We are proposing to establish standards for existing cement kilns that limit emissions of semivolatile metals (cadmium and lead, combined) to 4.0×10^{-4} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste. The proposed standard for new sources is 6.2×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Semivolatile metals emissions from existing cement kilns are currently limited to 330 µg/dscm by § 63.1204(a)(3). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796). Cement kilns control emissions of semivolatile metals with baghouses or electrostatic precipitators and/or by controlling the feed concentration of semivolatile metals in the hazardous waste.

We have compliance test emissions data for all cement kiln sources. For most sources, we have compliance test emissions data from more than one compliance test campaign. Semivolatile metal stack emissions range from approximately 1 to 2,800 µg/dscm. These emissions are expressed as mass of semivolatile metals (from all feedstocks) per unit volume of stack gas. Hazardous waste thermal emissions range from 3.0×10^{-6} to 3.7×10^{-3} lbs per million Btu. Hazardous waste thermal emissions represent the mass of semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste. Lead was the most significant contributor to semivolatile emissions during compliance test conditions.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using the SRE/Feed Approach. The calculated floor is 4.0×10^{-4} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 81% of sources and would reduce semivolatile metals emissions by 1 ton per year.

To put the proposed floor level in context for a hypothetical wet process cement kiln that gets 50% of its required heat input from hazardous waste, a thermal emissions level of 4.0×10^{-4} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste equates approximately to a stack gas concentration of 180 µg/dscm. This estimated stack gas concentration does not include contributions to emission from other semivolatile metals-containing materials such as raw materials and fossil fuels. The additional contribution to stack emissions of semivolatile metals in an average raw material and coal is estimated to range as high as 20 to 50 µg/dscm. Thus, for the hypothetical wet process cement kiln the thermal emissions floor level of 4.0×10^{-4} lbs semivolatile metals attributable to the hazardous waste per million Btu heat input of the hazardous waste is estimated to be less than 230 µg/dscm, which is less than the current interim standard of 330 µg/dscm. Given that comparing the proposed floor level to the interim standard requires numerous assumptions (as just illustrated) including hazardous waste fuel replacement rates, heat input requirements per ton of clinker, concentrations of semivolatile metals in the raw material and coal, and system removal efficiency, we have a more detailed analysis in the background document.[105] Our detailed analysis indicates the proposed floor level is at least as stringent as the interim standard (so as to avoid any backsliding from a current level of performance achieved by all cement kilns, and hence, the level of minimal stringency at which EPA could calculate the MACT floor). Thus, we conclude that a dual standard—the semivolatile metals standard as both the calculated floor level, expressed as a hazardous waste thermal emissions level, and the current interim standard—is not needed for this standard.

In the September 1999 final rule, we acknowledged that a cement kiln using properly designed and operated MACT control technologies, including controlling the levels of metals in the hazardous waste, may not be capable of achieving a given emission standard because of mineral and process raw material contributions that might cause an exceedance of the emission standard. To address this concern, we promulgated a provision that allows kilns to petition for alternative standards provided that they submit site-specific information that shows raw material hazardous air pollutant contributions to the emissions prevent the source from complying with the emission standard even though the kiln is using MACT control. *See* § 63.1206(b)(10). If we were to adopt the semivolatile (and low volatile) metals standard using a thermal emissions format, then there would be no need for these alternative standard provisions for semivolatile metals (since, as explained earlier, that standard is based solely on semivolatile metals contributions from hazardous waste fuels). Therefore, we would delete the provisions of § 63.1206(b)(10) as they apply to semivolatile (and low volatile) metals. We invite comment on this approach.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified three potential beyond-the-floor techniques for control of semivolatile metals: (1) Improved particulate matter control; (2) control of semivolatile metals in the hazardous waste feed; and (3) control of the semivolatile metals in the raw materials and fuels. For reasons discussed below, we are not proposing a beyond-the-floor standard for semivolatile metals.

Improved Particulate Matter Control. Controlling particulate matter also controls emissions of semivolatile metals. Our data show that all cement kilns are already achieving greater than 98.6% system removal efficiency for semivolatile metals, with most attaining 99.9% removal. Thus, additional controls of particulate matter are likely to result in only modest additional reductions of semivolatile metals emissions. We evaluated a beyond-the-floor level of 2.0×10^{-4} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which

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[105] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards," March 2004, Chapter 23.

represents a 50% reduction in emissions from MACT floor levels. The national incremental annualized compliance cost for cement kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $2.7 million and would provide an incremental reduction in semivolatile metals emissions beyond the MACT floor controls of 1.2 tons per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the impacts between further improvements to control particulate matter and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of solid waste generated by 300 tons per year and would also require sources to use an additional 5.7 million kW-hours of energy per year to achieve the floor level. The costs associated with these impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $2.3 million per additional ton of semivolatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control.

Feed Control of Semivolatile Metals in the Hazardous Waste. We also evaluated a beyond-the-floor level of 3.2×10^{-4} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which represents a 20% reduction from the floor level. We chose a 20% reduction as a level representing the practicable extent that additional feedrate control of semivolatile metals in hazardous waste can be used and still achieve appreciable emissions reductions. The national incremental annualized compliance cost for cement kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $0.30 million and would provide an incremental reduction in semivolatile metals emissions beyond the MACT floor controls of 0.36 tons per year. Nonair quality health and environmental impacts and energy effects were evaluated and are included in the national compliance cost estimates. Therefore, based on these factors and costs of approximately $0.84 million per additional ton of semivolatile metals removed, we are not proposing a beyond-the-floor standard based on feed control of semivolatile metals in the hazardous waste.

Feed Control of Semivolatile Metals in the Raw Materials and Auxiliary Fuels. Cement kilns could achieve a reduction in semivolatile metal emissions by substituting a raw material containing lower levels of lead and/or cadmium for a primary raw material with higher levels of these metals. We believe that this beyond-the-floor option would even be less cost-effective than either of the options discussed above, however. Given that cement kilns are sited near the primary raw material supply, acquiring and transporting large quantities of an alternate source of raw materials is likely to be cost-prohibitive. Therefore, we are not proposing a beyond-the-floor standard based on limiting semivolatile metals in the raw material feed. We also considered whether fuel switching to an auxiliary fuel containing a lower concentration of semivolatile metals would be an appropriate control option for sources. Given that most cement kilns burning hazardous waste also burn coal as a fuel, we considered switching to natural gas as a potential beyond-the-floor option. For the same reasons discussed for mercury, we judge a beyond-the-floor standard based on fuel switching as unwarranted.

For the reasons discussed above, we propose to establish the emission standard for existing cement kilns at 4.0×10^{-4} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste.

3. What Is the Rationale for the MACT Floor for New Sources?

Semivolatile metals emissions from new cement kilns are currently limited to 180 μg/dscm by § 63.1204(b)(3). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6796).

The MACT floor for new sources for semivolatile metals would be 6.2×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which considers emissions variability. This is an emission level that the single best performing source identified with the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the test conditions during which the emissions data were obtained.

To put the proposed floor level in context for a hypothetical wet process cement kiln that gets 50% of its required heat input from hazardous waste, a thermal emissions level of 6.2×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste equates approximately to a stack gas concentration of 80 μg/dscm, including contributions from typical raw materials and coal. Thus, for the hypothetical wet process cement kiln the thermal emissions floor level of 6.2×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste is estimated to be less than the current interim standard for new sources of 180 μg/dscm.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We identified the same three potential beyond-the-floor techniques for control of semivolatile metals: (1) Improved control of particulate matter; (2) control of semivolatile metals in the hazardous waste feed; and (3) control of semivolatile metals in the raw materials and fuels.

Improved Particulate Matter Control. Controlling particulate matter also controls emissions of semivolatile metals. We evaluated improved control of particulate matter based on a state-of-the-art baghouse using a high quality fabric filter bag material as beyond-the-floor control for further reductions in semivolatile metals emissions. We evaluated a beyond-the-floor level of 2.5×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste. The incremental annualized compliance cost for a new cement kiln with an average gas flow rate to meet this beyond-the-floor level, rather than to comply with the floor level, would be approximately $0.38 million and would provide an incremental reduction in semivolatile metals emissions of approximately 144 pounds per year. Nonair quality health and environmental impacts and energy effects were evaluated and are included in the cost estimates. For these reasons and costs of $5.3 million per ton of semivolatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control for new cement kilns.

Feed Control of Semivolatile Metals in the Hazardous Waste. We also believe that the expense for further reduction in semivolatile metals emissions based on further control of semivolatile metals concentrations in the hazardous waste is not warranted. We also evaluated a beyond-the-floor level of 5.0×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which represents a 20% reduction from the floor level. Nonair quality health and environmental impacts and energy effects were evaluated and are included in the compliance cost estimates. For similar reasons discussed above for existing sources, we conclude that a beyond-the-floor standard based on controlling the concentration of semivolatile metals levels in the hazardous waste feed would not be justified because of the costs coupled with estimated emission reductions.

Feed Control of Semivolatile Metals in the Raw Materials and Auxiliary Fuels. Cement kilns could achieve a reduction in semivolatile metals emissions by substituting a raw material containing lower levels of cadmium and lead for a primary raw material with a higher level. For a new source at an existing cement plant, we believe that this beyond-the-floor option would not be cost-effective due to the costs of transporting large quantities of an alternate source of raw materials to the cement plant. Given that the plant site already exists and sited near the source of raw material, replacing the raw materials at the plant site with lower semivolatile metals-containing materials would be the source's only option. For a cement kiln constructed at a new greenfield site, we are not aware of any information and data from a source that has undertaken or is currently located at a site whose raw materials are inherently lower in semivolatile metals that would consistently achieve reduced semivolatile metals emissions. Further, we are uncertain as to what beyond-the-floor standard would be achievable using a lower, if it exists, semivolatile metals-containing raw material. Although we are doubtful that selecting a new plant site based on the content of metals in the raw material is a realistic beyond-the-floor option considering the numerous additional factors that go into such a decision, we solicit comment on whether and what level of a beyond-the-floor standard based on controlling the level of semivolatile metals in the raw materials is appropriate.

We also considered whether fuel switching to an auxiliary fuel containing a lower concentration of semivolatile metals would be an appropriate control option for sources. Given that most cement kilns burning hazardous waste also burn coal as a fuel, we considered switching to natural gas as a potential beyond-the-floor option. For the same reasons discussed for mercury, we judge a beyond-the-floor standard based on fuel switching as unwarranted.

For the reasons discussed above, we propose to establish the emission standard for new cement kilns at 6.2×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste.

E. What Are the Proposed Standards for Low Volatile Metals?

We are proposing to establish standards for existing and new cement kilns that limit emissions of low volatile metals (arsenic, beryllium, and chromium, combined) to 1.4×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Low volatile metals emissions from existing cement kilns are currently limited to 56 µg/dscm by § 63.1204(a)(4). This standard was promulgated in the Interim Standards Rule (*see* 67 FR at 6796). Cement kilns control emissions of low volatile metals with baghouses or electrostatic precipitators and/or by controlling the feed concentration of low volatile metals in the hazardous waste.

We have compliance test emissions data for all cement kiln sources. For most sources, we have compliance test emissions data from more than one compliance test campaign. Low volatile metal stack emissions range from approximately 1 to 100 µg/dscm. These emissions are expressed as mass of low volatile metals (from all feedstocks) per unit volume of stack gas. Hazardous waste thermal emissions range from 9.2×10^{-7} to 1.0×10^{-5} lbs per million Btu. Hazardous waste thermal emissions represent the mass of low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste. For nearly every cement kiln, chromium was the most significant contributor to low volatile emissions.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using the SRE/Feed Approach. The calculated floor is 1.4×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 52% of sources and would reduce low volatile metals emissions by 0.10 tons per year.

To put the proposed floor level in context for a hypothetical wet process cement kiln that gets 50% of its required heat input from hazardous waste, a thermal emissions level of 1.4×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste equates approximately to a stack gas concentration of 7 µg/dscm. This estimated stack gas concentration does not include contributions to emission from other low volatile metals-containing materials such as raw materials and fossil fuels. The additional contribution to stack emissions of low volatile metals in an average raw material and coal is estimated to range from less than 1 to 15 µg/dscm. Thus, for the hypothetical wet process cement kiln the thermal emissions floor level of 1.4×10^{-5} lbs low volatile metals attributable to the hazardous waste per million Btu heat input of the hazardous waste is estimated to be less than 22 µg/dscm, which is less than the current interim standard of 56 µg/dscm. Given that comparing the proposed floor level to the interim standard requires numerous assumptions (as just illustrated) including hazardous waste fuel replacement rates, heat input requirements per ton of clinker, concentrations of low volatile metals in the raw material and coal, and system removal efficiency, we have included a more detailed analysis in the background document.[106] Our detailed analysis indicates the proposed floor level is as least as stringent as the interim standard (so as to avoid any backsliding from a current level of performance achieved by all cement kilns, and hence, the level of minimal stringency at which EPA could calculate the MACT floor). Thus, we conclude that a dual standard—the low volatile metals standard as both the calculated floor level, expressed as a hazardous waste thermal emissions level, and the current interim standard—is not needed for this standard.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified three potential beyond-the-floor techniques for control of low volatile metals: (1) Improved particulate matter control; (2) control of low volatile metals in the hazardous waste feed; and (3) control of the low volatile metals in the raw materials. For reasons discussed below, we are not proposing a beyond-the-floor standard for low volatile metals.

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[106] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards," March 2004, Chapter 23.

Improved Particulate Matter Control. Controlling particulate matter also controls emissions of low volatile metals. Our data show that all cement kilns are already achieving greater than 99.9% system removal efficiency for low volatile metals, with most attaining 99.99% removal. Thus, additional control of particulate matter emissions is likely to result in only a small increment in reduction of low volatile metals emissions. We evaluated a beyond-the-floor level of 7.0×10^{-6} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which represents a 50% reduction in emissions from MACT floor levels. The national incremental annualized compliance cost for cement kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $3.7 million and would provide an incremental reduction in low volatile metals emissions beyond the MACT floor controls of 120 pounds per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the impacts between further improvements to control particulate matter and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of solid waste generated by 72 tons per year and would also require sources to use an additional 1.2 million kW-hours per year beyond the requirements to achieve the floor level. The costs associated with these impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $63 million per additional ton of low volatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control.

Feed Control of Low Volatile Metals in the Hazardous Waste. We also evaluated a beyond-the-floor level of 1.1×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which represents a 20% reduction from the floor level. We chose a 20% reduction as a level representing the practicable extent that additional feedrate control of mercury in hazardous waste can be used and still achieve appreciable emissions reductions. The national incremental annualized compliance cost for cement kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $1.2 million and would provide an incremental reduction in low volatile metals emissions beyond the MACT floor controls of 38 pounds per year. Nonair quality health and environmental impacts and energy effects were evaluated and are included in the cost estimates. Therefore, based on these factors and costs of approximately $64 million per additional ton of low volatile metals removed, we are not proposing a beyond-the-floor standard based on feed control of low volatile metals in the hazardous waste.

Feed Control of Low Volatile Metals in the Raw Materials and Auxiliary Fuels. Cement kilns could achieve a reduction in low volatile metal emissions by substituting a raw material containing lower levels of arsenic, beryllium, and/or chromium for a primary raw material with higher levels of these metals. We believe that this beyond-the-floor option would even be less cost-effective than either of the options discussed above, however. Given that cement kilns are sited near the primary raw material supply, acquiring and transporting large quantities of an alternate source of raw materials is likely to be cost-prohibitive. Therefore, we are not proposing a beyond-the-floor standard based on limiting low volatile metals in the raw material feed. We also considered whether fuel switching to an auxiliary fuel containing a lower concentration of low volatile metals would be an appropriate control option for sources. Given that most cement kilns burning hazardous waste also burn coal as a fuel, we considered switching to natural gas as a potential beyond-the-floor option. For the same reasons discussed for mercury, we judge a beyond-the-floor standard based on fuel switching as unwarranted.

For the reasons discussed above, we propose to establish the emission standard for existing cement kilns at 1.4×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste.

3. What Is the Rationale for the MACT Floor for New Sources?

Low volatile metals emissions from new cement kilns are currently limited to 54 µg/dscm by § 63.1204(b)(4). This standard was promulgated in the Interim Standards Rule (*see* 67 FR at 6796, February 13, 2002).

The floor level for new sources for low volatile metals would be 1.4×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which considers emissions variability. This is an emission level that the single best performing source identified with the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the test conditions during which the emissions data were obtained.

To put the proposed floor level in context for a hypothetical wet process cement kiln that gets 50% of its required heat input from hazardous waste, a thermal emissions level of 1.4×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste equates approximately to a stack gas concentration of 22 µg/dscm, including contributions from typical raw materials and coal. Thus, for the hypothetical wet process cement kiln the thermal emissions floor level of 6.2×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste is estimated to be more stringent than the current interim standard for new sources of 54 µg/dscm.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We identified the same three potential beyond-the-floor techniques for control of low volatile metals: (1) Improved control of particulate matter; (2) control of low volatile metals in the hazardous waste feed; and (3) control of low volatile metals in the raw materials and fuels.

Improved Particulate Matter Control. Controlling particulate matter also controls emissions of low volatile metals. We evaluated improved control of particulate matter based on a state-of-the-art baghouse using a high quality fabric filter bag material as beyond-the-floor control for further reductions in low volatile metals emissions. We evaluated a beyond-the-floor level of 6.0×10^{-6} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste. The incremental annualized compliance cost for a new cement kiln to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $0.38 million and would provide an incremental reduction in low volatile metals emissions of approximately 33 pounds per year. Nonair quality health and environmental impacts and energy effects were evaluated and are included in the cost estimates. For these reasons and costs of $23.5 million per ton of low volatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control for new cement kilns.

Feed Control of Low Volatile Metals in the Hazardous Waste. We also evaluated a beyond-the-floor level of 1.1 $\times 10^{-5}$ lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which represents a 20% reduction from the floor level. We believe that the expense for further reduction in low volatile metals emissions based on further control of low volatile metals concentrations in the hazardous waste is not warranted given the costs, nonair quality health and environmental impacts, and energy effects.

Feed Control of Low Volatile Metals in the Raw Materials and Auxiliary Fuels. Cement kilns could achieve a reduction in low volatile metals emissions by substituting a raw material containing lower levels of low volatile metals for a primary raw material with a higher level. For a new source at an existing cement plant, we believe that this beyond-the-floor option would not be cost-effective due to the costs of transporting large quantities of an alternate source of raw materials to the cement plant. Given that the plant site already exists and sited near the source of raw material, replacing the raw materials at the plant site with lower low volatile metals-containing materials would be the source's only option. For a cement kiln constructed at a new greenfield site, we are not aware of any information and data from a source that has undertaken or is currently located at a site whose raw materials are inherently lower in low volatile metals that would consistently achieve reduced low volatile metals emissions. Further, we are uncertain as to what beyond-the-floor standard would be achievable using a lower, if it exists, low volatile metals-containing raw material. Although we are doubtful that selecting a new plant site based on the content of metals in the raw material is a realistic beyond-the-floor option considering the numerous additional factors that go into such a decision, we solicit comment on whether and what level of a beyond-the-floor standard based on controlling the level of low volatile metals in the raw materials is appropriate.

We also considered whether fuel switching to an auxiliary fuel containing a lower concentration of low volatile metals would be an appropriate control option for sources. Given that most cement kilns burning hazardous waste also burn coal as a fuel, we considered switching to natural gas as a potential beyond-the-floor option. For the same reasons discussed for mercury, we judge a beyond-the-floor standard based on fuel switching as unwarranted.

Therefore, we are proposing a low volatile metals standard of 1.4 $\times 10^{-5}$ lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste.

F. What Are the Proposed Standards for Hydrogen Chloride and Chlorine Gas?

We are proposing to establish standards for existing and new cement kilns that limit total chlorine emissions (hydrogen chloride and chlorine gas, combined, reported as a chloride equivalent) to 110 and 83 ppmv, respectively. However, we are also proposing to establish alternative risk-based standards, pursuant to CAA section 112(d)(4), which could be elected by the source in lieu of the MACT emission standards for total chlorine. The emission limits would be based on national exposure standards that ensure protection of public health with an ample margin of safety. See Part Two, Section XIII for additional details.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Total chlorine emissions from existing cement kilns are limited to 130 ppmv by § 63.1204(a)(6). This standard was promulgated in the Interim Standards Rule (See 67 FR at 6796). None of the cement kilns burning hazardous waste use a dedicated control device, such as a wet scrubber, to remove total chlorine from the gas stream. However, the natural alkalinity in some of the raw materials is highly effective at removing chlorine from the gas stream. Our data base shows that the majority of the system removal efficiency (SRE) data of total chlorine—over 80%—indicate a SRE greater than 95%. This scrubbing effect, though quite effective, varies across different sources and also at individual sources over time due to differences in raw materials, operating conditions, cement kiln dust recycle rates, and production requirements. Likewise, our data show that total chlorine emissions from a given source can vary over a considerable range. Based on these data, we conclude that the best (highest) SRE achieved at a given source is not duplicable or replicable.

The majority of the chlorine fed to the cement kiln during a compliance test comes from the hazardous waste.[107] In all but a few cases the hazardous waste contribution to the total amount of chlorine fed to the kiln represented at least 75% of the total chlorine loading to the kiln. As we identified in the September 1999 final rule, the proposed MACT floor control for total chlorine is based on controlling the concentration of chlorine in the hazardous waste. The chlorine concentration in the hazardous waste will affect emissions of total chlorine at a given SRE because emissions increase as the chlorine loading increases.

We have compliance test emissions data for all cement kiln sources. For most sources, we have compliance test emissions data from more than one compliance test campaign. Total chlorine emissions range from less than 1 ppmv to 192 ppmv.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using a variant of the SRE/Feed Approach because of concerns about a cement kiln's ability to replicate a given SRE. To identify the floor level we first evaluated the chlorine feed level in the hazardous waste for all sources. The best performing sources had the lowest maximum theoretical emissions concentration or MTEC, considering variability. We then applied a SRE of 90% to the best performing sources' total MTEC (*i.e.*, includes chlorine contributions to emissions from all feedstreams such as raw material and fossil fuels) to identify the floor level. Given our concerns about the reproducibility of SREs of total chlorine, we selected a SRE of 90% because our data base shows that all sources have demonstrated this SRE at least once (and often several times) during a compliance test. The calculated floor is 110 ppmv, which considers emissions variability. This is an emission level that the best performing feed control sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 93% of sources and would reduce total chlorine emissions by 64 tons per year.

We also invite comment on an alternative approach to establish a floor level expressed as a hazardous waste thermal feed concentration.[108] A hazardous waste thermal feed concentration is expressed as mass of chlorine in the hazardous waste per

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[107] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards'', March 2004, Chapter 2.

[108] We are also requesting comment on whether the hazardous waste feed concentration floor level should be the standard itself (*i.e.*, no stack emission concentration standard) or as an alternative to the stack emission standard (*e.g.*, sources have the opinion to comply with either the calculated stack emissions concentration or the hazardous waste feed concentration limit).

million Btu heat input contributed by the hazardous waste. The floor would be based on the best five performing sources with the lowest thermal feed concentration of chlorine in the hazardous waste considering each source's most recent compliance test data. One advantage of this approach is that the uncertainty surrounding the capture (SRE) of chlorine in a kiln is removed. The calculated floor level would be 2.4 lbs chlorine in the hazardous waste per million Btu in the hazardous waste, which considers variability. For a hypothetical wet process cement kiln that gets 50% of its required heat input from hazardous waste, a hazardous waste with a chlorine concentration of 2.4 lbs chlorine per million Btu and achieving 90% SRE equates approximately to a stack gas concentration of 75 ppmv. This estimated stack gas concentration does not include contributions to emission from other chlorine-containing materials such as raw materials and fossil fuels. The additional contribution to stack emissions of total chlorine in an average raw material and coal is estimated to range from less than 1 to 35 ppmv. Thus, for the hypothetical wet process cement kiln this floor level is estimated to be less than 110 ppmv, which is less than the current interim standard of 130 ppmv.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified three potential beyond-the-floor techniques for control of total chlorine: (1) Use of wet scrubbers; (2) control of chlorine in the hazardous waste feed; and (3) control of the chlorine in the raw materials. For reasons discussed below, we are not proposing a beyond-the-floor standard for total chlorine.

Use of Wet Scrubbers. We evaluated the use of wet scrubbers as beyond-the-floor control for further reduction of mercury emissions. Wet scrubbers are not currently being used at any hazardous waste burning cement kilns to capture hydrogen chloride. We evaluated a beyond-the-floor level of 55 ppmv. The national incremental annualized compliance cost for cement kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $3.4 million and would provide an incremental reduction in total chlorine emissions beyond the MACT floor controls of 370 tons per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the impacts between wet scrubbing and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of water usage and waste water generated by 1.5 billion gallon per year. The option would also require sources to use an additional 12 million kW-hours per year beyond the requirements to achieve the floor level. The costs associated with these impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $9,300 per additional ton of total chlorine removed, we are not proposing a beyond-the-floor standard based on wet scrubbing.

Feed Control of Chlorine in the Hazardous Waste. We also evaluated a beyond-the-floor level of 88 ppmv, which represents a 20% reduction from the floor level. We chose a 20% reduction as a level that represents the practicable extent that additional feedrate control of chlorine in the hazardous waste can be used and still achieve modest emissions reductions. The national incremental annualized compliance cost for cement kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $1.1 million and would provide an incremental reduction in total chlorine emissions beyond the MACT floor controls of 100 tons per year. Nonair quality health and environmental impacts and energy effects were also evaluated and are included in the compliance cost estimates. Therefore, based on these factors and costs of approximately $11,000 per additional ton of total chlorine, we are not proposing a beyond-the-floor standard based on feed control of chlorine in the hazardous waste.

Feed Control of Chlorine in the Raw Materials and Auxiliary Fuels. Cement kilns could achieve a reduction in total chlorine emissions by substituting a raw material containing lower levels of chlorine for a primary raw material with higher levels of chlorine. We believe that this beyond-the-floor option would even be less cost-effective than either of the options discussed above because most chlorine feed to the kiln is in the hazardous waste. In addition, given that cement kilns are sited near the primary raw material supply, acquiring and transporting large quantities of an alternate source of raw materials is likely to be cost-prohibitive. Therefore, we are not proposing a beyond-the-floor standard based on limiting chlorine in the raw material feed. We also considered whether fuel switching to an auxiliary fuel containing a lower concentration of chlorine would be an appropriate control option for kilns. Given that most cement kilns burning hazardous waste also burn coal as a fuel, we considered switching to natural gas as a potential beyond-the-floor option. For the same reasons discussed for mercury, we judge a beyond-the-floor standard based on fuel switching as unwarranted.

For the reasons discussed above, we propose not to adopt a beyond-the-floor standard for total chlorine and propose to establish the emission standard for existing cement kilns at 110 ppmv.

3. What Is the Rationale for the MACT Floor for New Sources?

Total chlorine emissions from new cement kilns are currently limited to 86 ppmv by § 63.1204(b)(6). This standard was promulgated in the Interim Standards Rule (See 67 FR at 6796). The MACT floor for new sources for total chlorine would be 78 ppmv, which considers emissions variability. This is an emission level that the single best performing source identified with the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We identified similar potential beyond-the-floor techniques for control of total chlorine for new sources: (1) Use of wet scrubbing; (2) control of chlorine in the hazardous waste feed; and (3) control of chlorine in the raw materials and fuels.

Use of Wet Scrubbers. We considered wet scrubbing as beyond-the-floor control for further reductions in total chlorine emissions and evaluated a beyond-the-floor level of 39 ppmv. The incremental annualized compliance cost for a new cement kiln to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $1.2 million and would provide an incremental reduction in total chlorine emissions of approximately 22 tons per year. Nonair quality health and environmental impacts and energy effects were evaluated and are included in the cost estimates. For these reasons and costs of $24,000 per ton of total chlorine removed, we are not proposing a beyond-the-floor standard based on wet scrubbing for new cement kilns.

Feed Control of Low Volatile Metals in the Hazardous Waste. We also evaluated a beyond-the-floor level of 62 ppmv, which represents a 20% reduction from the floor level. We believe that the expense for further reduction in total chlorine emissions based on further control of chlorine concentrations in the hazardous waste is not warranted given the costs, nonair quality health and environmental impacts, and energy effects.

Feed Control of Chlorine in the Raw Materials and Auxiliary Fuels. Cement kilns could achieve a reduction in total chlorine emissions by substituting a raw material containing lower levels of chlorine for a primary raw material with a higher level. For a new source at an existing cement plant, we believe that this beyond-the-floor option would not be cost-effective due to the costs of transporting large quantities of an alternate source of raw materials to the cement plant. Given that the plant site already exists and sited near the source of raw material, replacing the raw materials at the plant site with lower chlorine-containing materials would be the source's only option. For a cement kiln constructed at a new greenfield site, we are not aware of any information and data from a source that has undertaken or is currently located at a site whose raw materials are inherently lower in chlorine that would consistently achieve reduced total chlorine emissions. Further, we are uncertain as to what beyond-the-floor standard would be achievable using a lower, if it exists, chlorine-containing raw material. Although we are doubtful that selecting a new plant site based on the content of chlorine in the raw material is a realistic beyond-the-floor option considering the numerous additional factors that go into such a decision, we solicit comment on whether and what level of a beyond-the-floor standard based on controlling the level of chlorine in the raw materials is appropriate.

We also considered whether fuel switching to an auxiliary fuel containing a lower concentration of chlorine would be an appropriate control option for sources. Given that most cement kilns burning hazardous waste also burn coal as a fuel, we considered switching to natural gas as a potential beyond-the-floor option. For the same reasons discussed for mercury, we judge a beyond-the-floor standard based on fuel switching as unwarranted.

Therefore, we are proposing a total chlorine standard of 78 ppmv for new cement kilns.

G. What Are the Standards for Hydrocarbons and Carbon Monoxide?

Hydrocarbon and carbon monoxide standards are surrogates to control emissions of organic hazardous air pollutants for existing and new cement kilns. For cement kilns without bypass or midkiln sampling systems, the standard for existing sources limit hydrocarbon or carbon monoxide concentrations to 20 ppmv or 100 ppmv, respectively. The standards for new sources limit (1) hydrocarbons to 20 ppmv; or (2) carbon monoxide to 100 ppmv. New, greenfield kilns[109], that elect to comply with the 100 ppmv carbon monoxide standard, however, must also comply with a 50 ppmv hydrocarbon standard. New and existing sources that elect to comply with the 100 ppmv carbon monoxide standard, including new greenfield kilns that elect to comply with the carbon monoxide standard and 50 ppmv hydrocarbon standard, must also demonstrate compliance with the 20 ppmv hydrocarbon standard during the comprehensive performance test. However, continuous hydrocarbon monitoring following the performance test is not required.

For cement kilns with bypass or midkiln sampling systems, existing cement kilns are required to comply with either a carbon monoxide standard of 100 ppmv or a hydrocarbon standard of 10 ppmv. Both standards apply to combustion gas sampled in the bypass or a midkiln sampling port that samples representative kiln gas. See §§ 63.1204(a)(5) and (b)(5). The rationale for these decisions are discussed in the September 1999 final rule (64 FR at 52885). We view the standards for hydrocarbons and carbon monoxide as unaffected by the Court's vacature of the challenged regulations in its decision of July 24, 2001. We therefore are not proposing these standards for cement kilns, but rather are mentioning them here for the reader's convenience.

H. What Are the Standards for Destruction and Removal Efficiency?

The destruction and removal efficiency (DRE) standard is a surrogate to control emissions of organic hazardous air pollutants other than dioxin/furans. The standard for existing and new lightweight aggregate kilns requires 99.99% DRE for each principal organic hazardous constituent, except that 99.9999% DRE is required if specified dioxin-listed hazardous wastes are burned. See §§ 63.1204(c). The rationale for these decisions are discussed in the September 1999 final rule (64 FR at 52890). We view the standards for DRE as unaffected by the Court's vacature of the challenged regulations in its decision of July 24, 2001. We therefore are not proposing these standards for cement kilns, but rather are mentioning them here for the reader's convenience.

IX. How Did EPA Determine the Proposed Emission Standards for Hazardous Waste Burning Lightweight Aggregate Kilns?

In this section, the basis for the proposed emission standards is discussed. See proposed § 63.1221. The proposed emission limits apply to the stack gases from lightweight aggregate kilns that burn hazardous waste and are summarized in the table below:

PROPOSED STANDARDS FOR EXISTING AND NEW LIGHTWEIGHT AGGREGATE KILNS

Hazardous air pollutant or surrogate	Emission standard [1]	
	Existing sources	New sources
Dioxin and furan	0.40 ng TEQ/dscm	0.40 ng TEQ/dscm.
Mercury [2]	67 µg/dscm	67 µg/dscm.
Particulate Matter	57 mg/dscm (0.025 gr/dscf)	23 mg/dscm (0.0099 gr/dscf).
Semivolatile metals [3]	3.1×10^{-4} lb/MMBtu and 250 µg/dscm	2.4×10^{-5} lb/MMBtu and 43 µg/dscm.
Low volatile metals [3]	9.5×10^{-5} lb/MMBtu and 110 µg/dscm	3.2×10^{-5} lb/MMBtu and 110 µg/dscm.
Hydrogen chloride and chlorine gas [4]	600 ppmv	600 ppmv.
Hydrocarbons [5,6]	20 ppmv (or 100 ppmv carbon monoxide)	20 ppmv (or 100 ppmv carbon monoxide).

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[109] A greenfield cement kiln is a kiln that commenced construction or reconstruction after April 19, 1996 at a site where no cement kiln previously existed, irrespective of the class of kiln (*i.e.*, nonhazardous waste or hazardous waste burning). A newly constructed or reconstructed cement kiln at an existing site is not classified as a greenfield cement kiln, and is subject to the same carbon monoxide and hydrocarbon standards as an existing cement kiln.

PROPOSED STANDARDS FOR EXISTING AND NEW LIGHTWEIGHT AGGREGATE KILNS—Continued

Hazardous air pollutant or surrogate	Emission standard [1]	
	Existing sources	New sources
Destruction and removal efficiency	For existing and new sources, 99.99% for each principal organic hazardous constituent (POHC). For sources burning hazardous wastes F020, F021, F022, F023, F026, or F027, however, 99.9999% for each POHC.	

[1] All emission standards are corrected to 7% oxygen, dry basis.
[2] Mercury standard is an annual limit.
[3] Standards are expressed as mass of pollutant emissions contributed by hazardous waste per million British thermal unit contributed by the hazardous waste.
[4] Combined standard, reported as a chloride ($Cl^{(-)}$) equivalent.
[5] Sources that elect to comply with the carbon monoxide standard must demonstrate compliance with the hydrocarbon standard during the comprehensive performance test.
[6] Hourly rolling average. Hydrocarbons reported as propane.

A. What Are the Proposed Standards for Dioxin and Furan?

We are proposing to establish standards for existing and new lightweight aggregate kilns that limit emissions of dioxin and furans to 0.40 ng TEQ/dscm.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Dioxin and furan emissions for existing lightweight aggregate kilns are currently limited by § 63.1205(a)(1) to 0.20 ng TEQ/dscm or rapid quench of the flue gas at the exit of the kiln to less than 400°F. This standard was promulgated in the Interim Standards Rule (See 67 FR at 6797).

Since promulgation of the September 1999 final rule, we have obtained additional dioxin/furan emissions data. We now have compliance test emissions data for all lightweight aggregate kilns that burn hazardous waste. The compliance test dioxin/furan emissions in our database range from approximately 0.9 to 58 ng TEQ/dscm.

Quenching kiln gas temperatures at the exit of the kiln so that gas temperatures at the inlet to the particulate matter control device are below the temperature range of optimum dioxin/furan formation (400–750°F) may be problematic for some of these sources. Some of these sources have extensive (long) duct-work between the kiln exit and the inlet to the control device. For these sources, quenching the gases at the kiln exit to a low enough temperature to limit dioxin/furan formation may conflict with the source's ability to avoid acid gas dew point related problems in the long duct-work and control device. As a result, some sources quench the kiln exit gases to a temperature that is in the optimum temperature range for surface-catalyzed dioxin/furan formation. Available compliance test emissions data indicate that inlet temperatures to the control device range from 435–450°F. This means that temperatures in the duct-work are higher and well within the range of optimum dioxin/furan formation.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using the Emissions Approach described in Part Two, Section VI above. The calculated floor is 14 ng TEQ/dscm, which considers emissions variability. However, the current interim emission standard—0.20 ng TEQ/dscm or rapid quench of the flue gas at the exit of the kiln to less than 400°F—is a regulatory limit that is relevant in identifying the floor level because it fixes a level of performance for the source category. We estimate that sources achieving the "rapid quench of the flue gas at the exit of the kiln to less than 400°F'' part of the current standard can emit up to 6.1 ng TEQ/dscm. Given that all sources are achieving the interim standard and that the interim standard is judged as more stringent than the calculated MACT floor, the dioxin/furan floor level can be no less stringent than the current regulatory limit.[110] We are, therefore, proposing the dioxin/furan floor level as the current emission standard of 0.20 ng TEQ/dscm or rapid quench of the flue gas at the exit of the kiln to less than 400°F. This emission level is being achieved by all sources because it is the interim standard. In addition, there are no emissions reductions for existing lightweight aggregate kilns to comply with the floor level.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We evaluated activated carbon injection as beyond-the-floor control for further reduction of dioxin/furan emissions. Activated carbon has been demonstrated for controlling dioxin/furans in various combustion applications; however, no lightweight aggregate kiln that burns hazardous waste uses activated carbon injection. We evaluated a beyond-the-floor level of 0.40 ng TEQ/dscm, which represents a level that is considered routinely achievable using activated carbon injection. In addition, we assumed for costing purposes that lightweight aggregate kilns needing activated carbon injection to achieve the beyond-the-floor level would install the activated carbon injection system after the existing particulate matter control device and add a new, smaller baghouse to remove the injected carbon with the adsorbed dioxin/furans. We chose this costing approach to address potential concerns that injected carbon may interfere with lightweight aggregate dust use practices.

The national incremental annualized compliance cost for lightweight aggregate kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $1.8 million and would provide an incremental reduction in dioxin/furan emissions beyond the MACT floor controls of 1.9 grams TEQ per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the nonair quality health and environmental impacts between activated carbon injection and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of solid waste generated by 550 tons per year and would require sources to use an additional 1 million kW-hours per year beyond the requirements to achieve the floor level. The costs associated with these impacts are accounted for in the national compliance cost estimates.

Therefore, based on these factors and costs of approximately $0.95 million per additional gram of dioxin/furan TEQ

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[110] Even though all sources have recently demonstrated compliance with the interim standards, the dioxin/furan data in our data base preceded the compliance demonstration. This explains why we have emissions data that are higher than the interim standard.

removed, we are proposing a beyond-the-floor standard of 0.40 ng TEQ/dscm for existing lightweight aggregate kilns. We judge that the cost to achieve this beyond-the-floor level is warranted given our special concern about dioxin/furan. Dioxin/furan are some of the most toxic compounds known due to their bioaccumulation potential and wide range of health effects, including carcinogenesis, at exceedingly low doses. Exposure via indirect pathways is a chief reason that Congress singled our dioxin/furan for priority MACT control in CAA section 112(c)(6). See S. Rep. No. 128, 101st Cong. 1st Sess. at 154–155. In addition, we note that a beyond-the-floor standard of 0.40 ng TEQ/dscm is consistent with historically controlled levels under MACT for hazardous waste incinerators and cement kilns, and Portland cement plants. See §§ 63.1203(a)(1), 63.1204(a)(1), and 63.1343(d)(3). Also, EPA has determined previously in the 1999 Hazardous Waste Combustor MACT final rule that dioxin/furan in the range of 0.40 ng TEQ/dscm or less are necessary for the MACT standards to be considered generally protective of human health under RCRA (using the 1985 cancer slope factor), thereby eliminating the need for separate RCRA standards under the authority of RCRA section 3005(c)(3) and 40 CFR 270.10(k). Finally, we note that this decision is not inconsistent with EPA's decision not to promulgate beyond-the-floor standards for dioxin/furan for hazardous waste burning lightweight aggregate kilns, cement kilns, and incinerators at cost-effectiveness values in the range of $530,000 to $827,000 per additional gram of dioxin/furan TEQ removed. See 64 FR at 52892, 52876, and 52961. In those cases, EPA determined that controlling dioxin/furan emissions from a level of 0.40 ng TEQ/dscm to a beyond-the-floor level of 0.20 ng TEQ/dscm was not warranted because dioxin/furan levels below 0.40 ng TEQ/dscm are generally considered to be below the level of health risk concern.

We specifically request comment on whether this beyond-the-floor standard is warranted.

3. What Is the Rationale for the MACT Floor for New Sources?

Dioxin and furan emissions for new lightweight aggregate kilns are currently limited by § 63.1205(b)(1) to 0.20 ng TEQ/dscm or rapid quench of the flue gas at the exit of the kiln to less than 400°F. This standard was promulgated in the Interim Standards Rule (See 67 FR at 6797).

The calculated MACT floor for new sources would be 1.3 ng TEQ/dscm, which considers emissions variability, or rapid quench of the flue gas at the exit of the kiln to less than 400°F. This is an emission level that the single best performing source identified by the Emissions Approach. However, we are concerned that the calculated floor level of 1.3 ng TEQ/dscm is not duplicable by all sources using temperature control because we estimate that sources rapidly quenching the flue gas at the exit of the kiln to less than 400°F can emit up to 6.1 ng TEQ/dscm. Therefore, we are proposing the floor as the current emission standard of 0.20 ng TEQ/dscm or rapid quench of the flue gas at the exit of the kiln to less than 400°F.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated activated carbon injection as beyond-the-floor control for further reduction of dioxin/furan emissions, and considered a beyond-the-floor level of 0.40 ng TEQ/dscm, which represents a level that is considered routinely achievable with activated carbon injection. In addition, we assumed for costing purposes that a new lightweight aggregate kiln will install the activated carbon injection system after the existing particulate matter control device and add a new, smaller baghouse to remove the injected carbon with the adsorbed dioxin/furan. The incremental annualized compliance cost for a new source to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $0.26 million and would provide an incremental reduction in dioxin/furan emissions of 0.37 grams per year. Nonair quality health, environmental impacts, and energy effects are accounted for in the cost estimates. Therefore, based on these factors and cost of $0.71 million per gram TEQ removed, we are proposing a beyond-the-floor standard based on activated carbon injection. We believe that the cost to achieve this beyond-the-floor level is warranted given our special concern about dioxin/furan. Dioxin/furan are some of the most toxic compounds known due to their bioaccumulation potential and wide range of health effects, including carcinogenesis, at exceedingly low doses. In addition, as discussed above, we note that the beyond-the-floor emission level of 0.40 ng TEQ/dscm is consistent with historically controlled levels under MACT for hazardous waste incinerators and cement kilns, and Portland cement plants. See §§ 63.1203(a)(1), 63.1204(a)(1), and 63.1343(d)(3). EPA has determined previously in the 1999 Hazardous Waste Combustor MACT final rule that dioxin/furan in the range of 0.40 ng TEQ/dscm or less are necessary for the MACT standards to be considered generally protective of human health under RCRA, thereby eliminating the need for separate RCRA standards.

We specifically request comment on whether this beyond-the-floor standard is warranted.

B. What Are the Proposed Standards for Mercury?

We are proposing to establish standards for existing and new lightweight aggregate kilns that limit emissions of mercury to 67 µg/dscm.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Mercury emissions for existing lightweight aggregate kilns are currently limited to 120 µg/dscm by § 63.1205(a)(2). Existing lightweight aggregate kilns have the option to comply with an alternative mercury standard that limits the hazardous waste maximum theoretical emissions concentration (MTEC) of mercury to 120 µg/dscm.[111] This standard was promulgated in the Interim Standards Rule (See 67 FR at 6797). One lightweight aggregate facility with two kilns uses a venturi scrubber to remove mercury from the flue gas stream and the remaining sources limit the feed concentration of mercury in the hazardous waste to control emissions.

We have compliance test emissions data for only one source; however, we have normal emissions data for all sources. For most sources, we have normal emissions data from more than one test campaign. We used these emissions data to represent the average emissions from a source even though we do not know whether the emissions represent the high end, low end, or close to the average emissions. The normal mercury stack emissions range from less than 1 to 47 µg/dscm, while the highest compliance test emissions data is 1,050 µg/dscm. These emissions are expressed as mass of mercury (from all feedstocks) per unit volume of stack gas.

To identify the MACT floor, we evaluated all normal emissions data using the SRE/Feed Approach. We considered normal stack emissions data from all test campaigns.[112] For example,

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[111] MTEC is a term to compare metals and chlorine feedrates across sources of different sizes. MTEC is defined as the metals or chlorine feedrate divided by the gas flow rate and is expressed in units of µg/dscm.

[112] Given that the majority of feedrate and emissions data for mercury is normal, we do not believe it is appropriate to establish a hazardous

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one source in our data base has normal emissions data for three different testing campaigns: 1992, 1995, and 1999. Under this approach we considered the emissions data from the three separate years or campaigns. As explained earlier, we believe this approach better captures the range of average emissions for a source than only considering the most recent normal emissions. In addition, for sources without control equipment to capture mercury, we assumed the sources achieved a SRE of zero. The effect of this assumption is that the sources (without control equipment for mercury) with the lower mercury concentrations in the hazardous waste were identified as the better performing sources.

The calculated floor is 67 µg/dscm, which considers emissions variability, based on a hazardous waste maximum theoretical emissions concentration (MTEC) of 42 µg/dscm. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 57% of sources and would reduce mercury emissions by 8 pounds per year. If we were to adopt such a floor level, we are proposing that sources comply with the limit on an annual basis because it is based on normal emissions data. Under this approach, compliance would not be based on the use of a total mercury continuous emissions monitoring system because these monitors have not been adequately demonstrated as a reliable compliance assurance tool at all types of incinerator sources. Instead, a source would maintain compliance with the mercury standard by establishing and complying with short-term limits on operating parameters for pollution control equipment and annual limits on maximum total mercury feedrate in all feedstreams.

In the September 1999 final rule, we acknowledged that a lightweight aggregate kiln using properly designed and operated MACT control technologies, including controlling the levels of metals in the hazardous waste, may not be capable of achieving a given emission standard because of process raw material contributions that might cause an exceedance of the emission standard. To address this concern, we promulgated a provision that allows sources to petition for alternative standards provided they submit site-specific information that shows raw material hazardous air pollutant contributions to the emissions prevent the source from complying with the emission standard even though the kiln is using MACT control. See § 63.1206(b)(9).

Today's proposed floor of 67 µg/dscm, which was based on a hazardous waste MTEC of 42 µg/dscm, may likewise necessitate such an alternative because contributions of mercury in the raw materials and fossil fuels at some sources may cause an exceedance of the emission standard. The Agency intends to retain a source's ability to comply with an alternative standard, and we request comment on two approaches to accomplish this. The first approach would be to structure the alternative standard similar to the petitioning process used under § 63.1206(b)(9). In the case of mercury for an existing lightweight aggregate kiln, MACT would be defined as a hazardous waste feedrate corresponding to an MTEC of 42 µg/dscm. If we were to adopt this approach, we would require sources, upon approval of the petition by the Administrator, to comply with this hazardous waste MTEC on an annual basis because it is based on normal emissions data. Under the second approach, we would structure the alternative standard similar to the framework used for the alternative interim standards for mercury under § 63.1206(b)(15). The operating requirement would be an annual MTEC not to exceed 42 µg/dscm. We also request comment on whether there are other approaches that would more appropriately provide relief to sources that cannot achieve a total stack gas concentration standard because of emissions attributable to raw material and nonhazardous waste fuels.

In comments submitted to EPA in 1997, Solite Corporation (Solite), owner and operator of five[113] of the seven lightweight aggregate kilns, stated that the normal emissions data in our data base are unrepresentative of average emissions of mercury because the normal range of mercury concentrations in the hazardous waste burned during the compliance and trial burn tests was not captured during the tests. In their 1997 comments, Solite provided information on actual mercury concentrations in the hazardous waste burn tanks over a year and a quarter period. The information showed that 87% of the burn tanks contained mercury at concentrations below the facility's detection limit of 2 ppm. Additional analyses of a limited number of these samples conducted at an off-site lab showed that the majority of samples were actually less than 0.2 ppm.[114]

We examined the test reports of the five best performing sources that are the basis of today's proposed floor level to determine the concentration level of mercury in the hazardous wastes. The hazardous waste burned by the best performing sources during the tests that generated the normal emissions data had mercury concentrations that ranged from 0.02 to 0.2 ppm.[115] Even though the concentrations of mercury in the hazardous waste seem low, we cannot judge how these snap shot concentrations compare to long-term normal concentrations because the majority of the burn tank concentration data submitted by Solite are nondetect measurements at a higher detection limit.

Solite informed us in July 2003 that they are in the process of upgrading the analysis equipment at their on-site laboratory. Once completed, Solite expects to be capable of detecting mercury in the hazardous waste at concentrations of 0.2 ppm. Solite also indicated that they intend to assemble and submit to EPA several months of burn tank concentration data analyzed with the new equipment. We will add these data to the docket of today's proposal once available. As we discussed for cement kilns for mercury, we are requesting comment on approaches to establish a hazardous waste feed concentration standard based on long-term feed concentrations of mercury in the hazardous waste. Likewise, we invite comments on establishing a mercury feed

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waste thermal emissions-based standard. We prefer to establish emission standards under the hazardous waste thermal emissions format using compliance test data because the metals feedrate information from compliance tests that we use to apportion emissions to calculate emissions attributable to hazardous waste are more reliable than feedrate data measured during testing under normal, typical operations.

[113] Solite Corporation has four kilns at its Cascade facility and three kilns at its Arvonia facility. However, only three kilns and two kilns, respectively, can be fired with hazardous waste at any one time. For purposes of today's proposal, Solite Corporation is assumed to operate a total of five kilns.

[114] A hazardous waste with a mercury concentration of 2 ppm equates approximately to a mercury emissions level of 200–250 µg/dscm, and a source firing a hazardous waste with a mercury concentration of 0.2 ppm approximately equates to 20–25 µg/dscm. The existing standard of 120 µg/dscm allows a source to burn a hazardous waste with a mercury concentration of approximately 1 ppm.

[115] These mercury concentrations were analyzed by an off-site lab that had equipment capable of detecting mercury at lower concentrations. Sixteen of the 27 measurements of the best performers were reported as non-detects.

concentration standard for lightweight aggregate kilns.

We also invite comment on whether we should judge an annual limit of 67 µg/dscm as less stringent than either the current emission standard of 120 µg/dscm or the hazardous waste MTEC of mercury of 120 µg/dscm for lightweight aggregate kilns (so as to avoid any backsliding from a current level of performance achieved by all sources, and hence, the level of minimal stringency at which EPA could calculate the MACT floor). In order to comply with the current emission standard, generally a source must conduct manual stack sampling to demonstrate compliance with the mercury emission standard and then establish a maximum mercury feedrate limit based on operations during the performance test. Following the performance test, the source complies with a limit on the maximum total mercury feedrate in all feedstreams on a 12-hour rolling average (not an annual average). Alternatively, a source can elect to comply with a hazardous waste MTEC of mercury of 120 µg/dscm that would require the source to limit the mercury feedrate in the hazardous waste on a 12-hour rolling average. The floor level of 67 µg/dscm proposed today would allow a source to feed more variable mercury-containing feedstreams (*e.g.*, a hazardous waste with a mercury MTEC greater than 120 µg/dscm) than the current 12-hour rolling average because today's proposed floor level is an annual limit. For example, the concentration of mercury in the hazardous waste exceeded a hazardous waste MTEC of 120 µg/dscm in a minimum of 13% of the burn tanks based on the data submitted by Solite in their 1997 comments (discussed above). As mentioned above, Solite intends to submit several months of burn tank concentration data using upgraded analysis equipment at their on-site laboratory that we will consider when comparing the relative stringency of an annual limit of 67 µg/dscm and a short-term limit of 120 µg/dscm.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified three potential beyond-the-floor techniques for control of mercury: (1) Activated carbon injection; (2) control of mercury in the hazardous waste feed; and (3) control of mercury in the raw materials and auxiliary fuels. For reasons discussed below, we are not proposing a beyond-the-floor standard for mercury.

Use of Activated Carbon Injection. We evaluated activated carbon injection as beyond-the-floor control for further reduction of mercury emissions. Activated carbon has been demonstrated for controlling mercury in several combustion applications; however, currently no lightweight aggregate kiln that burns hazardous waste uses activated carbon injection. Given this lack of experience using activated carbon injection, we made a conservative assumption that the use of activated carbon injection will provide 70% mercury control and evaluated a beyond-the-floor level of 20 µg/dscm. In addition, for costing purposes we assumed that sources needing activated carbon injection to achieve the beyond-the-floor level would install the activated carbon injection system after the existing baghouse and add a new, smaller baghouse to remove the injected carbon with the adsorbed mercury. We chose this costing approach to address potential concerns that injected carbon may interfere with lightweight aggregate kiln dust use practices.

The national incremental annualized compliance cost for lightweight aggregate kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $1.1 million and would provide an incremental reduction in mercury emissions beyond the MACT floor controls of 11 pounds per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the impacts between activated carbon injection and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of solid waste generated by 270 tons per year and would require sources to use an additional 1.2 million kW-hours per year beyond the requirements to achieve the floor level. The costs associated with these impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $209 million per additional ton of mercury removed, we are not proposing a beyond-the-floor standard based on activated carbon injection.

Feed Control of Mercury in the Hazardous Waste. We also evaluated a beyond-the-floor level of 54 µg/dscm, which represents a 20% reduction from the floor level. We chose a 20% reduction as a level representing the practicable extent that additional feedrate control of mercury in hazardous waste (beyond feedrate control that may be necessary to achieve the floor level) can be used and still achieve modest emissions reductions.[116] The national incremental annualized compliance cost for lightweight aggregate kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $0.3 million and would provide an incremental reduction in mercury emissions beyond the MACT floor controls of 3 pounds per year. Nonair quality health and environmental impacts and energy effects were also evaluated. Therefore, based on these factors and costs of approximately $229 million per additional ton of mercury removed, we are not proposing a beyond-the-floor standard based on feed control of mercury in the hazardous waste.

Feed Control of Mercury in the Raw Materials and Auxiliary Fuels. Lightweight aggregate kilns could achieve a reduction in mercury emissions by substituting a raw material containing a lower level of mercury for a primary raw material with a higher level. We believe that this beyond-the-floor option would be even less cost-effective than either of the options discussed above, however. Given that sources are sited near the supply of the primary raw material, transporting large quantities of an alternate source of raw materials, even if available, is likely to be cost-prohibitive, especially considering the small expected emissions reductions that would result.

We also considered whether fuel switching to an auxiliary fuel containing a lower concentration of mercury would be an appropriate control option for sources. Two facilities typically burn hazardous waste at a fuel replacement rate of 100%, while one facility has burned a combination of fuel oil and natural gas in addition to the hazardous waste. We considered switching only to natural gas as the auxiliary fuel as a potential beyond-the-floor option. We do not believe that switching to natural gas is a viable control option for the same reasons discussed above for cement kilns.

For the reasons discussed above, we propose to establish the emission standard for existing lightweight aggregate kilns at 67 µg/dscm. If we were to adopt such a standard, we are proposing that sources comply with the standard on an annual basis because it is based on normal emissions data.

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[116] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume V: Emission Estimates and Engineering Costs'', March 2004, Chapter 4.

3. What Is the Rationale for the MACT Floor for New Sources?

Mercury emissions from new lightweight aggregate kilns are currently limited to 120 µg/dscm by § 63.1205(b)(2). This standard was promulgated in the Interim Standards Rule (*see* 67 FR at 6797).

The MACT floor for new sources for mercury would be 67 µg/dscm, which considers emissions variability. This is an emission level that the single best performing source identified with the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We identified the same three potential beyond-the-floor techniques for control of mercury: (1) Use of activated carbon; (2) control of mercury in the hazardous waste feed; and (3) control of the mercury in the raw materials and auxiliary fuels.

Use of Activated Carbon Injection. We evaluated activated carbon injection as beyond-the-floor control for further reduction of mercury emissions. We made a conservative assumption that the use of activated carbon injection will provide 70% mercury control and evaluated a beyond-the-floor level of 20 µg/dscm. The incremental annualized compliance cost for a new lightweight aggregate kiln with average gas flow rate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $0.26 million and would provide an incremental reduction in mercury emissions of approximately 42 pounds per year. Nonair quality health and environmental impacts and energy effects are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of $12 million per ton of mercury removed, we are not proposing a beyond-the-floor standard based on activated carbon injection for new sources.

Feed Control of Mercury in the Hazardous Waste. We also believe that the expense for further reduction in mercury emissions based on further control of mercury concentrations in the hazardous waste is not warranted. A beyond-the-floor level of 54 µg/dscm, which represents a 20% reduction from the floor level, would result in little additional mercury reductions. For similar reasons discussed above for existing sources, we conclude that a beyond-the-floor standard based on controlling the mercury in the hazardous waste feed would not be justified because of the costs coupled with estimated emission reductions.

Feed Control of Mercury in the Raw Materials and Auxiliary Fuels. Lightweight aggregate kilns could achieve a reduction in mercury emissions by substituting a raw material containing lower levels of mercury for a primary raw material with a higher level. For a new source at an existing lightweight aggregate plant, we believe that this beyond-the-floor option would not be cost-effective due to the costs of transporting large quantities of an alternate source of raw materials to the facility. Given that the plant site already exists and sited near the source of raw material, replacing the raw materials at the plant site with lower mercury-containing materials would be the source's only option. For a new lightweight aggregate kiln constructed at a new site—a greenfield site[117]—we are not aware of any information and data from a source that has undertaken or is currently located at a site whose raw materials are low in mercury which would consistently decrease mercury emissions. Further, we are uncertain as to what beyond-the-floor standard would be achievable using a lower, if it exists, mercury-containing raw material. Although we are doubtful that selecting a new plant site based on the content of metals in the raw material is a realistic beyond-the-floor option considering the numerous additional factors that go into such a decision, we solicit comment on whether and what level of a beyond-the-floor standard based on controlling the level of mercury in the raw materials is appropriate.

We also considered whether fuel switching to an auxiliary fuel containing a lower concentration of mercury would be an appropriate control option for sources. We considered using natural gas in lieu of a fuel containing higher concentrations of mercury as a potential beyond-the-floor option. As discussed for existing sources, we are concerned about the availability of the natural gas infrastructure in all regions of the United States and believe that using natural gas would not be a viable control option for all new sources. Therefore, we are not proposing a beyond-the-floor standard based on limiting mercury in the raw material feed and auxiliary fuels.

Therefore, we propose a mercury standard of 67 µg/dscm for new sources. If we were to adopt such a standard, we are proposing that sources comply with the standard on an annual basis because it is based on normal emissions data.

C. What Are the Proposed Standards for Particulate Matter?

We are proposing to establish standards for existing and new lightweight aggregate kilns that limit emissions of particulate matter to 0.025 and 0.0099 gr/dscf, respectively. This standard would control unenumerated HAP metals in hazardous waste, and all non-Hg HAP metals in the raw material and fossil fuel inputs to the kiln.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Particulate matter emissions for existing lightweight aggregate kilns are currently limited to 0.025 gr/dscf (57 mg/dscm) by § 63.1205(a)(7). This standard was promulgated in the Interim Standards Rule (See 67 FR at 6797). The particulate matter standard is a surrogate control for the non-mercury metal HAP. All lightweight aggregate kilns control particulate matter with baghouses.

We have compliance test emissions data for all lightweight aggregate kiln sources. For most sources, we have compliance test emissions data from more than one compliance test campaign. Our database of particulate matter stack emissions range from 0.001 to 0.042 gr/dscf.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using the APCD Approach. The calculated floor is 0.029 gr/dscf, which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained. The calculated floor level of 0.029 gr/dscf is less stringent than the interim standard of 0.025 gr/dscf, which is a regulatory limit relevant in identifying the floor level (so as to avoid any backsliding from a current level of performance achieved by all lightweight aggregate kilns, and hence, the level of minimal stringency at which EPA could calculate the MACT floor). Therefore, we are proposing the floor level as the current emission standard of 0.025 gr/dscf. This emission level is currently being achieved by all sources.

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[117] A greenfield source is a kiln constructed at a site where no lightweight aggregate kiln previously existed; however, a newly constructed or reconstructed kiln at an existing site would not be considered as a greenfield kiln.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We evaluated improved particulate matter control to achieve a beyond-the-floor standard of 29 mg/dscm (0.013 gr/dscf). The national incremental annualized compliance cost for lightweight aggregate kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $0.32 million and would provide an incremental reduction in particulate matter emissions beyond the MACT floor controls of 8.6 tons per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the impacts between further improvements to control particulate matter and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of solid waste generated by 9 tons per year beyond the requirements to achieve the floor level. Therefore, based on these factors and costs of approximately $36,600 per additional ton of particulate matter removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control.

3. What Is the Rationale for the MACT Floor for New Sources?

Particulate matter emissions from new lightweight aggregate kilns are currently limited to 0.025 gr/dscf by § 63.1205(b)(7). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6797, February 13, 2002).

The MACT floor for new sources for particulate matter would be 23 mg/dscm (0.0099 gr/dscf), which considers emissions variability. This is an emission level that the single best performing source identified with the APCD Approach could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated improved particulate matter control to achieve a beyond-the-floor standard. We evaluated a beyond-the-floor level of 12 mg/dscm (0.005 gr/dscf). The incremental annualized compliance cost for a new lightweight aggregate kiln with an average gas flow rate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $91,400 million and would provide an incremental reduction in particulate matter emissions of approximately 2 tons per year. Nonair quality health and environmental impacts and energy effects were also evaluated and are included in the cost estimates. Therefore, based on these factors and costs of approximately $45,600 per additional ton of particulate removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control for new lightweight aggregate kilns. Therefore, we propose a particulate matter standard of 2.3 mg/dscm (0.0099 gr/dscf) for new sources.

D. What Are the Proposed Standards for Semivolatile Metals?

We are proposing to establish standards for existing lightweight aggregate kilns that limit emissions of semivolatile metals (cadmium and lead, combined) to 3.1×10^{-4} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste and 250 µg/dscm. The proposed standard for new sources is 2.4×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste and 43 µg/dscm.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Semivolatile metals emissions from existing lightweight aggregate kilns are currently limited to 250 µg/dscm by § 63.1205(a)(3). This standard was promulgated in the Interim Standards Rule (See 67 FR at 6797). Lightweight aggregate kilns control emissions of semivolatile metals with baghouses and/or by controlling the feed concentration of semivolatile metals in the hazardous waste.

We have compliance test emissions data for all lightweight aggregate kiln sources. For most sources, we have compliance test emissions data from more than one compliance test campaign. Semivolatile metal stack emissions range from approximately 1 to over 1,600 µg/dscm. These emissions are expressed as mass of semivolatile metals (from all feedstocks) per unit volume of stack gas. Hazardous waste thermal emissions range from 3.0×10^{-6} to 1.1×10^{-3} lbs per million Btu. Hazardous waste thermal emissions represent the mass of semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste. For most lightweight aggregate kilns, lead was the major contributor to semivolatile emissions.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using the SRE/Feed Approach. The calculated floor is 3.1×10^{-4} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 71% of sources, and would reduce semivolatile metals emissions by 30 pounds per year.

To put the proposed floor level in context for a hypothetical lightweight aggregate kiln that gets 90% of its required heat input from hazardous waste, a thermal emissions level of 3.1×10^{-4} lbs semivolatile metals attributable to the hazardous waste per million Btu heat input of the hazardous waste equates approximately to a stack gas concentration of 300 µg/dscm. This estimated stack gas concentration does not include contributions to emission from other semivolatile metals-containing materials such as raw materials and fossil fuels. The additional contribution to stack emissions of semivolatile metals in an average raw material is estimated to range as high as 20 to 50 µg/dscm. Thus, for the hypothetical lightweight aggregate kiln the thermal emissions floor level of 3.1×10^{-4} lbs semivolatile metals attributable to the hazardous waste per million Btu heat input of the hazardous waste is estimated to be less than 350 µg/dscm, which is higher than the current interim standard of 250 µg/dscm. Given that comparing the proposed floor level to the interim standard requires numerous assumptions (as just illustrated) including hazardous waste fuel replacement rates, heat input requirements per ton of clinker, concentrations of semivolatile metals in the raw material and fuels, and system removal efficiency, we have included a more detailed analysis in the background document.[118] Our detailed analysis indicates the proposed floor level could be less stringent than the interim standard for some sources. In order to avoid any backsliding from the current level of performance achieved by all lightweight aggregate kilns, we propose a dual standard: the semivolatile metals standard as both the

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[118] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapter 23.

calculated floor level, expressed as a hazardous waste thermal emissions level, and the current interim standard. This would ensure that all sources are complying with a limit that is at least as stringent as the interim standard.

In the September 1999 final rule, we acknowledged that a lightweight aggregate kiln using properly designed and operated MACT control technologies, including controlling the levels of metals in the hazardous waste, may not be capable of achieving a given emission standard because of mineral and process raw material contributions that might cause an exceedance of the emission standard. To address this concern, we promulgated a provision that allows kilns to petition for alternative standards provided that they submit site-specific information that shows raw material hazardous air pollutant contributions to the emissions prevent the source from complying with the emission standard even though the kiln is using MACT control. See § 63.1206(b)(9). If we were to adopt the proposed dual semivolatile (and low volatile) metals standards approach, we propose to retain the alternative standard provisions under § 63.1206(b)(9) for semivolatile metals (and low volatile metals). We invite comment on this approach.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified three potential beyond-the-floor techniques for control of semivolatile metals: (1) Improved particulate matter control; (2) control of semivolatile metals in the hazardous waste feed; and (3) control of the semivolatile metals in the raw materials and fuels.

Improved Particulate Matter Control. Controlling particulate matter also controls emissions of semivolatile metals. Our data show that all lightweight aggregate kilns are already achieving greater than 99.7% system removal efficiency for semivolatile metals, with many attaining 99.9% removal. Thus, additional control of particulate matter are likely to result in only modest additional reductions of semivolatile metals emissions. We evaluated a beyond-the-floor level of 1.5×10^{-4} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which represents a 50% reduction in emissions from MACT floor levels. The national incremental annualized compliance cost for lightweight aggregate kilns to meet this beyond-the-floor level rather than to comply with the floor controls would be approximately $84,200 and would provide an incremental reduction in semivolatile metals emissions beyond the MACT floor controls of 20 pounds per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the impacts between further improvements to control particulate matter and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of solid waste generated by less than 10 tons per year and would also require sources to use an additional 2,000 kW-hours per year beyond the requirements to achieve the floor level. The costs associated with these impacts are accounted for in the national annualized compliance cost estimates. Therefore, based on these factors and costs of approximately $7.6 million per additional ton of semivolatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control.

Feed Control of Semivolatile Metals in the Hazardous Waste. We also evaluated a beyond-the-floor level of 2.5×10^{-4} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which represents a 20% reduction from the floor level. We chose a 20% reduction as a level representing the practicable extent that additional feedrate control of semivolatile metals in hazardous waste can be used and still achieve appreciable emissions reductions. The national incremental annualized compliance cost for lightweight aggregate kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $6,000 and would provide an incremental reduction in semivolatile metals emissions beyond the MACT floor controls of less than one pound per year. Nonair quality health and environmental impacts and energy effects were evaluated and are included in the national compliance cost estimates. Therefore, based on these factors and costs of approximately $20 million per additional ton of semivolatile metals removed, we are not proposing a beyond-the-floor standard based on feed control of semivolatile metals in the hazardous waste.

Feed Control of Semivolatile Metals in the Raw Materials and Auxiliary Fuels. Lightweight aggregate kilns could achieve a reduction in semivolatile metal emissions by substituting a raw material containing lower levels of cadmium and/or lead for a primary raw material with higher levels of these metals. We believe that this beyond-the-floor option would even be less cost-effective than either of the options discussed above, however. Given that facilities are sited near the primary raw material supply, acquiring and transporting large quantities of an alternate source of raw materials is likely to be cost-prohibitive. Therefore, we are not proposing a beyond-the-floor standard based on limiting semivolatile metals in the raw material feed.

We also considered whether fuel switching to an auxiliary fuel containing a lower concentration of semivolatile metals would be an appropriate control option for sources. Two facilities typically burn hazardous waste at a fuel replacement rate of 100%, while one facility has burned a combination of fuel oil and natural gas in addition to the hazardous waste. We considered switching only to natural gas as the auxiliary fuel as a potential beyond-the-floor option. We do not believe that switching to natural gas is a viable control option for similar reasons discussed above for cement kilns.

For the reasons discussed above, we propose to establish the emission standard for existing lightweight aggregate kilns at 3.1×10^{-4} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste and 250 µg/dscm.

3. What Is the Rationale for the MACT Floor for New Sources?

Semivolatile metals emissions from new lightweight aggregate kilns are currently limited to 43 µg/dscm by § 63.1205(b)(3). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6797).

The MACT floor for new sources for semivolatile metals would be 2.4×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu in the hazardous waste, which considers emissions variability. This is an emission level that the single best performing source identified with the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained.

To put the proposed floor level in context for a hypothetical lightweight aggregate kiln that gets 90% of its required heat input from hazardous waste, a thermal emissions level of 2.4×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste can equate to a stack gas concentration as high as 60 µg/dscm, including contributions from typical raw materials. Thus, for the hypothetical lightweight aggregate kiln the thermal emissions floor level of 2.4×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste is estimated to be as high as 60 µg/dscm, which is higher than the current interim standard of 43 µg/dscm. In order to avoid any backsliding from the current level of performance for a new lightweight aggregate kiln source, we propose a dual standard: the semivolatile metals standard as both the calculated floor level, expressed as a hazardous waste thermal emissions level, and the current interim standard. This would ensure that all sources are complying with a limit that is at least as stringent as the interim standard. Thus, the proposed MACT floor for new lightweight aggregate kilns is 2.4×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste and 43 µg/dscm.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We identified the same three potential beyond-the-floor techniques for control of semivolatile metals: (1) Improved control of particulate matter; (2) control of semivolatile metals in the hazardous waste feed; and (3) control of semivolatile metals in the raw materials and fuels.

Improved Particulate Matter Control. Controlling particulate matter also controls emissions of semivolatile metals. We evaluated improved control of particulate matter based on a state-of-the-art baghouse using a high quality fabric filter bag material as beyond-the-floor control for further reductions in semivolatile metals emissions. We evaluated a beyond-the-floor level of 1.2×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste. The incremental annualized compliance cost for a new lightweight aggregate kiln with average gas flowrate to meet this beyond-the-floor level, rather than to comply with the floor level, would be approximately $0.11 million and would provide an incremental reduction in semivolatile metals emissions of approximately 13 pounds per year. Nonair quality health and environmental impacts and energy effects were evaluated and are included in the cost estimates. We estimate that this beyond-the-floor option would increase the amount of solid waste generated by 3 tons per year and would also require sources to use an additional 0.3 million kW-hours per year beyond the requirements to achieve the floor level. Therefore, based on these factors and costs of approximately $18 million per ton of semivolatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control for new lightweight aggregate kilns.

Feed Control of Semivolatile Metals in the Hazardous Waste. We also believe that the expense for further reduction in semivolatile metals emissions based on further control of semivolatile metals concentrations in the hazardous waste is not warranted. We considered a beyond-the-floor level of 1.9×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which represents a 20% reduction from the floor level. Nonair quality health and environmental impacts and energy effects were evaluated and are included in the compliance cost estimates. For similar reasons discussed above for existing sources, we conclude that a beyond-the-floor standard based on controlling the concentration of semivolatile metals levels in the hazardous waste feed would not be justified because of the costs and estimated emission reductions.

Feed Control of Semivolatile Metals in the Raw Materials and Auxiliary Fuels. Lightweight aggregate kilns could achieve a reduction in semivolatile metals emissions by substituting a raw material containing lower levels of cadmium and lead for a primary raw material with a higher level. For a new source at an existing facility, we believe that this beyond-the-floor option would not be cost-effective due to the costs of transporting large quantities of an alternate source of raw material to the facility. Given that the plant site already exists and is sited near the source of raw material, replacing the raw materials at the plant site with lower semivolatile metals-containing materials would be the source's only option. For a kiln constructed at a new greenfield site, we are not aware of any information and data from a source that has undertaken or is currently located at a site whose raw materials are inherently lower in semivolatile metals that would consistently achieve reduced semivolatile metals emissions. Further, we are uncertain as to what beyond-the-floor standard would be achievable using, if it exists, a lower semivolatile metals-containing raw material. Although we are doubtful that selecting a new plant site based on the content of metals in the raw material is a realistic beyond-the-floor option considering the numerous additional factors that go into such a decision, we solicit comment on whether and what level of a beyond-the-floor standard based on controlling the level of semivolatile metals in the raw materials is appropriate.

We also considered whether fuel switching to an auxiliary fuel containing a lower concentration of semivolatile metals would be an appropriate control option for sources. Two facilities typically burn hazardous waste at a fuel replacement rate of 100%, while one facility has burned a combination of fuel oil and natural gas in addition to the hazardous waste. We considered switching only to natural gas as the auxiliary fuel as a potential beyond-the-floor option. We do not believe that switching to natural gas is a viable control option for the same reasons discussed above for cement kilns.

For the reasons discussed above, we propose to establish the emission standard for new lightweight aggregate kilns at 2.4×10^{-5} lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat content in the hazardous waste and 43 µg/dscm.

E. What Are the Proposed Standards for Low Volatile Metals?

We are proposing to establish standards for existing lightweight aggregate kilns that limit emissions of low volatile metals (arsenic, beryllium, and chromium) to 9.5×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste and 110 µg/dscm. The proposed standard for new sources is 3.2×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste and 110 µg/dscm.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Low volatile metals emissions from existing lightweight aggregate kilns are currently limited to 110 µg/dscm by § 63.1205(a)(4). This standard was promulgated in the Interim Standards Rule (*see* 67 FR at 6797). Lightweight aggregate kilns control emissions of low volatile metals with baghouses and/or by controlling the feed concentration of low volatile metals in the hazardous waste.

We have compliance test emissions data for all lightweight aggregate kiln sources. For most sources, we have compliance test emissions data from more than one compliance test campaign. Low volatile metal stack emissions range from approximately 16 to 200 µg/dscm. These emissions are expressed as mass of low volatile metals (from all feedstocks) per unit volume of stack gas. Hazardous waste thermal emissions range from 9.7×10^{-6} to 1.8×10^{-4} lbs per million Btu. Hazardous waste thermal emissions represent the mass of low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste. For most lightweight aggregate kilns, chromium was the major contributor to low volatile emissions.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using the SRE/Feed Approach. The calculated floor is 9.5×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 57% of sources and would reduce low volatile metals emissions by 30 pounds per year.

To put the proposed floor level in context for a hypothetical lightweight aggregate kiln that gets 90% of its required heat input from hazardous waste, a thermal emissions level of 9.5×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste equates approximately to a stack gas concentration of 90 µg/dscm. This estimated stack gas concentration does not include contributions to emission from other low volatile metals-containing materials such as raw materials. The additional contribution to stack emissions of low volatile metals in an average raw material is estimated to be 50 µg/dscm. Thus, for the hypothetical lightweight aggregate kiln the thermal emissions floor level of 9.5×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste is estimated to be 150 µg/dscm, which is higher than the current interim standard of 110 µg/dscm. Given that comparing the proposed floor level to the interim standard requires numerous assumptions including hazardous waste fuel replacement rates, heat input requirements per ton of clinker, concentrations of low volatile metals in the raw material and fuels, and system removal efficiency, we have included a more detailed analysis in the background document.[119] Our detailed analysis indicates the proposed floor level could be less stringent than the interim standard for some sources. In order to avoid any backsliding from the current level of performance achieved by all lightweight aggregate kilns, we propose a dual standard: the low volatile metals standard as both the calculated floor level, expressed as a hazardous waste thermal emissions level, and the current interim standard. This would ensure that all sources are complying with a limit that is at least as stringent as the interim standard.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified three potential beyond-the-floor techniques for control of low volatile metals: (1) Improved particulate matter control; (2) control of low volatile metals in the hazardous waste feed; and (3) control of the low volatile metals in the raw materials and fuels.

Improved Particulate Matter Control. Controlling particulate matter also controls emissions of low volatile metals. Our data show that all lightweight aggregate kilns are already achieving greater than 99.8% system removal efficiency for low volatile metals, with many attaining 99.9% or greater removal. Thus, additional control of particulate matter emissions is likely to result in only a small increment in reduction of low volatile metals emissions. We evaluated a beyond-the-floor level of 4.7×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste. The national incremental annualized compliance cost for lightweight aggregate kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $0.24 million and would provide an incremental reduction in low volatile metals emissions beyond the MACT floor controls of 28 pounds per year. Nonair quality health and environmental impacts and energy effects were evaluated to estimate the impacts between further improvements to control particulate matter and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of solid waste generated by less than 30 tons per year and would also require sources to use an additional 46,000 kW-hours of energy per year. Therefore, based on these factors and costs of approximately $17 million per additional ton of low volatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control.

Feed Control of Low Volatile Metals in the Hazardous Waste. We also evaluated a beyond-the-floor level of 7.6×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which represents a 20% reduction from the floor level. We chose a 20% reduction as a level representing the practicable extent that additional feedrate control of low volatile metals in hazardous waste (beyond feedrate control that may be necessary to achieve the floor level) can be used and still achieve modest emissions reductions. The national incremental annualized compliance cost for lightweight aggregate kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $150,000 and would provide an incremental reduction in low volatile metals emissions beyond the MACT floor controls of 14 pounds per year. Nonair quality health and environmental impacts and energy effects were considered and are included in the cost estimates. Therefore, based on these factors and costs of approximately $22 million per additional ton of low volatile metals removed, we are not proposing a beyond-the-floor standard based on feed control of low volatile metals in the hazardous waste.

Feed Control of Low Volatile Metals in the Raw Materials and Auxiliary Fuels. Lightweight aggregate kilns could achieve a reduction in low volatile metal emissions by substituting a raw material containing lower levels of arsenic, beryllium, and/or chromium for a primary raw material with higher levels of these metals. We believe that this beyond-the-floor option would even be less cost-effective than either of the options discussed above, however. Given that facilities are sited near the primary raw material supply, acquiring and transporting large quantities of an alternate source of raw materials is likely to be cost-prohibitive. Therefore, we are not proposing a beyond-the-floor standard based on limiting low volatile metals in the raw material feed.

We also considered whether fuel switching to an auxiliary fuel containing a lower concentration of low volatile metals would be an appropriate control option for sources. Two facilities typically burn hazardous waste at a fuel replacement rate of 100%, while one facility has burned a combination of fuel oil and natural gas in addition to the hazardous waste. We considered switching only to natural gas as the auxiliary fuel as a potential beyond-the-

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[119] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapter 23.

floor option. We do not believe that switching to natural gas is a viable control option for similar reasons discussed above for cement kilns.

For the reasons discussed above, we propose to establish the emission standard for existing lightweight aggregate kilns at 9.5×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste and 110 μg/dscm.

3. What Is the Rationale for the MACT Floor for New Sources?

Low volatile metals emissions from new lightweight aggregate kilns are currently limited to 110 μg/dscm by § 63.1205(b)(4). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6797).

The MACT floor for new sources for low volatile metals would be 3.2×10^{-5} lbs low volatile metals emissions in the hazardous waste per million Btu in the hazardous waste, which considers emissions variability. This is an emission level that the single best performing source identified with the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained.

As discussed for existing sources, in order to avoid any backsliding from the current level of performance for a new lightweight aggregate kiln source, we propose a dual standard: the low volatile metals standard as both the calculated floor level, expressed as a hazardous waste thermal emissions level, and the current interim standard. This would ensure that all sources are complying with a limit that is at least as stringent as the interim standard. Thus, the proposed MACT floor for new lightweight aggregate kilns is 3.2×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste and 110 μg/dscm.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We considered three potential beyond-the-floor techniques for control of low volatile metals: (1) Improved particulate matter control; (2) control of low volatile metals in the hazardous waste feed; and (3) control of the low volatile metals in the raw materials and fuels.

Improved Particulate Matter Control. Controlling particulate matter also controls emissions of low volatile metals. We evaluated improved control of particulate matter based on a state-of-the-art baghouse using a high quality fabric filter bag material as beyond-the-floor control for further reductions in low volatile metals emissions. We evaluated a beyond-the-floor level of 1.6×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste. The incremental annualized compliance cost for a new lightweight aggregate kiln with average gas flowrate to meet this beyond-the-floor level, rather than to comply with the floor level, would be approximately $0.11 million and would provide an incremental reduction in low volatile metals emissions of approximately 16 pounds per year. Nonair quality health and environmental impacts and energy effects were evaluated and are included in the cost estimates. We estimate that this beyond-the-floor option would increase the amount of solid waste generated by 3 tons per year and would also require sources to use an additional 0.3 million kW-hours per year beyond the requirements to achieve the floor level. Therefore, based on these factors and costs of nearly $14 million per ton of low volatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control for new lightweight aggregate kilns.

Feed Control of Low Volatile Metals in the Hazardous Waste. We also believe that the expense for further reduction in low volatile metals emissions based on further control of low volatile metals concentrations in the hazardous waste is not warranted. We considered a beyond-the-floor level of 2.6×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which represents a 20% reduction from the floor level. Nonair quality health and environmental impacts and energy effects were evaluated and are included in the compliance cost estimates. For similar reasons discussed above for existing sources, we conclude that a beyond-the-floor standard based on controlling the concentration of low volatile metals levels in the hazardous waste feed would not be justified because of the costs and estimated emission reductions.

Feed Control of Low Volatile Metals in the Raw Materials and Auxiliary Fuels. Lightweight aggregate kilns could achieve a reduction in low volatile metals emissions by substituting a raw material containing lower levels of arsenic, beryllium, and/or chromium for a primary raw material with a higher level. For a new source at an existing facility, we believe that this beyond-the-floor option would not be cost-effective due to the costs of transporting large quantities of an alternate source of raw material to the facility. Given that the plant site already exists and is sited near the source of raw material, replacing the raw materials at the plant site with lower low volatile metals-containing materials would be the source's only option. For a kiln constructed at a new greenfield site, we are not aware of any information and data from a source that has undertaken or is currently located at a site whose raw materials are inherently lower in low volatile metals that would consistently achieve reduced low volatile metals emissions. Further, we are uncertain as to what beyond-the-floor standard would be achievable using, if it exists, a lower low volatile metals-containing raw material. Although we are doubtful that selecting a new plant site based on the content of metals in the raw material is a realistic beyond-the-floor option considering the numerous additional factors that go into such a decision, we solicit comment on whether and what level of a beyond-the-floor standard based on controlling the level of low volatile metals in the raw materials is appropriate.

We also considered whether fuel switching to an auxiliary fuel containing a lower concentration of low volatile metals would be an appropriate control option for sources. Two facilities typically burn hazardous waste at a fuel replacement rate of 100%, while one facility has burned a combination of fuel oil and natural gas in addition to the hazardous waste. We considered switching only to natural gas as the auxiliary fuel as a potential beyond-the-floor option. We do not believe that switching to natural gas is a viable control option for the same reasons discussed above for cement kilns.

For the reasons discussed above, we propose to establish the emission standard for new lightweight aggregate kilns at 3.2×10^{-5} lbs low volatile metals emissions attributable to the hazardous waste per million Btu heat content in the hazardous waste and 110 μg/dscm.

F. What Are the Proposed Standards for Hydrogen Chloride and Chlorine Gas?

We are proposing to establish standards for existing and new lightweight aggregate kilns that limit total chlorine emissions (hydrogen chloride and chlorine gas, combined, reported as a chloride equivalent) to 600 ppmv. Although we are also proposing to invoke CAA section 112(d)(4) to establish alternative risk-based standards in lieu of the MACT emission standards for total chlorine, the risk-based standards would be capped at the interim standards. Given that we are proposing MACT standards equivalent to the interim standards—600 ppmv, an emission level you are currently achieving—you would not be eligible for the section 112(d)(4) risk-based standards. See Part Two, Section XIII for additional details.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Total chlorine emissions from existing cement kilns are limited to 600 ppmv by § 63.1205(a)(6). This standard was promulgated in the Interim Standards Rule (See 67 FR at 6797). One of the three lightweight aggregate facilities uses a venturi scrubber to remove total chlorine from the gas stream. The system removal efficiency (SRE) achieved by this facility during compliance testing shows removal efficiencies ranging from 96 to 99%. Sources at the other two facilities do not use air pollution control equipment to capture emissions of total chlorine, and, therefore, SREs are negligible.

The majority of the chlorine fed to the lightweight aggregate kiln during a compliance test comes from the hazardous waste. In all but a few cases the hazardous waste contribution to the total amount of chlorine fed to the kiln represented at least 80% of the total loading to the kiln. The proposed MACT floor control for total chlorine is, in part, based on controlling the concentration of chlorine in the hazardous waste. The chlorine concentration in the hazardous waste will affect emissions of total chlorine at a given SRE because emissions will increase as the chlorine loading increases.

We have compliance test emissions data for all lightweight aggregate kiln sources. For most sources, we have compliance test emissions data from more than one compliance test campaign. Total chlorine emissions range from 14 to 116 ppmv for the source using a venturi scrubber and range from 500 to 2,400 ppmv at sources without scrubbing control equipment.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using the SRE/Feed Approach. The calculated floor is 3.0 lbs total chlorine emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained.

To put the proposed floor level in context for a hypothetical lightweight aggregate kiln that gets 90% of its required heat input from hazardous waste, a thermal emissions level of 3.0 lbs total chlorine emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste equates approximately to a stack gas concentration of 1,970 ppmv. This estimated stack gas concentration does not include contributions to emission from other chlorine-containing materials such as raw materials. Given that the calculated floor level is less stringent than the current interim emission standard of 600 ppmv. In order to avoid any backsliding from the current level of performance achieved by all lightweight aggregate kilns, we are proposing the floor standard as the current emission standard of 600 ppmv. This emission level is currently being achieved by all sources.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We considered a beyond-the-floor standard of 150 ppmv based on the assumption that dry lime scrubbing will provide 75% control of hydrogen chloride.[120] In addition, for costing purposes we assumed that lightweight aggregate kilns needing total chlorine reductions to achieve the beyond-the-floor level would install the dry scrubbing system after the existing particulate matter control device and add a new, smaller baghouse to remove the products of the reaction and any unreacted lime. We chose this conservative costing approach to address potential concerns that unreacted lime and collected chloride and sulfur salts may interfere with lightweight aggregate dust use practices.

The national incremental annualized compliance cost for lightweight aggregate kilns to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $1.9 million and would provide an incremental reduction in total chlorine emissions beyond the MACT floor controls of 280 tons per year, for a cost-effectiveness of $6,800 per additional ton of total chlorine removed. We evaluated nonair quality health and environmental impacts and energy effects associated with this beyond-the-floor standard and estimate that this beyond-the-floor option would increase the amount of solid waste generated by 12,700 tons per year and would also require sources to use an additional 175,000 kW-hours per year and 31 million gallons of water beyond the requirements to achieve the floor level.

We note that a cost of $6,800 per additional ton of total chlorine removed is in the "grey area'' between a cost the Agency has concluded is cost-effective and a cost the Agency has concluded is not cost-effective under other MACT rules. EPA concluded that a cost of $1,100 per ton of total chlorine removed for hazardous waste burning lightweight aggregate kilns was cost-effective in the 1999 MACT final rule. See 68 FR at 52900. EPA concluded, however, that a cost of $45,000 per ton of hydrogen chloride removed was not cost-effective for industrial boilers. See 68 FR at 1677. Consequently, we are concerned that a cost of $6,800 per additional ton of total chlorine removed is not warranted. Therefore, after considering cost-effectiveness and nonair quality health and environmental impacts and energy effects, we are not proposing a beyond-the-floor standard.

We specifically request comment on whether a beyond-the-floor standard is warranted.

3. What Is the Rationale for the MACT Floor for New Sources?

Total chlorine emissions from new lightweight aggregate kilns are currently limited to 600 ppmv by § 63.1205(b)(6). This standard was promulgated in the Interim Standards Rule (*See* 67 FR at 6797). The MACT floor for new sources for total chlorine would be 0.93 lbs chlorine in the hazardous waste per million Btu in the hazardous waste, which considers emissions variability.

To put the proposed floor level in context for a hypothetical lightweight aggregate kiln that gets 90% of its required heat input from hazardous waste, a thermal emissions level of 0.93 lbs total chlorine emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste equates approximately to a stack gas concentration of 610 ppmv. This estimated stack gas concentration does not include contributions to emission from other chlorine-containing materials such as raw materials. Given that the calculated floor level is less stringent than the current interim emission standard of 600 ppmv. In order to avoid any backsliding from the current standard for a new lightweight aggregate kilns, we are proposing the floor standard as the current emission standard of 600 ppmv.

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[120] We also considered controlling the chlorine levels in the hazardous waste feed and controlling the chlorine levels in the raw materials as potential beyond-the-floor techniques; however, it is our judgment that they are not likely to be as cost-effective as dry lime scrubbing.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

Similar to existing sources, we considered a beyond-the-floor standard of 150 ppmv based on the assumption that dry lime scrubbing will provide 75% control of hydrogen chloride. The incremental annualized compliance cost for a new lightweight aggregate kiln with average gas flowrate to meet this beyond-the-floor level, rather than to comply with the floor level, would be approximately $0.42 million and would provide an incremental reduction in total chlorine emissions of approximately 150 tons per year for a cost-effectiveness of approximately $2,800 per additional ton of total chlorine removed. Nonair quality health and environmental impacts and energy effects were evaluated and are included in the cost estimates. We estimate that this beyond-the-floor option would increase the amount of solid waste generated by 23 tons per year and would also require sources to use an additional 0.3 million kW-hours per year and 2 million gallons of water beyond the requirements to achieve the floor level.

A cost of $2,800 per additional ton of total chlorine removed is in the "grey area'' between a cost the Agency has concluded is cost-effective and a cost the Agency has concluded is not cost-effective under other MACT rules, as discussed above. Therefore, we are concerned that a cost-effectiveness of $2,800 per additional ton of total chlorine removed may not be warranted. After considering cost-effectiveness and nonair quality health and environmental impacts and energy effects, we are not proposing a beyond-the-floor standard.

We specifically request comment on whether a beyond-the-floor standard is warranted.

G. What Are the Standards for Hydrocarbons and Carbon Monoxide?

Hydrocarbon and carbon monoxide standards are surrogates to control emissions of organic hazardous air pollutants for existing and new lightweight aggregate kilns. The standards limit hydrocarbons and carbon monoxide concentrations to 20 ppmv or 100 ppmv. *See* §§ 63.1205(a)(5) and (b)(5). Existing and new lightweight aggregate kilns can elect to comply with either the hydrocarbon limit or the carbon monoxide limit on a continuous basis. Sources that comply with the carbon monoxide limit on a continuous basis must also demonstrate compliance with the hydrocarbon standard during the comprehensive performance test. However, continuous hydrocarbon monitoring following the performance test is not required. The rationale for these decisions are discussed in the September 1999 final rule (64 FR at 52900). We view the standards for hydrocarbons and carbon monoxide as unaffected by the Court's vacature of the challenged regulations in its decision of July 24, 2001. We therefore are not proposing these standards for lightweight aggregate kilns, but rather are mentioning them here for the reader's convenience.

H. What Are the Standards for Destruction and Removal Efficiency?

The destruction and removal efficiency (DRE) standard is a surrogate to control emissions of organic hazardous air pollutants other than dioxin/furans. The standard for existing and new lightweight aggregate kilns requires 99.99% DRE for each principal organic hazardous constituent, except that 99.9999% DRE is required if specified dioxin-listed hazardous wastes are burned. *See* §§ 63.1205(c). The rationale for these decisions are discussed in the September 1999 final rule (64 FR at 52902). We view the standards for DRE as unaffected by the Court's vacature of the challenged regulations in its decision of July 24, 2001. We therefore are not proposing these standards for lightweight aggregate kilns, but rather are mentioning them here for the reader's convenience.

X. How Did EPA Determine the Proposed Emission Standards for Hazardous Waste Burning Solid Fuel-Fired Boilers?

The proposed standards for existing and new solid fuel-fired boilers that burn hazardous waste are summarized in the table below. *See* proposed § 63.1216.

PROPOSED STANDARDS FOR EXISTING AND NEW SOLID FUEL-FIRED BOILERS

Hazardous air pollutant or surrogate	Emission standard [1]	
	Existing sources	New sources
Dioxin and furan	100 ppmv carbon monoxide or 10 ppmv hydrocarbons..	100 ppmv carbon monoxide or 10 ppmv hydrocarbons.
Mercury	10 µg/dscm	10 µg/dscm.
Particulate matter	69 mg/dscm (0.030 gr/dscf)	34 mg/dscm (0.015 gr/dscf).
Semivolatile metals	170 µg/dscm	170 µg/dscm.
Low volatile metals	210 µg/dscm	190 µg/dscm.
Hydrogen chloride and chlorine gas [2]	440 ppmv or the alternative emission limits under § 63.1215.	73 ppmv or the alternative emission limits under § 63.1215.
Carbon monoxide or hydrocarbons [3]	100 ppmv carbon monoxide or 10 ppmv hydrocarbons.	100 ppmv carbon monoxide or 10 ppmv hydrocarbons.
Destruction and Removal Efficiency	For existing and new sources, 99.99% for each principal organic hazardous constituent (POHC). For sources burning hazardous wastes F020, F021, F022, F023, F026, or F027, however, 99.9999% for each POHC.	

[1] All emission standards are corrected to 7% oxygen, dry basis.

[2] Combined standard, reported as a chloride ($Cl^{(-)}$) equivalent.

[3] Hourly rolling average. Hydrocarbons reported as propane.

We considered whether fuel switching could be considered a control technology to achieve MACT floor control. We investigated whether fuel switching would achieve lower HAP emissions and whether it could be technically achieved considering the existing design of solid fuel-fired boilers. We also considered the availability of various types of fuel. After considering these factors, we determined that fuel switching is not an appropriate control technology for purposes of determining the MACT floor level of control. This decision is based on the overall effect of fuel switching on HAP emissions, technical and design considerations, and concerns about fuel availability.

We determined that while fuel switching from coal to natural gas or oil would decrease particulate matter and some metal HAP emissions, emissions of some organic HAP would increase, resulting in uncertain benefits.[121] We believe that it is inappropriate in a MACT rulemaking to consider as MACT a control option that potentially will decrease emissions of one HAP while increasing emissions of another HAP. In order to adopt such a strategy, we would need to assess the relative risk associated with each HAP emitted, and determine whether requiring the control in question would result in overall lower risk. Such an analysis is not appropriate at this stage in the regulatory process. For example, the term "clean coal'' refers to coal that is lower in sulfur content and not necessarily lower in HAP content. Data gathered by EPA also indicates that within specific coal types HAP content can vary significantly. Switching to a low sulfur coal may actually increase emissions of some HAP. Therefore, it is not appropriate for EPA to include fuel switching to a low sulfur coal as part of the MACT standards for boilers that burn hazardous waste.

We also considered the availability of alternative fuel types. Natural gas pipelines are not available in all regions of the U.S., and natural gas is simply not available as a fuel for many solid fuel-fired boilers. Moreover, even where pipelines provide access to natural gas, supplies of natural gas may not be adequate. For example, it is common practice in cities during winter months (or periods of peak demand) to prioritize natural gas usage for residential areas before industrial usage. Requiring EPA regulated combustion units to switch to natural gas would place an even greater strain on natural gas resources. Consequently, even where pipelines exist, some units would not be able to run at normal or full capacity during these times if shortages were to occur. Therefore, under any circumstances, there would be some units that could not comply with a requirement to switch to natural gas.

In addition, we have significant concern that switching fuels would be infeasible for sources designed and operated to burn specific fuel types. Changes in the type of fuel burned by a boiler may require extensive changes to the fuel handling and feeding system (*e.g.*, a stoker-fired boiler using coal as primary fuel would need to be redesigned to handle fuel oil or gaseous fuel as the primary fuel). Additionally, burners and combustion chamber designs are generally not capable of handling different fuel types, and generally cannot accommodate increases or decreases in the fuel volume and shape. Design changes to allow different fuel use, in some cases, may reduce the capacity and efficiency of the boiler. Reduced efficiency may result in less complete combustion and, thus, an increase in organic HAP emissions. For the reasons discussed above, we conclude that fuel switching to cleaner solid fuels or to liquid or gaseous fuels is not an appropriate criteria for identifying the MACT floor level of control for solid fuel-fired boilers.

A. What Is the Rationale for the Proposed Standards for Dioxin and Furan?

The proposed standard for dioxin/furan for existing and new sources is compliance with the proposed carbon monoxide or hydrocarbon (CO/HC) emission standard and compliance with the proposed destruction and removal efficiency (DRE) standard. The CO/HC and DRE standards control emissions of organic HAPs in general, and are discussed in Sections G and H below. This standard ensures that boilers operate under good combustion practices as a surrogate for dioxin/furan control. Operating under good combustion practices minimizes levels of products of incomplete combustion, including potentially dioxin/furan, and organic compounds that could be precursors for post-combustion formation of dioxin/furan. The rationale for the dioxin/furan standard is discussed below.

1. What Is the Rationale for the MACT Floor for Existing Sources?

The proposed MACT floor control for existing sources is compliance with the proposed CO/HC emission standard and compliance with the proposed DRE standard.

Solid fuel-fired boilers that burn hazardous waste cofire the hazardous waste with coal at firing rates of 6–33% of total heat input. We have dioxin/furan emission data for one source, and those emissions are 0.07 ng TEQ/dscm.

Although dioxin/furan can be formed post-combustion in an electrostatic precipitator or baghouse that is operated at temperatures within the range of 400° to 750°F, the boiler for which we have dioxin/furan emissions data is equipped with an electrostatic precipitator that operated at 500°F during the emissions test. Although this is well within the optimum temperature range for formation of dioxin/furan, dioxin/furan emissions were low. In addition, this boiler fed chlorine at levels four times greater than any other solid fuel boiler.[122] We also have emissions data from 16 nonhazardous waste coal-fired boilers equipped with electrostatic precipitators and baghouses operated at temperatures up to 480°F, all of which have dioxin/furan emissions below 0.3 ng TEQ/dscm.[123] We conclude from these data and the information discussed below that rapid quench of post-combustion gas temperatures to below 400°F—the control technique that is the basis for the MACT standards for hazardous waste burning incinerators, and cement and lightweight aggregate kilns—is not the dominant dioxin/furan control mechanism for coal-fired boilers.

We believe that sulfur contributed by the coal fuel is a dominant control mechanism by inhibiting formation of dioxin/furan. Coal generally contributes from 65% to 95% percent of the boiler's heat input with the remainder provided by hazardous waste fuel. The presence of sulfur in combustor feedstocks has been shown to dramatically inhibit the catalytic formation of dioxin/furan in downstream temperature zones from 400°F to 750°F. High sulfur coals tend to inhibit dioxin/furan formation better than low sulfur coals. *Id.*

Adsorption of any dioxin/furan that may be formed on coal fly ash, and subsequent capture in the electrostatic precipitator or baghouse, also may contribute to the low dioxin/furan emissions despite some boilers operating at relatively high back-end gas temperatures. This effect is similar to that of using activated carbon injection to control dioxin/furan emissions. Adsorption of dioxin/furan on fly ash is related to the carbon content of the fly ash, and, thus, the type of coal burned. *Id.*

Operating under good combustion conditions to minimize emissions of organic compounds such as polychlorinated biphenols, benzene, and phenol that can be precursors to dioxin/furan formation is an important requisite to control dioxin/furan emissions. Although sulfur-induced inhibition may be the dominant mechanism to control dioxin/furan

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[121] C. Leatherwood, ERG, to J. Eddinger, OAQPS, EPA, Memorandum: Development of Fuel Switching Costs and Emission Reductions for Industrial/Commercial/Institutional Boilers and Process Heaters National Emission Standards for Hazardous Air Pollutants, October 2002.

[122] Uncontrolled hydrogen chloride in combustion gas was approximately 700 ppmv.

[123] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,'' March 2004, Chapter 2.

emissions from coal-fired boilers, minimizing dioxin/furan precursors by operating under good combustion practices certainly plays a part in controlling dioxin/furan emissions.

We propose to use the CO/HC and DRE standards as surrogates to ensure that boilers operate under good combustion conditions because quantified levels of control provided by sulfur in the coal and adsorption onto collected fly ash may not be replicable by the best performing sources nor duplicable by other sources. Although coal sulfur content may be a dominant factor affecting dioxin/furan emissions, we do not know what minimum level of sulfur provides significant control. Moreover, sulfur in coal causes emissions of sulfur oxides, a major criteria pollutant, and particulate sulfates. Similarly, we cannot quantify a minimum carbon content of coal that would form carbonaceous fly ash with superior dioxin/furan adsorptive properties. In addition, restricting coal types that may be burned based on carbon content may have an adverse impact on energy production at sources burning hazardous waste as fuel. (These considerations raise the question of whether boilers operating under these conditions would still be "best'' performers when these adverse impacts are taken into account.) For these reasons, and because we have emissions data from only one source, we cannot establish a numerical dioxin/furan emission standard.

Operating under good combustion practices is floor control because all hazardous waste burning boilers are required by existing RCRA regulations to operate under good combustion conditions to minimize emissions of toxic organic compounds. See § 266.104 requiring compliance with DRE and CO/HC emission standards.[124] We also find, as required by CAA section 112(h)(1), that these proposed standards are consistent with section 112(d)'s objective of reducing emissions of these HAPs to the extent achievable.

We request comment on an alternative floor that would be established as the highest dioxin/furan emission level in our data base. Because we have dioxin/furan emission data from only one coal-fired boiler that burns hazardous waste, we would combine that data point with emissions data from coal-fired boilers that do not burn hazardous waste since the factors that affect dioxin/furan emissions from these boilers are not significantly influenced by hazardous waste. These additional data would better represent the range of emissions from coal-fired boilers. Under this approach, the dioxin/furan floor would be an emission level of 0.30 ng TEQ/dscm. We would also use this approach to establish the same floor for new sources.

Finally, we note that we propose to require a one-time dioxin/furan emission test for sources that would not be subject to a numerical dioxin/furan emission standard, such as solid fuel-fired boilers. As discussed in Part Two, Section XIV.B below, the testing would assist in developing both section 112(d)(6) standards and section 112(f) residual risk standards.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

As discussed above, we propose to use the CO/HC and DRE standards as surrogates to ensure good combustion conditions, and thus, control of dioxin/furan emissions. We are not proposing beyond-the-floor standards for CO/HC and DRE, as discussion in Sections G and H below.

We investigated use of activated carbon injection or, for sources equipped with baghouses, catalytically impregnated fabric felt/membrane filter materials to achieve a beyond-the-floor standard of 0.10 ng TEQ/dscm.[125] To estimate the cost-effectiveness of these beyond-the-floor control techniques, we imputed dioxin/furan emissions levels for the six sources for which we don't have measured emissions data. To impute the missing emissions levels, we used the emissions data from the hazardous waste burning boiler as well as the emissions data from nonhazardous waste coal-fired boilers. It may be appropriate to meld these emissions data because hazardous waste burning should not affect dioxin/furan emissions from coal-fired boilers. In fact, the nonhazardous waste coal-fired boilers had somewhat higher emissions than the hazardous waste coal-fired boiler. (The emissions from the nonhazardous waste coal-fired boilers may simply represent the range of emissions that could be expected from hazardous waste coal-fired boilers, as well, given that we have emissions data from only one hazardous waste boiler.)

The national incremental annualized compliance cost for solid fuel-fired boilers to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $3.4 million and would provide an incremental reduction in dioxin/furan emissions beyond the MACT floor controls of 0.26 grams TEQ tons per year. We also evaluated the nonair quality health and environmental impacts and energy effects between activated carbon injection and controls likely to be used to meet the floor level. We estimate that this beyond-the-floor option would increase the amount of hazardous waste[126] generated by 3,300 tons per year and would also require sources to use an additional 1.2 million kW-hours per year. Based on these impacts and costs of approximately $13 million per additional grams of dioxin/furan removed, we are not proposing a beyond-the-floor standard based on activated carbon injection.

For these reasons, we propose a floor standard for dioxin/furan for existing sources of compliance with the proposed CO/HC emission standard and compliance with the proposed DRE standard.[127]

3. What Is the Rationale for the MACT Floor for New Sources?

As discussed above, we propose to use the CO/HC and DRE standards as surrogates to ensure good combustion conditions, and thus, control of dioxin/furan emissions. Because we are proposing the same DRE and CO/HC standards for existing sources and new sources as discussion in Sections G and H below, we are proposing the same dioxin/furan floor for new and existing sources.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We are not proposing beyond-the-floor standards for CO/HC for dioxin/furan for new solid fuel-fired boilers because we are not proposing beyond-the-floor standards for CO/HC and DRE

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[124] Section 266.104 requires compliance with a CO limit of 100 ppmv or a HC limit of 20 ppmv, while we are proposing today a CO limit of 100 ppmv or a HC limit of 10 ppmv (see Section X.H in the text). Although today's proposed HC limit is more stringent than the current limit for boilers, all solid fuel boilers chose to comply with the 100 ppmv CO limit. Moreover, for those liquid-fuel fired boilers that chose to comply with the 20 ppmv HC limit, their HC emissions are below 10 ppmv.

[125] We considered a beyond-the-floor standard of 0.20 ng TEQ/dscm but determined that it may not result in emissions reductions because the majority of sources (the hazardous waste coal-fired boiler and the nonhazardous waste coal-fired boilers) appear to emit dioxin/furan at levels below 0.20 ng TEQ/dscm.

[126] To estimate the cost of a beyond-the-floor standard conservatively, we assumed the solid waste generated would be subject to regulation as hazardous waste. These costs are likely over-estimated, however, because these residues are not likely to fail the criteria for retaining the Bevill exclusion under 40 CFR 266.112.

[127] We note that we propose to require solid fuel-fired boilers (and liquid fuel-fired boilers that are not subject to a numerical dioxin/furan standard) to conduct a one-time dioxin/furan emission test to provide data to assist in developing both section 112(d)(6) standards and section 112(f) residual risk standards. See discussion in Section XIV.B of the preamble.

for new sources. See discussion in Sections G and H below.

In addition, we evaluated activated carbon injection or, for sources equipped with baghouses, use of catalytically impregnated fabric felt/membrane filter materials as beyond-the-floor control for further reduction of dioxin/furan emissions to achieve a beyond-the-floor level of 0.15 ng TEQ/dscm. The incremental annualized compliance cost for a new solid fuel-fired boiler with average gas flowrate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $0.28 million and would provide an incremental reduction in dioxin/furan emissions of approximately 0.21 grams TEQ per year, for a cost-effectiveness of $1.3 million per gram of dioxin/furan removed. We estimate that this beyond-the-floor option would increase the amount of hazardous waste (or solid waste if the source retains the Bevill exclusion under 40 CFR 266.112) generated for a new solid fuel-fired boiler with average gas flowrate by 270 tons per year and would require a source to use an additional 0.1 million kW-hours per year beyond the requirements to achieve the floor level. After considering these impacts and a cost of $1.3 million per gram of dioxin/furan removed, we conclude that a beyond-the-floor standard based on activated carbon injection or catalytically impregnated fabric felt/membrane filter is not warranted for new sources. Consequently, we propose a floor standard for dioxin/furan for new sources: Compliance with the proposed CO/HC and DRE emissions standards.

B. What Is the Rationale for the Proposed Standards for Mercury?

The proposed standard for mercury for solid fuel-fired boilers is 10 µg/dscm for both existing sources and new sources.[128]

1. What Is the Rationale for the MACT Floor for Existing Sources?

The MACT floor for existing sources is 10 µg/dscm based on adsorption of mercury onto coal fly ash and removal of fly ash by the electrostatic precipitator or baghouse.

All solid fuel-fired boilers are equipped with electrostatic precipitators or baghouses. We have compliance test emissions data for three sources equipped with electrostatic precipitators which document maximum mercury emissions ranging from 3 ug/dscm to 11 µg/dscm and system removal efficiencies of 83% to 96%. These three sources represent seven of the 12 solid fuel-fired boilers.[129] The Agency has also determined that coal-fired utility boilers can achieve significant control of mercury by adsorption on fly ash and particulate matter control.[130]

To identify the MACT floor, we evaluated the compliance test emissions data using the SRE/Feed Approach. The calculated floor is 10 µg/dscm, which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 67% of sources and would provide a reduction in mercury emissions of 0.015 tons per year.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified two potential beyond-the-floor techniques for control of mercury: (1) Activated carbon injection; and (2) control of mercury in the hazardous waste feed. For reasons discussed below, we are not proposing a beyond-the-floor standard for mercury.

a. Use of Activated Carbon Injection. We evaluated activated carbon injection as beyond-the-floor control for further reduction of mercury emissions. Activated carbon has been demonstrated for controlling mercury from waste combustion systems and has achieved efficiencies ranging from 80% to greater than 90% depending on factors such as: Activated carbon type/impregnation; injection rate; mercury speciation in the flue gas; and flue gas temperature. We made a conservative assumption that the use of activated carbon will provide 70% mercury control for coal-fired boilers given the low mercury levels at the floor. Applying this activated carbon removal efficiency to the mercury floor level of 10 µg/dscm would provide a beyond-the-floor level of 3.0 µg/dscm.

The national incremental annualized compliance cost for solid fuel boilers to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $1.1 million and would provide an incremental reduction in mercury emissions beyond the MACT floor controls of 0.03 tons per year. We evaluated nonair quality health and environmental impacts and energy effects and estimate that this beyond-the-floor option would increase the amount of hazardous waste (or solid waste if the source retains the Bevill exclusion under 40 CFR 266.112) generated by 1,000 tons per year and would require sources to use an additional 0.35 million kW-hours per year beyond the requirements to achieve the floor level. Based on these factors and costs of approximately $35 million per additional ton of mercury removed, we are not proposing a beyond-the-floor standard based on activated carbon injection.

b. Feed Control of Mercury in the Hazardous Waste. We also evaluated a beyond-the-floor level of 8 µg/dscm, which represents a 20% reduction from the floor level. The national incremental annualized compliance cost for solid fuel boilers to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $0.11 million and would provide an incremental reduction in mercury emissions beyond the MACT floor controls of 0.005 tons per year. Nonair quality health and environmental impacts and energy effects are not significant factors for feedrate control.

We are not proposing a beyond-the-floor standard based on feed control of mercury in the hazardous waste because it would not be cost-effective at approximately $23 million per additional ton of mercury removed. Consequently, we propose a floor standard for mercury for existing sources of 10 µg/dscm.

3. What Is the Rationale for MACT Floor for New Sources?

MACT floor for new sources would be 10 µg/dscm, the same as the floor for existing sources. This is an emission level that the single best performing source identified by the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We identified the same two potential beyond-the-floor techniques for control

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[128] As information, EPA proposed MACT standards for mercury for solid fuel-fired industrial, commercial, and institutional boilers that do not burn hazardous waste of 5.3 µg/dscm for existing sources and 3.4 µg/dscm for new sources. See 68 FR 1660 (Jan. 13, 2003). These standards are based on use of fabric filters to control mercury emissions.

[129] Owners and operators have used the emissions data from the three boilers as "data in lieu of testing" emissions from other, identical boilers at the same facility. One of the three boilers as two such sister identical boilers, and the other two boilers each have a sister identical boiler. Thus, emissions from these three boilers represent emissions from seven of the 12 solid fuel-fired boilers.

[130] Memo from Frank Princiotta, USEPA, to John Seitz, USEPA, entitled "Control of Mercury Emissions from Coal-fired Utility Boilers," dated October 25, 2000.

of mercury: (1) Use of activated carbon injection; and (2) control of mercury in the hazardous waste feed.

We evaluated use of carbon injection for new sources to achieve a beyond-the-floor emission level of 5.0 µg/dscm. The incremental annualized compliance cost for a new solid fuel boiler with average gas flowrate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $0.28 million and would provide an incremental reduction in mercury emissions of approximately 0.008 tons per year, for a cost-effectiveness of $37 million per ton of mercury removed. We estimate that this beyond-the-floor option would increase the amount of hazardous waste (or solid waste if the source retains the Bevill exclusion under 40 CFR 266.112) generated for a new solid fuel-fired boiler with average gas flowrate by 270 tons per year and would require a source to use an additional 0.1 million kW-hours per year beyond the requirements to achieve the floor level. After considering these impacts and, primarily, cost-effectiveness, we are not proposing a beyond-the-floor standard based on activated carbon injection for new sources. Consequently, we propose a floor standard for mercury of 10 µg/dscm for new sources.

C. What Is the Rationale for the Proposed Standards for Particulate Matter?

The proposed standards for particulate matter for solid fuel-fired boilers are 69 mg/dscm (0.030 gr/dscf) for existing sources and 34 mg/dscm (0.015 gr/dscf) for new sources.[131] The particulate matter standard serves as a surrogate for nonmercury HAP metals in emissions from the coal burned in the boiler, and for nonenumerated HAP metal emissions attributable to the hazardous waste fuel burned in the boiler.

1. What Is the Rationale for the MACT Floor for Existing Sources?

All solid fuel-fired boilers are equipped with electrostatic precipitators or baghouses. We have compliance test emissions data for seven boilers. Emissions from these seven boilers represent emissions from all 12 solid fuel-fired boilers.[132] Particulate emissions range from 0.021 gr/dscf to 0.037 gr/dscf.[133]

To identify the floor level, we evaluated the compliance test emissions data associated with the most recent test campaign using the air pollution control device approach. *See* discussion in Part Two, Section VI.A.2.a. The calculated floor is 140 mg/dscm (0.063 gr/dscf), which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 75% of sources. Compliance with the floor level would reduce particulate matter emissions by 33 tons per year.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We evaluated improved design, operation, and maintenance of the existing electrostatic precipitators (*e.g.*, humidification to improve gas conditioning) and baghouses (*e.g.*, improved bags) for these boilers to achieve a beyond-the-floor emission level of 69 mg/dscm (0.030 gr/dscf). We also evaluated a more stringent standard based on adding a polishing fabric filter to achieve a beyond-the-floor emission level of 0.015 gr/dscf. The national incremental annualized compliance cost for solid fuel boilers to meet a beyond-the-floor level of 69 mg/dscm rather than comply with the floor controls would be approximately $1.3 million and would provide an incremental reduction in particulate matter emissions beyond the MACT floor controls of 400 tons per year and an incremental reduction in metal HAP of 6.8 tons per year. We evaluated nonair quality health and environmental impacts and energy effects and estimate that this beyond-the-floor option would increase the amount of hazardous waste (or solid waste if the source retains its Bevill exclusion under 40 CFR 266.112) generated by 380 tons per year and would require sources to use an additional 3.3 million kW-hours per year and to use an additional 160 million gallons of water beyond the requirements to achieve the floor level.

Notwithstanding these nonair quality health and environmental impacts and energy effects, a beyond-the-floor standard of 69 mg/dscm (0.030 gr/dscf) based on improved particulate matter control is warranted because it is cost-effective at a cost of approximately $3,200 per additional ton of particulate matter removed and a cost of approximately $190,000 per additional ton of metal HAP removed.[134] In addition, the average incremental annualized cost would be only $120,000 per facility. We also note that, although section 112(d) only authorizes control of HAPs, and particulate matter is not itself a HAP but a surrogate for HAP metals, Congress expected the MACT program to result in significant emissions reductions of criteria air pollutants (of which particulate matter is one), and viewed this as an important benefit of the MACT (and residual risk) provisions. *See* 5 *Legislative History* at 8512 (Senate Committee Report). Finally, we note that this beyond-the-floor standard of 0.030 gr/dscf would be comparable to the floor-based standard the Agency recently promulgated for solid fuel-fired boilers that do not burn hazardous waste: 0.07 lb/MM Btu (approximately 0.034 gr/dscf). *See* NESHAP for Industrial/Commercial/Institutional Boilers and Process Heaters, signed Feb. 26, 2004. Because hazardous waste does not contribute substantially to particulate matter emissions from coal-fired boilers, MACT standards for solid fuel boilers should be similar irrespective of whether they burn hazardous waste.

A 34 mg/dscm beyond-the-floor standard for existing sources based on use of a polishing fabric filter would remove an additional 570 tons per year of particulate matter beyond the floor level at a cost-effectiveness of $9,800 per ton removed. We conclude that this standard would not be as cost-effective as a 69 mg/dscm standard and would result in greater nonair quality health and environmental impacts and energy effects. For these reasons, we propose a beyond-the-floor particulate matter standard of 0.030 gr/dscf (69 mg/dscm) for existing sources. We specifically request comment on whether this beyond-the-floor standard is warranted.

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[131] As information, EPA proposed MACT standards for particulate matter for solid fuel-fired industrial, commercial, and institutional boilers that do not burn hazardous waste of 0.035 gr/dscf for existing sources and 0.013 gr/dscf for new sources. *See* 68 FR 1660 (Jan. 13, 2003). These standards are based on control of particulate matter emissions using a fabric filter.

[132] Owners and operators have determined that emissions from these seven boilers represent emissions from five other identical, sister boilers. Owners and operators have used the emissions from these seven boilers as "data in lieu of testing'' emissions from the other five identical boilers.

[133] Although particulate matter emissions are predominantly attributable to coal ash rather than ash from hazardous waste fuel, we did not combine emissions data for coal-fired boilers that do not burn hazardous waste with the data for boilers that burn hazardous waste because we have particulate emissions data for all boilers that burn hazardous waste.

[134] Note that we are not proposing beyond-the-floor particulate matter standards for incinerators, cement kilns, lightweight aggregate kilns, and liquid fuel-fired boilers because those standards would have a cost-effectiveness of $12,000 to $80,000 per ton of particulate matter removed, substantially higher than the $3,200 per ton cost-effectiveness of a beyond-the-floor standard for solid fuel-fired boilers.

3. What Is the Rationale for the MACT Floor for New Sources?

MACT floor for new sources would be 90 mg/dscm (0.040 gr/dscf), considering emissions variability. This is an emission level that the single best performing source identified by the APCD Approach (*i.e.*, the source using a fabric filter with the lowest emissions) could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated use of a fabric filter to achieve a beyond-the-floor emission level of 34 mg/dscm (0.015 gr/dscf). The incremental annualized cost for a new solid fuel-fired boiler with average gas flowrate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $280,000 and would provide an incremental reduction in particulate emissions of approximately 44 tons per year, for a cost-effectiveness of $6,400 per ton of particulate matter removed. We estimate that this beyond-the-floor option would increase the amount of hazardous waste (or solid waste if the source retains the Bevill exclusion under 40 CFR 266.112) generated for a new solid fuel-fired boiler with average gas flowrate by 44 tons per year and would require a source to use an additional 1.1 million kW-hours per year beyond the requirements to achieve the floor level. Notwithstanding these impacts, a standard of 34 mg/dscm (0.015 gr/dscf) is warranted because it would be cost-effective and it would remove additional nonenumerated metal HAP. We also note that this beyond-the-floor standard of 0.015 gr/dscf for new sources would be comparable to the floor-based standard the Agency recently promulgated for new solid fuel-fired boilers that do not burn hazardous waste: 0.025 lb/MM Btu (approximately 0.012 gr/dscf). *See* NESHAP for Industrial/Commercial/Institutional Boilers and Process Heaters, signed Feb. 26, 2004.

For these reasons, we propose a beyond-the-floor particulate matter standard of 34 mg/dscm (0.015 gr/dscf) for new sources. We specifically request comment on whether this beyond-the-floor standard is warranted.

D. What Is the Rationale for the Proposed Standards for Semivolatile Metals?

The proposed standard for semivolatile metals (lead and cadmium, combined) for solid fuel-fired boilers is 170 µg/dscm for both existing and new sources.[135]

1. What Is the Rationale for the MACT Floor for Existing Sources?

We have compliance test emissions data for four boilers. Emissions from these four boilers represent emissions from nine of the 12 solid fuel-fired boilers.[136] Semivolatile metal emissions range from 62 µg/dscm to 170 µg/dscm. These emissions are expressed as mass of semivolatile metals (from all feedstocks) per unit of stack gas.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using the SRE/Feed Approach. The calculated floor is 170 µg/dscm, which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this floor level is being achieved by 42% of sources and would reduce semivolatile metals emissions by 0.22 tons per year.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We evaluated three beyond-the-floor approaches for semivolatile metals for existing sources: (1) Improved control of particulate matter; (2) control of semivolatile metals in the hazardous waste feed; and (3) a no-cost standard derived from the beyond-the-floor particulate matter standard. For reasons discussed below, we are not proposing a beyond-the-floor standard for semivolatile metals.

a. Improved Particulate Matter Control. Controlling particulate matter also controls emissions of semivolatile metals. Consequently, we evaluated a beyond-the-floor level of 85 µg/dscm, a 50 percent reduction in semivolatile metal emissions, that would be achieved by reducing particulate matter emissions. The national incremental annualized compliance cost for solid fuel boilers to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $0.29 million and would provide an incremental reduction in semivolatile metals emissions beyond the MACT floor controls of 0.29 tons per year. We evaluated the nonair quality health and environmental impacts and energy effects of this beyond-the-floor standard and estimate that the amount of hazardous waste generated would increase by approximately 133 tons per year, an additional 61 million gallons per year of water would be used, and an additional 1.3 million kW-hours per year of electricity would be used. Therefore, based on these factors and costs of approximately $1 million per additional ton of semivolatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control.

b. Feed Control of Semivolatile Metals in the Hazardous Waste. We also evaluated a beyond-the-floor level of 140 µg/dscm based on additional control of semivolatile metals in the hazardous waste feed. This represents a 20% reduction from the floor level. The national incremental annualized compliance cost for solid fuel boilers to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $36,000 and would provide an incremental reduction in semivolatile metals emissions beyond the MACT floor controls of 0.046 tons per year. Although nonair quality health and environmental impacts and energy effects are not significant factors, we are not proposing a beyond-the-floor standard based on feed control of semivolatile metals in the hazardous waste because it is not cost-effective at approximately $0.78 million per additional ton of semivolatile metals removed.

c. No-cost Standard Derived from the Beyond-the-Floor Particulate Matter Standard. The beyond-the-floor standard for particulate matter would also provide beyond-the-floor control for semivolatile metals if sources were to comply with the beyond-the-floor particulate matter standard using improved particulate matter control

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[135] As information, EPA proposed to control nonmercury metal HAP emissions for industrial, commercial, and institutional boilers that do not burn hazardous waste with a particulate matter emission standard only. See 68 FR 1660 (Jan. 13, 2003). For hazardous waste combustors, we propose to control specific, enumerated semivolatile and low volatile metals with separate emission standards because hazardous waste can have a wide range of concentrations of these metals, and, thus, particulate matter may contain a wide range of metal concentrations. Thus, particulate matter may not be an effective surrogate for particular metal HAP. Nonetheless, for practical reasons, we rely on particulate matter to control nonenumerated metal HAP.

[136] Owners and operators have determined that emissions from these four boilers represent emissions from five other identical, sister boilers. Owners and operators have used the emissions from these four boilers as "data in lieu of testing'' emissions from the other five identical boilers.

rather than by reducing the feedrate of ash. To identify a beyond-the-floor emission level for semivolatile metals that would derive from the beyond-the-floor particulate matter standard, we assumed that emissions of semivolatile metals would be reduced by the same percentage that sources would need to reduce particulate matter emissions. We then developed a revised semivolatile metal emission data base considering these particulate matter standard-derived reductions and reductions needed to meet the semivolatile metal floor level. We analyzed these revised emissions to identify the best performing sources and an emission level that the average of the best performers could achieve 99 out of 100 future tests. This emission level—82 µg/dscm—is a beyond-the-floor semivolatile metal standard that can be achieved at no cost because the costs have been allocated to the particulate matter beyond-the-floor standard.

We are concerned, however, that sources may choose to comply with the beyond-the-floor particulate matter standard by controlling the feedrate of ash in the hazardous waste feed, which may or may not reduce the feedrate and emissions of metal HAP. If so, it would be inappropriate to consider the beyond-the-floor standard for semivolatile metals discussed above as a no-cost standard. We specifically request comment on whether sources may comply with beyond-the-floor particulate matter standard by controlling the feedrate of ash.

For these reasons, we propose a floor standard for semivolatile metals of 170 µg/dscm for existing sources.

3. What Is the Rationale for the MACT Floor for New Sources?

MACT floor for new sources would be 170 µg/dscm, considering emissions variability. This is the same as the floor for existing sources. This is an emission level that the single best performing source identified by the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated three beyond-the-floor approaches for semivolatile metals for new sources: (1) Improved particulate matter controls; (2) control of semivolatile metals in the hazardous waste feed; and (3) a no-cost standard derived from the beyond-the-floor particulate matter standard.

a. Improved Particulate Matter Controls. We evaluated improved control of particulate matter using a fabric filter as beyond-the-floor control for further reductions in semivolatile metals emissions. We evaluated a beyond-the-floor level of 71 µg/dscm. The incremental annualized compliance cost for a new solid fuel boiler with average gas flowrate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $0.28 million and would provide an incremental reduction in semivolatile metals emissions of approximately 0.15 tons per year, for a cost-effectiveness of $1.8 million per ton of semivolatile metals removed. We estimate that this beyond-the-floor option would increase the amount of hazardous waste (or solid waste if the source retains the Bevill exclusion under 40 CFR 266.112) generated for a new solid fuel-fired boiler with average gas flowrate by 44 tons per year and would require the source to use an additional 1.2 million kW-hours per year beyond the requirements to achieve the floor level. After considering these impacts and cost-effectiveness, we conclude that a beyond-the-floor standard for new sources based on use of a fabric filter to improve control of particulate matter is not warranted.

b. Feedrate Control. For similar reasons discussed above for existing sources, we conclude that a beyond-the-floor standard based on controlling the semivolatile metals in the hazardous waste feed would not be cost-effective.

c. No-cost Standard Derived from the Beyond-the-Floor Particulate Matter Standard. As discussed above in the context of existing sources, the beyond-the-floor standard for particulate matter would also provide beyond-the-floor control for semivolatile metals if sources were to comply with the beyond-the-floor particulate matter standard using improved particulate matter control rather than by reducing the feedrate of ash. Under this approach, the no-cost beyond-the-floor standard for semivolatile metals for new sources would be 44 µg/dscm. As discussed above, however, we are concerned that sources may choose to comply with the beyond-the-floor particulate matter standard by controlling the feedrate of ash in the hazardous waste feed, which may or may not reduce the feedrate and emissions of metal HAP. If so, it would be inappropriate to consider this beyond-the-floor standard as a no-cost standard. We specifically request comment on whether sources may comply with beyond-the-floor particulate matter standard by controlling the feedrate of ash.

For these reasons, we propose a semivolatile metals standard of 170 µg/dscm for new sources.

E. What Is the Rationale for the Proposed Standards for Low Volatile Metals?

The proposed standards for low volatile metals (arsenic, beryllium, and chromium) for solid fuel-fired boilers is 210 µg/dscm for existing sources and 190 µg/dscm for new sources.

1. What Is the Rationale for the MACT Floor for Existing Sources?

We have compliance test emissions data for four boilers. Emissions from these four boilers represent emissions from 10 of the 12 solid fuel-fired boilers.[137] Low volatile metal emissions range from 41 µg/dscm to 230 µg/dscm. These emissions are expressed as mass of low volatile metals (from all feedstocks) per unit of stack gas.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using the SRE/Feed Approach. The calculated floor is 210 µg/dscm, which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 67% of sources and that it would reduce low volatile metals emissions by 0.45 tons per year.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We evaluated three beyond-the-floor approaches for low volatile metals for existing sources: (1) Improved control of particulate matter; (2) control of low volatile metals in the hazardous waste feed; and (3) a no-cost standard derived from the beyond-the-floor particulate matter standard. For reasons discussed below, we are not proposing a beyond-the-floor standard for low volatile metals.

a. Improved Particulate Matter Control. Controlling particulate matter also controls emissions of low volatile metals. We evaluated a beyond-the-floor level of 105 µg/dscm. The national incremental annualized compliance cost for solid fuel boilers to meet this

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[137] Owners and operators have determined that emissions from these four boilers represent emissions from five other identical, sister boilers. Owners and operators have used the emissions from these four boilers as "data in lieu of testing'' emissions from the other five identical boilers.

beyond-the-floor level rather than comply with the floor controls would be approximately $0.32 million and would provide an incremental reduction in low volatile metals emissions beyond the MACT floor controls of 0.37 tons per year. We evaluated the nonair quality health and environmental impacts and energy effects of this beyond-the-floor standard and estimate that the amount of hazardous waste generated would increase by approximately 83 tons per year, an additional 54 million gallons of water per year would be used, and electricity consumption would increase by 1.2 million kW-hours per year. Considering these impacts and a cost of approximately $0.87 million per additional ton of low volatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control.

b. Feed Control of Low Volatile Metals in the Hazardous Waste. We also evaluated a beyond-the-floor level of 170 µg/dscm, which represents a 20% reduction from the floor level. The national incremental annualized compliance cost for solid fuel boilers to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $98,000 and would provide an incremental reduction in low volatile metals emissions beyond the MACT floor controls of 0.13 tons per year. Although nonair quality health and environmental impacts and energy effects are not significant factors, we are not proposing a beyond-the-floor standard based on feedrate control of low volatile metals in the hazardous waste because it would not be cost-effective at approximately $0.78 million per additional ton of low volatile metals removed.

c. No-cost Standard Derived from the Beyond-the-Floor Particulate Matter Standard. As discussed above in the context of semivolatile metals, the beyond-the-floor standard for particulate matter would also provide beyond-the-floor control for low volatile metals if sources were to comply with the beyond-the-floor particulate matter standard using improved particulate matter control rather than by reducing the feedrate of ash. To identify a beyond-the-floor emission level for low volatile metals that would derive from the beyond-the-floor particulate matter standard, we assumed that emissions of low volatile metals would be reduced by the same percentage that sources would need to reduce particulate matter emissions. We then developed a revised low volatile metal emission data base considering these particulate matter standard-derived reductions and reductions needed to meet the low volatile metal floor level. We analyzed these revised emissions to identify the best performing sources and an emission level that the average of the best performers could achieve 99 out of 100 future tests. This emission level—110 µg/dscm—is a beyond-the-floor low volatile metal standard that can be achieved at no cost because the costs have been allocated to the particulate matter beyond-the-floor standard.

We are concerned, however, that sources may choose to comply with the beyond-the-floor particulate matter standard by controlling the feedrate of ash in the hazardous waste feed, which may or may not reduce the feedrate and emissions of metal HAP. If so, it would be inappropriate to consider the beyond-the-floor standard for low volatile metals discussed above as a no-cost standard. We specifically request comment on whether sources may comply with beyond-the-floor particulate matter standard by controlling the feedrate of ash.

For these reasons, we propose a floor standard for low volatile metals of 210 µg/dscm for existing sources.

3. What Is the Rationale for the MACT Floor for New Sources?

MACT floor for low volatile metals for new sources would be 190 µg/dscm, considering emissions variability. This is an emission level that the single best performing source identified by the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated three beyond-the-floor approaches for low volatile metals for new sources: (1) Improved particulate matter control; (2) control of low volatile metals in the hazardous waste feed; and (3) a no-cost standard derived from the beyond-the-floor particulate matter standard.

a. Improved Particulate Matter Control. We evaluated improved control of particulate matter using a fabric filter to achieve an emission level of 79 µg/dscm as beyond-the-floor control for low volatile metals emissions. The incremental annualized compliance cost for a new solid fuel boiler to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $0.28 million and would provide an incremental reduction in low volatile metals emissions of approximately 0.17 tons per year, for a cost-effectiveness of $1.7 million per ton of low volatile metals removed. We estimate that this beyond-the-floor option would increase the amount of hazardous waste (or solid waste if the source retains the Bevill exclusion under 40 CFR 266.112) generated for a new solid fuel-fired boiler with average gas flowrate by 44 tons per year and would require the source to use an additional 1.2 million kW-hours per year beyond the requirements to achieve the floor level. After considering these impacts and cost-effectiveness, we conclude that a beyond-the-floor standard based on improved particulate matter control using a fabric filter for new sources is not warranted.

b. Feedrate Control. For similar reasons discussed above for existing sources, we conclude that a beyond-the-floor standard based on controlling the low volatile metals in the hazardous waste feed would not be cost-effective.

c. No-cost Standard Derived from the Beyond-the-Floor Particulate Matter Standard. As discussed above in the context of existing sources, the beyond-the-floor standard for particulate matter would also provide beyond-the-floor control for low volatile metals if sources were to comply with the beyond-the-floor particulate matter standard using improved particulate matter control rather than by reducing the feedrate of ash. Under this approach, the no-cost beyond-the-floor standard for low volatile metals for new sources would be 34 µg/dscm. As discussed above, however, we are concerned that sources may choose to comply with the beyond-the-floor particulate matter standard by controlling the feedrate of ash in the hazardous waste feed, which may or may not reduce the feedrate and emissions of metal HAP. If so, it would be inappropriate to consider this beyond-the-floor standard as a no-cost standard. We specifically request comment on whether sources may comply with beyond-the-floor particulate matter standard by controlling the feedrate of ash.

For these reasons, we propose a low volatile metals standard of 190 µg/dscm for new sources.

F. What Is the Rationale for the Proposed Standards for Total Chlorine?

The proposed standards for hydrogen chloride and chlorine gas (*i.e.*, total chlorine, reported as a hydrogen chloride equivalents) for solid fuel-fired boilers are 440 ppmv for existing sources and 73 ppmv for new sources.[138]

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[138] As information, EPA proposed MACT standards for hydrogen chloride for solid fuel-fired industrial, commercial, and institutional boilers

1. What Is the Rationale for the MACT Floor for Existing Sources?

Solid fuel-fired boilers that burn hazardous waste are equipped with electrostatic precipitators or baghouses and do not have back-end controls for total chlorine. Total chlorine emissions are controlled by controlling the feedrate of chlorine in the hazardous waste feed. We have compliance test emissions data for five boilers. Emissions from these five boilers represent emissions from 10 of the 12 solid fuel-fired boilers.[139] Total chlorine emissions range from 60 ppmv to 700 ppmv.

To identify the MACT floor, we evaluated the compliance test emissions data associated with the most recent test campaign using the SRE/Feed Approach. The calculated floor is 440 ppmv, which considers emissions variability. This is an emission level that the best performing feed control sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this emission level is being achieved by 83% of sources and that it would reduce total chlorine emissions by 420 tons per year.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We evaluated dry scrubbing to achieve a beyond-the-floor emission level of 110 ppmv for total chlorine for existing sources, assuming conservatively a 75% removal efficiency. The national annualized incremental compliance cost for solid fuel-fired boilers to comply with this beyond-the-floor level rather than the floor level would be $3.7 million, and emissions of total chlorine would be reduced by an additional 790 tons per year, for a cost-effectiveness of $4,700 per ton of total chlorine removed. We evaluated the nonair quality health and environmental impacts and energy effects of this beyond-the-floor level and estimate that the amount of hazardous waste generated would increase by 18,000 tons per year, an additional 27 million gallons of water per year would be used, and electricity consumption would increase by 0.11 million kW-hours per year.

We note that a cost of $4,700 per additional ton of total chlorine removed is in the "grey area'' between a cost the Agency has concluded is cost-effective and a cost the Agency has concluded is not cost-effective under other MACT rules. EPA concluded that a cost of $1,100 per ton of total chlorine removed for hazardous waste burning lightweight aggregate kilns was cost-effective in the 1999 MACT final rule. See 68 FR at 52900. EPA concluded, however, that a cost of $45,000 per ton of hydrogen chloride removed was not cost-effective for industrial boilers. See 68 FR at 1677.

Although a beyond-the-floor standard of 110 ppmv for solid fuel boilers under today's rule would provide health benefits from collateral reductions in SO_2 emissions,[140] we are concerned that a cost of $4,700 per additional ton of total chlorine removed is not warranted. Therefore, after considering cost-effectiveness and nonair quality health and environmental impacts and energy effects, we are not proposing a beyond-the-floor standard based on dry scrubbing. We specifically request comment on whether a beyond-the-floor standard is warranted.

We also evaluated use of feedrate control of chlorine in hazardous waste to achieve a beyond-the-floor level of 350 ppmv, which represents a 20% reduction from the floor level. The national annualized incremental compliance cost for solid fuel-fired boilers to comply with this beyond-the-floor level rather than the floor level would be $0.08 million, and emissions of total chlorine would be reduced by an additional 40 tons per year, for a cost-effectiveness of $2,000 per ton of total chlorine removed. Although nonair quality health and environmental impacts and energy effects are not significant factors for feedrate control, we are not proposing a beyond-the-floor standard based on hazardous waste feedrate control because we are concerned about the practicability of achieving these emissions reductions, and our estimate of the associated cost, using feedrate control. We specifically request comment on use of feedrate control of chlorine in hazardous waste as a beyond-the-floor control technique, the emission reductions that could be achieved, and the costs of achieving those reductions.

3. What Is the Rationale for the MACT Floor for New Sources?

MACT floor for new sources would be 73 ppmv. This is an emission level that the single best performing source identified by the Emissions Approach (*i.e.*, the source with the lowest emissions) could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated dry lime scrubbing to achieve a beyond-the-floor emission level of 37 ppmv for total chlorine for new sources, assuming conservatively a 50% removal efficiency.[141] The incremental annualized compliance cost for a new solid fuel boiler with average gas flowrate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $610,000 and would provide an incremental reduction in total chlorine emissions of approximately 42 tons per year. Although nonair quality health and environmental impacts and energy effects are not significant factors, we conclude that a beyond-the-floor standard of 37 ppmv is not warranted because it would not be cost-effective at approximately $14,000 per additional ton of total chlorine removed.

For these reasons, we propose a floor standard for total chlorine of 73 ppmv for new sources.

G. What Is the Rationale for the Proposed Standards for Carbon Monoxide or Hydrocarbons?

To control emissions of organic HAP, existing and new sources would be required to comply with either a carbon monoxide standard of 100 ppmv or a hydrocarbon standard of 10 ppmv.[142]

1. What Is the Rationale for the MACT Floor for Existing Sources?

Solid fuel-fired boilers that burn hazardous waste are currently subject to RCRA standards that require

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that do not burn hazardous waste of 68 ppmv for existing sources and 15 ppmv for new sources. See 68 FR 1660 (Jan. 13, 2003). These standards are based on use of wet scrubbers to control hydrogen chloride.

[139] Owners and operators have determined that emissions from these five boilers represent emissions from five other identical, sister boilers. Owners and operators have used the emissions from these five boilers as "data in lieu of testing'' emissions from the other five identical boilers.

[140] See U.S. EPA, "Addendum to the Assessment of the Potential Costs, Benefits, and Other Impacts of the Hazardous Waste Combustion MACT Replacement Standards—Proposed Rule,'' March 2004.

[141] Although we assumed dry scrubbing can readily achieve 75% removal of total chlorine for beyond-the-floor control for existing sources, assuming 50% removal for beyond-the-floor control for new sources is appropriate. This is because the floor for new sources—73 ppmv—is substantially lower than the floor for existing sources—440 ppmv—and dry scrubbing is less efficient at lower uncontrolled emission levels.

[142] As information, EPA proposed MACT standards for carbon monoxide for new solid fuel-fired industrial, commercial, and institutional boilers that do not burn hazardous waste of 400 ppmv corrected to 3% oxygen. See 68 FR 1660 (Jan. 13, 2003).

compliance with either a carbon monoxide standard of 100 ppmv, or a hydrocarbon standard of 20 ppmv. Compliance is based on an hourly rolling average as measured with a CEMS. See § 266.104(a). We are proposing today floor standards of 100 ppmv for carbon monoxide or 10 ppmv for hydrocarbons.

Floor control for existing sources is operating under good combustion practices including: (1) Providing adequate excess air with use of oxygen CEMS and feedback air input control; (2) providing adequate fuel/air mixing; (3) homogenizing hazardous waste fuels (such as by blending or size reduction) to control combustion upsets due to very high or very low volatile content wastes; (4) regulating waste and air feedrates to ensure proper combustion temperature and residence time; (5) characterizing waste prior to burning for combustion-related composition (including parameters such as heating value, volatile content, liquid waste viscosity, *etc.*); (6) ensuring the source is operated by qualified, experienced operators; and (7) periodic inspection and maintenance of combustion system components such as burners, fuel and air supply lines, injection nozzles, etc. Given that there are many interdependent parameters that affect combustion efficiency and thus carbon monoxide and hydrocarbon emissions, we are not able to quantify "good combustion practices.''

Ten of 12 solid fuel-fired boilers are currently complying with the RCRA carbon monoxide limit of 100 ppmv on an hourly rolling average. The remaining two boilers are complying with the RCRA hydrocarbon limit of 20 ppmv on an hourly rolling average. Those boilers have hydrocarbon levels below 5 ppmv, however, indicative of operating under good combustion practices.

We propose a floor level for carbon monoxide level of 100 ppmv because it is a currently enforceable Federal standard. Although the best performing sources are achieving carbon monoxide levels below 100 ppmv, it is not appropriate to establish a lower floor level because carbon monoxide is a surrogate for nondioxin/furan organic HAP. As such, lowering the carbon monoxide floor may not significantly reduce organic HAP emissions. In addition, it would be inappropriate to apply a MACT methodology to the carbon monoxide emissions from the best performing sources because those sources may not be able to replicate their emission levels. This is because there are myriad factors that affect combustion efficiency and, subsequently, carbon monoxide emissions. Extremely low carbon monoxide emissions cannot be assured by controlling only one or two operating parameters We note also that we used this rationale to establish a carbon monoxide standard of 100 ppmv for Phase I sources in the September 1999 Final Rule.

We propose a floor level for hydrocarbons of 10 ppmv even though the currently enforceable standard is 20 ppmv because: (1) The two sources that comply with the RCRA hydrocarbon standard can readily achieve 10 ppmv; and (2) reducing hydrocarbon emissions within the range of 20 ppmv to 10 ppmv should reduce emissions of nondioxin/furan organic HAP. We do not apply a prescriptive MACT methodology to establish a hydrocarbon floor below 10 ppmv, however, because we have data from only two sources. In addition, we note that the hydrocarbon emission standard for Phase I sources established in the September 1999 Final Rule is 10 ppmv also.

There would be no incremental emission reductions associated with these floors because all sources are currently achieving the floor levels.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We considered beyond-the-floor levels for carbon monoxide and hydrocarbons based on use of better combustion practices but conclude that they may not be replicable by the best performing sources nor duplicable by other sources given that we cannot quantify good combustion practices. Moreover, we cannot ensure that carbon monoxide or hydrocarbon levels lower than the floors would significantly reduce emissions of nondioxin/furan organic HAP. This is because the portion of hydrocarbons that is comprised of nondioxin/furan organic HAP is likely to become lower as combustion efficiency improves and hydrocarbon levels decrease. Thus, at beyond-the-floor hydrocarbon levels, we would expect a larger portion of residual hydrocarbons to be compounds that are not organic HAP.

Nonair quality health and environmental impacts and energy requirements are not significant factors for use of better combustion practices as beyond-the-floor control.

For these reasons, we conclude that beyond-the-floor standards for carbon monoxide and hydrocarbons are not warranted for existing sources.

3. What Is the Rationale for the MACT Floor for New Sources?

MACT floor for new sources would be the same as the floor for existing sources—100 ppmv for carbon monoxide and 10 ppmv for hydrocarbons—and based on the same rationale.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

As discussed in the context of beyond-the-floor considerations for existing sources, we considered beyond-the-floor standards for carbon monoxide and hydrocarbons for new sources based on use of better combustion practices. But, we conclude that beyond the floor standards may not be replicable by the best performing sources nor duplicable by other sources given that we cannot quantify good combustion practices. Moreover, we cannot ensure that carbon monoxide or hydrocarbon levels lower than the floors would significantly reduce emissions of nondioxin/furan organic HAP.

Nonair quality health and environmental impacts and energy requirements are not significant factors for use of better combustion practices as beyond-the-floor control.

For these reasons, we conclude that beyond-the-floor standards for carbon monoxide and hydrocarbons are not warranted for new sources.

H. What Is the Rationale for the Proposed Standard for Destruction and Removal Efficiency?

To control emissions of organic HAP, existing and new sources would be required to comply with a destruction and removal efficiency (DRE) of 99.99% for organic HAP. For sources burning hazardous wastes F020, F021, F022, F023, F026, or F027, however, the DRE standard is 99.9999% for organic HAP.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Solid fuel-fired boilers that burn hazardous waste are currently subject to RCRA DRE standards that require 99.99% destruction of designated principal organic hazardous constituents (POHCs). For sources that burn hazardous wastes F020, F021, F022, F023, F026, or F027, however, the DRE standard is 99.9999% destruction of designated POHCs. See § 266.104(a).

The DRE standard helps ensure that a combustor is operating under good combustion practices and thus minimizing emissions of organic HAP. Under the MACT compliance regime, sources would designate POHCs that are organic HAP or that are surrogates for organic HAP.

We propose to establish the RCRA DRE standard as the floor for existing sources because it is a currently enforceable Federal standard. There would be no incremental emission reductions associated with this floor because sources are currently complying with the standard.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We considered a beyond-the-floor level for DRE based on use of better combustion practices but conclude that it may not be replicable by the best performing sources nor duplicable by other sources given that we cannot quantify better combustion practices. Moreover, we cannot ensure that a higher DRE standard would significantly reduce emissions of organic HAP given that DRE measures the destruction of organic HAP present in the boiler feed rather than gross emissions of organic HAP. Although a source's combustion practices may be adequate to destroy particular organic HAP in the feed, other organic HAP that may be emitted as products of incomplete combustion may not be controlled by the DRE standard.[143]

For these reasons, and after considering non-air quality health and environmental impacts and energy requirements, we are not proposing a beyond-the-floor DRE standard for existing sources.

3. What Is the Rationale for the MACT Floor for New Sources?

We propose to establish the RCRA DRE standard as the floor for new sources because it is a currently enforceable Federal standard.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

Using the same rationale as we used to consider a beyond-the-floor DRE standard for existing sources, we conclude that a beyond-the-floor DRE standard for new sources is not warranted. Consequently, after considering non-air quality health and environmental impacts and energy requirements, we are proposing the floor DRE standard for new sources.

XI. How Did EPA Determine the Proposed Emission Standards for Hazardous Waste Burning Liquid Fuel-Fired Boilers?

The proposed standards for existing and new liquid fuel-fired boilers that burn hazardous waste are summarized in the table below. *See* proposed § 63.1217.

PROPOSED STANDARDS FOR EXISTING AND NEW LIQUID FUEL-FIRED BOILERS

Hazardous air pollutant or surrogate	Emission standard [1]	
	Existing sources	New sources
Dioxin and furan: sources equipped with dry air pollution control system [2].	0.40 ng TEQ/dscm	0.015 ng TEQ/dscm or control of flue gas temperature not to exceed 400°F at the inlet to the particulate matter control device.
Dioxin and furan: sources equipped with wet or with no air pollution control systems [2].	100 ppmv carbon monoxide or 10 ppmv hydrocarbons.	100 ppmv carbon monoxide or 10 ppmv hydrocarbons
Mercury [3]	3.7E–6 lbs/MM Btu	3.8E–7 lbs/MM BTU
Particulate matter	72 mg/dscm (0.032 gr/dscf)	17 mg/dscm (0.0076 gr/dscf)
Semivolatile metals [3]	1.1E–5 lbs/MM BTU	4.3E–6 lbs/MM BTU
Low volatile metals: chromium only [3, 4]	1.1E–4 lbs/MM BTU	3.6E–5 lbs/MM BTU
Hydrogen chloride and chlorine gas [3, 5]	2.5E–2 lbs/MM BTU or the alternative emission limits under § 63.1215.	7.2E–4 lbs/MM BTU or the chlorine alternative emission limits under § 63.1215
Carbon monoxide or hydrocarbons [6]	100 ppmv carbon monoxide or 10 ppmv hydrocarbons..	100 ppmv carbon monoxide or 10 ppmv hydrocarbons.
Destruction and Removal Efficiency	For existing and new sources, 99.99% for each principal organic hazardous constituent (POHC). For sources burning hazardous wastes F020, F021, F022, F023, F026, or F027, however, 99.9999% for each POHC.	

[1] All emission standards are corrected to 7% oxygen, dry basis.

[2] A wet air pollution system followed by a dry air pollution control system is not considered to be a dry air pollution control system for purposes of this standard. A dry air pollution systems followed a wet air pollution control system is considered to be a dry air pollution control system for purposes of this standard.

[3] Standards are expressed as mass of pollutant emissions contributed by hazardous waste per million Btu contributed by the hazardous waste.

[4] Standard is for chromium only and does not include arsenic and beryllium.

[5] Combined standard, reported as a chloride (Cl(-)) equivalent.

[6] Hourly rolling average. Hydrocarbons reported as propane.

We considered whether fuel switching could be considered a MACT floor control technology for liquid fuel-fired boilers to achieve lower HAP emissions. We conclude that HAP emissions from liquid fuel-fired boilers are attributable primarily to the hazardous waste fuels rather than the natural gas or fuel oil that these boilers burn. Consequently, we conclude that fuel switching is not an effective MACT floor control technology to reduce HAP emissions for liquid fuel-fired boilers.

A. What Are the Proposed Standards for Dioxin and Furan?

We propose to establish a dioxin/furan standard for existing liquid fuel-fired boilers equipped with dry air pollution control devices of 0.40 ng TEQ/dscm. The standard for new sources would be 0.015 ng TEQ/dscm or control of flue gas temperature not to exceed 400 °F at the inlet to the particulate matter control device. For liquid fuel-fired boilers equipped either with wet air pollution control systems or with no air pollution systems, we propose a standard for both existing and new sources as compliance with the proposed standards for carbon monoxide/hydrocarbon and destruction and removal efficiency. In addition, we note that we propose to require a one-time dioxin/furan emission test for

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[143] The carbon monoxide/hydrocarbon emission standard would control organic HAP that are products of incomplete combustion by also ensuring use of good combustion practices.

sources that would not be subject to a numerical dioxin/furan emission standard, including liquid fuel-fired boilers with wet or no emission control device, and new liquid fuel-fired boilers equipped with a dry air pollution control device. As discussed in Part Two, Section XIV.B below, the testing would assist in developing both section 112(d)(6) standards and section 112(f) residual risk standards.

1. What Is the Rationale for the MACT Floor for Existing Sources?

As discussed in Part Two, Section I.B.5, we used a statistical analysis to conclude that liquid boilers equipped with dry air pollution control devices have different dioxin/furan emission characteristics compared to sources with either wet air pollution control or no air pollution control devices.[144] Note that we consider the type of emission control device as a basis for subcategorization because the type of control device affects formation of dioxin/furan: dioxin/furan can form in dry particulate matter control devices while it cannot form in wet (or no) control devices. We therefore believe subcategorization is warranted and we propose to identify separate floor levels for sources equipped with dry particulate matter control devices versus sources with wet or no emission control device.

a. MACT Floor for Boilers Equipped with Dry Control Systems. To identify the floor level for liquid fuel boilers equipped with dry air pollution control systems, we considered whether dioxin/furan can be controlled by controlling the temperature at the inlet to the particulate matter control device. We conclude that this control mechanism may not be the predominant factor that affects dioxin/furan emissions from these sources. We have emissions data for three boilers equipped with electrostatic precipitators or fabric filters. Emissions from two of the boilers are below 0.03 ng TEQ/dscm. We do not have data on the gas temperature at the inlet to the emission control device for these sources. The third boiler, however, has dioxin/furan emissions of 2.4 ng TEQ/dscm when the flue gas temperature at the inlet to the fabric filter is 410 °F. We conclude from this information that this boiler is not likely to be able to achieve dioxin/furan emissions below 0.40 ng TEQ/dscm if the gas temperature is reduced to below 400 °F. This is contrary to the finding we made for cement kilns and incinerators without heat recovery boilers and equipped with dry particulate matter control devices. In those cases, we conclude that gas temperature control at the dry particulate matter control device is the predominant factor affecting dioxin/furan emissions. See discussions in Sections VII and VIII above. Consequently, other factors are likely contributing to high dioxin/furan emissions from the liquid fuel-fired boiler equipped with a fabric filter operated at a gas temperature of 410 °F, such as metals in the waste feed or soot on boiler tubes that may catalyze dioxin/furan formation reactions.

We evaluated the compliance test emissions data using the Emissions Approach and calculated a numerical dioxin/furan floor level of 3.0 ng TEQ/dscm, which considers emissions variability. As discussed above, however, one of the three sources for which we have emissions data is not likely to be able to achieve this emission level using gas temperature control at the inlet to the dry particulate matter control device. Consequently, we propose to identify the floor level as 3.0 ng TEQ/dscm or control of flue gas temperature not to exceed 400 °F at the inlet to the particulate matter control device. This floor level is duplicable by all sources, and would minimize dioxin/furan emissions for sources where flue gas temperature at the control device substantially affects dioxin/furan emissions. We estimate that this emission level is being achieved by all sources and, thus, would not reduce dioxin/furan emissions.

b. MACT Floor for Boilers Equipped with Wet or No Control Systems. We have dioxin/furan emissions data for 33 liquid fuel-fired boilers equipped with a wet or no particulate matter control device. Emissions levels are below 0.1 ng TEQ/dscm for 30 of the sources. Emission levels for the other three sources are 0.19, 0.36, and 0.44 ng TEQ/dscm.

As previously discussed in Part Two, Section VII.A, we believe that it would be inappropriate to establish a numerical dioxin/furan emission floor level for sources using wet or no air pollution control systems based on the emissions achieved by the best performing sources because a numerical floor level would not be replicable by the best performing sources nor duplicable by other sources. As a result, we propose to define the MACT floor for sources with wet or no emission control devices as operating under good combustion practices by complying with the destruction and removal efficiency and carbon monoxide/hydrocarbon standards.[145] There would be no emissions reductions for these existing boilers to comply with the floor level because they are currently complying with the carbon monoxide/hydrocarbon standard and destruction and removal efficiency standard pursuant to RCRA requirements.

We also request comment on an alternative MACT floor expressed as a dioxin/furan emission concentration for liquid fuel boilers with wet or no emission control devices.[146] Although it would be inappropriate to identify a floor concentration based on the average emissions of the best performing sources as discussed above, we possibly could identify the floor as the highest emission concentration from any source in our data base, after considering emissions variability.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We evaluated use of activated carbon injection systems or carbon beds as beyond-the-floor control for further reduction of dioxin/furan emissions. Activated carbon has been demonstrated for controlling dioxin/furans in various combustion applications.

a. Beyond-the-Floor Considerations for Boilers Equipped with Dry Control Systems. For liquid fuel-fired boilers using dry air pollution control equipment, we evaluated a beyond-the-floor level of 0.40 ng TEQ/dscm based on activated carbon injection or control of flue gas temperature not to exceed 400 °F at the inlet to the particulate matter control device. The national incremental annualized compliance cost for sources to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $80,000 and would provide an incremental reduction in dioxin/furan emissions beyond the MACT floor

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[144] Sources with a wet air pollution system followed by a dry air pollution control system is not considered to be a dry air pollution control system for purposes of this standard. Sources with a dry air pollution systems followed a wet air pollution control system is considered to be a dry air pollution control system for purposes of this standard.

[145] The fact that we determined floor control for existing sources as good combustion practices does not mean that all sources using floor control will have low dioxin/furan emissions. As discussed in Part Two, Section XIV.B., we are proposing to require liquid fuel-fired boilers that would not be subject to a numerical dioxin/furan emission standard to perform a one-time dioxin/furan emissions test to quantify the effectiveness of today's proposed surrogate for dioxin/furan emission control.

[146] Although the floor for liquid fuel boilers equipped with a dry emission control device would not be a numerical standard (*i.e.*, 3.0 ng TEQ/dscm or control of temperature of flue gas at the inlet to the control device to 400 °F), we propose a numerical beyond-the-floor standard for those boilers, as discussed below in the text.

controls of 0.06 grams TEQ per year for a cost-effectiveness of $1.3 million per additional gram of dioxin/furan removed. We evaluated the nonair quality health and environmental impacts and energy effects of this beyond-the-floor standard and estimate that the amount of hazardous waste generated would increase by 100 tons per year, an additional 25 trillion Btu per year of natural gas would be consumed, and electricity consumption would increase by 0.50 million kW-hours per year.

We judge that the cost to achieve this beyond-the-floor level is warranted given our special concern about dioxin/furan. Dioxin/furan are some of the most toxic compounds known due to their bioaccumulation potential and wide range of health effects, including carcinogenesis, at exceedingly low doses. Exposure via indirect pathways is a chief reason that Congress singled our dioxin/furan for priority MACT control in CAA section 112(c)(6). *See* S. Rep. No. 128, 101st Cong. 1st Sess. at 154–155. In addition, we note that the beyond-the-floor emission level of 0.40 ng TEQ/dscm is consistent with historically controlled levels under MACT for hazardous waste incinerators and cement kilns, and Portland cement plants. *See* §§ 63.1203(a)(1), 63.1204(a)(1), and 63.1343(d)(3). Also, EPA has determined previously in the 1999 Hazardous Waste Combustor MACT final rule that dioxin/furan in the range of 0.40 ng TEQ/dscm or less are necessary for the MACT standards to be considered generally protective of human health under RCRA (using the 1985 cancer slope factor), thereby eliminating the need for separate RCRA standards under the authority of RCRA section 3005(c)(3) and 40 CFR 270.10(k). Finally, we note that this decision is not inconsistent with EPA's decision not to promulgate beyond-the-floor standards for dioxin/furan for hazardous waste burning lightweight aggregate kilns, cement kilns, and incinerators at cost-effectiveness values in the range of $530,000 to $827,000 per additional gram of dioxin/furan TEQ removed. *See* 64 FR at 52892, 52876, and 52961. In those cases, EPA determined that controlling dioxin/furan emissions from a level of 0.40 ng TEQ/dscm to a beyond-the-floor level of 0.20 ng TEQ/dscm was not warranted because dioxin/furan levels below 0.40 ng TEQ/dscm are generally considered to be below the level of health risk concern.

For these reasons, we believe that proposing a beyond-the-floor standard of 0.40 ng TEQ/dscm is warranted notwithstanding the nonair quality health and environmental impacts and energy effects identified above and costs of approximately $1.3 million per additional gram of dioxin/furan TEQ removed. We specifically request comment on our decision to propose this beyond-the-floor standard.

b. Beyond-the-Floor Considerations for Boilers Equipped with Wet or No Control Systems. For liquid fuel-fired boilers equipped with wet or no air pollution control systems, we evaluated a beyond-the-floor level of 0.20 ng TEQ/dscm based on activated carbon. The national incremental annualized compliance cost for these sources to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $550,000 and would provide an incremental reduction in dioxin/furan emissions beyond the MACT floor controls of 0.12 grams TEQ per year. We evaluated the nonair quality health and environmental impacts and energy effects of this beyond-the-floor standard and estimate that the amount of hazardous waste generated would increase by 100 tons per year, an additional 25 trillion Btu per year of natural gas would be consumed, an additional 4 million gallons per year of water would be used, and electricity consumption would increase by 0.50 million kW-hours per year. We are not proposing a beyond-the-floor standard of 0.20 ng TEQ/dscm for liquid boilers that use a wet or no air pollution control system because it would not be cost-effective at $4.6 million per gram of TEQ removed.

We are also considering an alternative beyond-the-floor standard for existing liquid fuel boilers with wet or no particulate matter control devices of 0.40 ng TEQ/dscm. Although all but one source for which we have data are currently achieving this emission level, boilers for which we do not have dioxin/furan emissions data may have emissions higher than 0.40 ng TEQ/dscm. In addition, dioxin/furan emissions from a given boiler may vary over time. Other factors that may contribute substantially to dioxin/furan formation, such as the level and type of soot on boiler tubes, or feeding metals that catalyze dioxin/furan formation reactions, differ across boilers and may change over time at a given boiler. Thus, dioxin/furan levels for these sources may be higher than 0.40 ng TEQ/dscm. For example, we recently obtained dioxin/furan emissions data for a liquid fuel-fired boiler equipped with a wet emission control system documenting emissions of 1.4 ng TEQ/dscm.[147] To control dioxin/furan emissions to a beyond-the-floor standard of 0.40 ng TEQ/dscm, you would use activated carbon. We specifically request comment on this beyond-the-floor option, including how we should estimate compliance costs and emissions reductions.

3. What Is the Rationale for the MACT Floor for New Sources?

The calculated floor level for new liquid fuel boilers equipped with dry air pollution control systems is 0.015 ng TEQ/dscm, which we identified using the Emissions Approach. If dioxin/furan emissions could be controlled predominantly by controlling the gas temperature at the inlet to the dry particulate matter control device, this would be the emission level that the single best performing source could be expected to achieve in 99 out of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. This emission level may not be replicable by this source and duplicable by other (new) sources, however, because factors other than flue gas temperature control at the control device may affect dioxin/furan emissions. *See* discussion of this issue in the context of the floor level for existing sources. Therefore, we propose to establish the floor level as 0.015 ng TEQ/dscm or control of flue gas temperature not to exceed 400 °F at the inlet to the particulate matter control device.

As previously discussed, we believe that it would be inappropriate to establish a numerical dioxin/furan emission floor level for liquid boilers with wet or with no air pollution control systems. Therefore, we propose floor control for these units as good combustion practices provided by complying with the proposed destruction and removal efficiency and carbon monoxide/hydrocarbon standards.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated use of activated carbon as beyond-the-floor control for further reduction of dioxin/furan emissions. Activated carbon has been demonstrated for controlling dioxin/furan in various combustion applications.

a. Beyond-the-Floor Considerations for Boilers Equipped with Dry Control Systems. For liquid fuel-fired boilers using dry air pollution control equipment, we evaluated a beyond-the-floor level of 0.01 ng TEQ/dscm using activated carbon injection. The national incremental annualized compliance cost

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[147] These data were recently obtained and are not in the MACT data base. *See* "Region 4 Boiler Dioxin Data," Excel spreadsheet, March 10, 2004.

for a source with an average gas flowrate to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $0.15 million and would provide an incremental reduction in dioxin/furan emissions beyond the MACT floor controls of 0.005 grams TEQ per year. We evaluated the nonair quality health and environmental impacts and energy effects of this beyond-the-floor standard and estimate that, for a new liquid fuel-fired boiler with average gas flowrate, the amount of hazardous waste generated would increase by 120 tons per year and electricity consumption would increase by 0.1 million kW-hours per year. After considering these impacts and costs of approximately $32 million per additional gram of dioxin/furan removed, we are not proposing a beyond-the-floor standard of 0.01 ng TEQ/dscm for liquid fuel-fired boilers using dry air pollution control systems.

We are also considering an alternative beyond-the-floor standard of 0.40 ng TEQ/dscm for new liquid fuel boilers equipped with a dry particulate matter control device. A new source that achieves the floor level by controlling the gas temperature at the inlet to the dry particulate matter control device to 400 °F may have dioxin/furan emissions at levels far exceeding 0.40 ng TEQ/dscm. See discussion above regarding factors other than gas temperature at the control device that can affect dioxin/furan emissions from liquid fuel-fired boilers (and discussion of emissions of 2.4 ng TEQ/dscm for a boiler operating a fabric filter at 410 °F). Therefore, it may be appropriate to establish a beyond-the-floor standard to limit emissions to 0.40 ng TEQ/dscm based on use of activated carbon injection. We also note that this beyond-the-floor standard may be appropriate to ensure that emission levels from new sources do not exceed the proposed 0.40 ng TEQ/dscm beyond-the-floor standard for existing sources. Because standards for new sources are based on the single best performing source while standards for existing sources are based on the average of the best 12% (or best 5) performing sources, standards for new sources should not be less stringent than standards for existing sources. We specifically request comment on this beyond-the-floor option, including how we should estimate compliance costs and emissions reductions.

b. Beyond-the-Floor Considerations for Boilers Equipped with Wet or No Control Systems. We evaluated a beyond-the-floor level of 0.20 ng TEQ/dscm for liquid fuel-fired boilers equipped with wet or with no air pollution control systems based on use of activated carbon. The national incremental annualized compliance cost for a source with average gas flowrate to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $0.15 million and would provide an incremental reduction in dioxin/furan emissions beyond the MACT floor controls of 0.06 grams TEQ per year. We evaluated the nonair quality health and environmental impacts and energy effects of this beyond-the-floor standard and estimate that, for a source with average gas flowrate, the amount of hazardous waste generated would increase by 120 tons per year and electricity consumption would increase by 0.1 million kW-hours per year. After considering these impacts and costs of approximately $2.4 million per additional gram of dioxin/furan removed, we are not proposing a beyond-the-floor standard for liquid fuel-fired boilers using a wet or no air pollution control system.

We are also considering an alternative beyond-the-floor standard of 0.40 ng TEQ/dscm for new liquid fuel boilers equipped with wet or with no air pollution control systems. A new source that achieves the floor level—compliance with the standards for carbon monoxide/hydrocarbon and destruction and removal efficiency—may have high dioxin/furan emissions at levels far exceeding 0.40 ng TEQ/dscm. See discussion above regarding factors other than gas temperature at the control device that can affect dioxin/furan emissions from liquid fuel-fired boilers. Therefore, it may be appropriate to establish a beyond-the-floor standard to limit emissions to 0.40 ng TEQ/dscm based on use of activated carbon. We specifically request comment on this beyond-the-floor option, including how we should estimate compliance costs and emissions reductions.

B. What Is the Rationale for the Proposed Standards for Mercury?

We propose to establish standards for existing liquid fuel-fired boilers that limit emissions of mercury to 3.7E–6 lbs mercury emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. The proposed standards for new sources would be 3.8E–7 lbs mercury emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste.[148] These standards are expressed as hazardous waste thermal emission concentrations because liquid fuel-fired boilers burn hazardous waste for energy recovery. *See* discussion in Part Two, Section IV.B of the preamble.

1. What Is the Rationale for the MACT Floor for Existing Sources?

MACT floor for existing sources is 3.7E–6 lbs mercury emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste, which is based primarily by controlling the feed concentration of mercury in the hazardous waste. Approximately 11% of liquid boilers also use wet scrubbers that can control emissions of mercury.

We have normal emissions data within the range of normal emissions for 32% of the sources.[149] The normal mercury stack emissions in our data base are all less than 7 µg/dscm. These emissions are expressed as mass of mercury (from all feedstocks) per unit of stack gas. Hazardous waste thermal emissions, available for 12% of sources, range from 1.0E–7 to 1.0E–5 lbs mercury emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. Hazardous waste thermal emissions represent the mass of mercury contributed by the hazardous waste per million Btu contributed by the hazardous waste.

To identify the MACT floor, we evaluated all normal emissions data using the Emissions Approach. The calculated floor is 3.7E–6 lbs mercury emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this floor level is being achieved by 40% of sources and would reduce mercury emissions by 0.68 tons per year.

Because the floor level is based on normal emissions data, compliance would be documented by complying with a hazardous waste mercury thermal feed concentration on an annual rolling average. See discussion in Part Two, Section XIV.F below.

We did not use the SRE/Feed Approach to identify the floor level because the vast majority of mercury feed levels in the hazardous waste and

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[148] As information, EPA did not propose MACT emission standards for mercury for liquid fuel-fired boilers that do not burn hazardous waste. *See* 68 FR 1660 (Jan. 13, 2003). Note that, in today's rule, we propose to control mercury only in hazardous waste fuels, an option obviously not available to boilers that do not burn hazardous waste.

[149] Several owners and operators have used the emissions data as "data in lieu of testing'' emissions from other, identical boilers at the same facility. For purposes of identifying the number of boilers represented in this paragraph, the percentage includes the data-in-lieu sources.

the emissions measurements did not have detectable concentrations of mercury. Given that a system removal efficiency, or SRE, is the percentage of mercury emitted compared to the amount fed, we concluded that it would be inappropriate to base this analysis on SREs that were derived from measurements below detectable levels.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified two potential beyond-the-floor techniques for control of mercury: (1) Activated carbon injection; and (2) control of mercury in the hazardous waste feed. For reasons discussed below, we are not proposing a beyond-the-floor standard for mercury.

a. Use of Activated Carbon Injection. We evaluated activated carbon injection as beyond-the-floor control for further reduction of mercury emissions. Activated carbon has been demonstrated for controlling mercury in several combustion applications; however, currently no liquid fuel boilers burning hazardous waste uses activated carbon injection. We evaluated a beyond-the-floor level of 1.1E–6 lbs mercury emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. The national incremental annualized compliance cost for liquid fuel-fired boilers to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $12 million and would provide an incremental reduction in mercury emissions beyond the MACT floor controls of 0.097 tons per year. We evaluated nonair quality health and environmental impacts and energy effects of using activated carbon injection to meet this beyond-the-floor emission level and estimate that the amount of hazardous waste generated would increase by 4,800 tons per year and that sources would consume an additional 44 trillion Btu per year of natural gas and use an additional 9.6 million kW-hours per year beyond the requirements to achieve the floor level. Therefore, based on these factors and costs of approximately $124 million per additional ton of mercury removed, we are not proposing a beyond-the-floor standard based on activated carbon injection.[150]

b. Feed Control of Mercury in the Hazardous Waste. We also evaluated a beyond-the-floor level of 3.0E–6 lbs mercury emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste, which represents a 20% reduction from the floor level. The national incremental annualized compliance cost for liquid fuel-fired boilers to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $4.2 million and would provide an incremental reduction in mercury emissions beyond the MACT floor controls of 0.036 tons per year. Nonair quality health and environmental impacts and energy effects are not significant factors for feedrate control. Therefore, based on these factors and costs of approximately $115 million per additional ton of mercury removed, we are not proposing a beyond-the-floor standard based on feed control of mercury in the hazardous waste.

For the reasons discussed above, we do not propose a beyond-the-floor standard for mercury for existing sources. We propose a standard based on the floor level: 3.7E–6 lbs mercury emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste.

3. What Is the Rationale for the MACT Floor for New Sources?

The MACT floor for new sources for mercury would be 3.8E–7 lbs mercury emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste and would be implemented as an annual average because it is based on normal emissions data. This is an emission level that the single best performing source identified with the Emissions Approach could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated activated carbon injection as beyond-the-floor control to achieve an emission level of 2.0E–7 lbs mercury emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. The incremental annualized compliance cost for a new liquid fuel-fired boiler with average gas flowrate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $0.15 million and would provide an incremental reduction in mercury emissions of less than 0.0002 tons per year, for a cost-effectiveness of $1 billion per ton of mercury removed. We evaluated the nonair quality health and environmental impacts and energy effects of this beyond-the-floor standard and estimate that, for a new liquid fuel-fired boiler with average gas flowrate, the amount of hazardous waste generated would increase by 120 tons per year and electricity consumption would increase by 0.1 million kW-hours per year. Although nonair quality health and environmental impacts and energy effects are not significant factors, we are not proposing a beyond-the-floor standard based on activated carbon injection for new sources because it would not be cost-effective. Therefore, we propose a mercury standard based on the floor level: 3.8E–7 lbs mercury emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste.

C. What Is the Rationale for the Proposed Standards for Particulate Matter?

The proposed standards for particulate matter for liquid fuel-fired boilers are 59 mg/dscm (0.026 gr/dscf) for existing sources and 17 mg/dscm (0.0076 gr/dscf) for new sources.[151] The particulate matter standard serves as a surrogate for nonenumerated HAP metal emissions attributable to the hazardous waste fuel burned in the boiler. Although the particulate matter standard would also control nonmercury HAP metal from nonhazardous waste fuels, the natural gas or fuel oil these boilers burn as primary or auxiliary fuel do not contain significant levels of metal HAP.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Few liquid fuel-fired boilers are equipped particulate matter control equipment such as electrostatic precipitators and baghouses, and, therefore, many sources control particulate matter emissions by limiting the ash content of the hazardous waste. We have compliance test emissions data from nearly all liquid boilers representing maximum allowable emissions. Particulate emissions range from 0.0008 to 0.078 gr/dscf.

To identify the floor level, we evaluated the compliance test emissions

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[150] We note that the beyond-the-floor dioxin/furan standard we propose for liquid fuel-fired boilers equipped with dry particulate matter control devices would also provide no-cost beyond-the-floor mercury control for sources that use activated carbon injection to control dioxin/furan. If such sources achieve the beyond-the-floor dioxin/furan standard by other means (control of temperature at the inlet to the control device; control of feedrate of metals that may catalyze formation of dioxin/furan), however, collateral reductions in mercury emissions would not be realized.

[151] As information, EPA proposed MACT standards for particulate matter for solid fuel-fired industrial, commercial, and institutional boilers that do not burn hazardous waste of 0.035 gr/dscf for existing sources and 0.013 gr/dscf for new sources.

data associated with the most recent test campaign using the APCD Approach. The calculated floor is 72 mg/dscm (0.032 gr/dscf), which considers emissions variability. This is an emission level that the average of the performing sources could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this floor level is being achieved by 44% of sources and would reduce particulate matter emissions by 1,200 tons per year.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We evaluated use of fabric filters to improve particulate matter control to achieve a beyond-the-floor standard of 36 mg/dscm (0.016 gr/dscf). The national incremental annualized compliance cost for liquid fuel-fired boilers to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $16 million and would provide an incremental reduction in particulate matter emissions beyond the MACT floor controls of 520 tons per year. We evaluated the nonair quality health and environmental impacts and energy effects of this beyond-the-floor standard and estimate that the amount of hazardous waste generated would increase by 520 tons per year and electricity consumption would increase by 13 million kW-hours per year. After considering these factors and costs of approximately $30,000 per additional ton of particulate matter removed, we are not proposing a beyond-the-floor standard.

For the reasons discussed above, we propose a standard for particulate matter for existing liquid fuel-fired boilers based on the floor level: 72 mg/dscm (0.032 gr/dscf).

3. What Is the Rational for the MACT Floor for New Sources?

MACT floor for new sources would be 17 mg/dscm (0.0076 gr/dscf), considering emissions variability. This is an emission level that the single best performing source identified by the APCD Approach (*i.e.*, the source using a fabric filter[152] with the lowest emissions) could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated use of an advanced fabric filter using high efficiency membrane bag material and a low air to cloth ratio to achieve a beyond-the-floor emission level of 9 mg/dscm (0.0040 gr/dscf). The incremental annualized cost for a new liquid fuel-fired boiler with average gas flowrate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $0.15 million and would provide an incremental reduction in particulate emissions of approximately 2.9 tons per year, for a cost-effectiveness of $53,000 per ton of particulate matter removed. We evaluated the nonair quality health and environmental impacts and energy effects of this beyond-the-floor standard and estimate that, for a new liquid fuel-fired boiler with average gas flowrate, the amount of hazardous waste generated would increase by 3 tons per year and electricity consumption would increase by 0.54 million kW-hours per year. Considering these factors and cost-effectiveness, we conclude that a beyond-the-floor standard of 9 mg/dscm is not warranted.

For the reasons discussed above, we propose a floor-based standard for particulate matter for new liquid fuel-fired boilers: 9.8 mg/dscm (0.0043 gr/dscf)

D. What Is the Rationale for the Proposed Standards for Semivolatile Metals?

We propose a standard for existing liquid fuel-fired boilers that limits emissions of semivolatile metals (cadmium and lead, combined) to 1.1E–5 lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. The proposed standard for new sources is 4.3E–6 lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste.

1. What Is the Rationale for the MACT Floor for Existing Sources?

MACT floor for existing sources is 1.1E–5 lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste, which is based on particulate matter control (for those few sources using a control device) and controlling the feedrate of semivolatile metals in the hazardous waste.

We have emissions data within the range of normal emissions for nearly 40% of the sources.[153] The normal semivolatile stack emissions in our database range from less than 1 to 46 ug/dscm. These emissions are expressed conventionally as mass of semivolatile metals (from all feedstocks) per unit of stack gas. Hazardous waste thermal emissions, available for 25% of sources, range from 1.2E–6 to 4.8E–5 lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input of the hazardous waste.

We identified a MACT floor of 1.1E–5 expressed as a hazardous waste thermal emission by applying the Emissions Approach to the normal hazardous waste thermal emissions data.[154] This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this floor level is being achieved by 33% of sources and would reduce semivolatile metals emissions by 1.7 tons per year.

Because the floor level is based on normal emissions data, compliance would be documented by complying with a hazardous waste mercury thermal feed concentration on an annual rolling average. See discussion in Part Two, Section XIV.F below.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified two potential beyond-the-floor techniques for control of semivolatile metals: (1) Improved particulate matter control; and (2) control of mercury in the hazardous waste feed. For reasons discussed below, we are not proposing a beyond-the-floor standard for semivolatile metals.

a. Improved Particulate Matter Control. We evaluated installation of a new fabric filter or improved design, operation, and maintenance of the existing electrostatic precipitator and fabric filter as beyond-the-floor control

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[152] The source also is equipped with a high efficiency particulate air (HEPA) filter.

[153] Several owners and operators have used the emissions data as "data in lieu of testing'' emissions from other, identical boilers at the same facility. For purposes of identifying the number of boilers represented in this paragraph, the percentages include the data-in-lieu sources.

[154] We propose to use the Emissions Approach rather than the SRE/Feed approach because our data base is comprised of emissions obtained during normal rather than compliance test operations. Because of the relatively low semivolatile metal feedrates during normal operations, we are concerned that the system removal efficiencies that we would calculate may be inaccurate (*e.g.*, sampling and analysis imprecision at low feed rates can have a substantial impact on calculated system removal efficiencies).

for further reduction of semivolatile metals emissions. We evaluated a beyond-the-floor level of 5.5E–6 lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. The national incremental annualized compliance cost for liquid fuel-fired boilers to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $6.5 million and would provide an incremental reduction in semivolatile metals emissions beyond the MACT floor controls of 0.06 tons per year. We evaluated nonair quality health and environmental impacts and energy effects and determined that this beyond-the-floor option would increase the amount of hazardous waste generated by approximately 45 tons per year and would increase electricity usage by 0.8 million kW-hours per year. After considering these factors and costs of approximately $100 million per additional ton of semivolatile metals removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control.

b. Feed Control of Semivolatile Metals in the Hazardous Waste. We also evaluated a beyond-the-floor level of 8.8E–6 lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste, which represents a 20% reduction from the floor level. The national incremental annualized compliance cost for liquid fuel-fired boilers to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $4.8 million and would provide an incremental reduction in semivolatile metals emissions beyond the MACT floor controls of 0.06 tons per year. Nonair quality health and environmental impacts and energy effects are not significant factors for feedrate control. Therefore, considering these factors and costs of approximately $81 million per additional ton of semivolatile metals removed, we are not proposing a beyond-the-floor standard based on feed control of semivolatile metals in the hazardous waste.

For the reasons discussed above, we propose a floor standard for semivolatile metals for existing liquid fuel-fired boilers of 1.1E–5 lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste.

3. What Is the Rationale for the MACT Floor for New Sources?

The MACT floor for new sources for semivolatile metals would be 4.3E–6 lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. This is an emission level that the single best performing source identified with the Emissions Approach[155] could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained.

Because the floor level is based on normal emissions data, compliance would be documented by complying with a hazardous waste mercury thermal feed concentration on an annual rolling average. See discussion in Part Two, Section XIV.F below.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated a beyond-the-floor level of 2.1E–6 lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste based on an advanced fabric filter using high efficiency membrane bag material and a low air to cloth ratio. The incremental annualized compliance cost for a new liquid fuel-fired boiler with average gas flowrate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $0.15 million and would provide an incremental reduction in semivolatile metals emissions of less than 0.002 tons per year, for a cost-effectiveness of $87 million per ton of semivolatile metals removed. We evaluated the nonair quality health and environmental impacts and energy effects of this beyond-the-floor standard and estimate that, for a new liquid fuel-fired boiler with average gas flowrate, the amount of hazardous waste generated would increase by 2 tons per year and electricity consumption would increase by 0.54 million kW-hours per year. Considering these factors and cost-effectiveness, we conclude that a beyond-the-floor standard is not warranted. Therefore, we propose a semivolatile metals standard based on the floor level: 4.3E–6 lbs semivolatile metals emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste for new sources.

E. What Is the Rationale for the Proposed Standards for Chromium?

We propose to establish standards for existing and new liquid fuel-fired boilers that limit emissions of chromium to 1.1E–4 lbs and 3.6E–5 lbs chromium emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste, respectively.

We propose to establish emission standards on chromium-only because our data base has very limited compliance test data on emissions of total low volatile metals: arsenic, beryllium, and chromium. We have compliance test data on only two sources for total low volatile metals emissions while we have compliance test data for 12 sources for chromium-only. Although we have total low volatile metals emissions for 12 sources when operating under normal operations, we prefer to use compliance test data to establish the floor because they better address emissions variability.

By establishing a low volatile metal floor based on chromium emissions only we are relying on the particulate matter standard to control the other enumerated low volatile metals—arsenic and beryllium—as well as nonenumerated metal HAP. We request comment on this approach and note that, as discussed below, an alternative approach would be to establish a MACT floor based on normal emissions data for all three enumerated low volatile metals.

We request comment on whether the compliance test data for chromium-only are appropriate for establishing a MACT floor for chromium. We are concerned that some sources in our data base may have used chromium as a surrogate for arsenic and beryllium during RCRA compliance testing such that their chromium emissions may be more representative of their total low volatile metals emissions than only chromium. If we determine this to be the case, we could apply the floor we calculate using chromium emissions to total low volatile metal emissions. Alternatively, we could use the normal emissions data we have on 12 sources and our MACT methodology to establish a total low volatile metals floor.

1. What Is the Rationale for the MACT Floor for Existing Sources?

MACT floor for existing sources is 1.1E–4 lbs chromium emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste, which is based on particulate matter control (for those few sources using a control device) and controlling the feed concentration of chromium in the hazardous waste.

We have compliance test emissions data for approximately 17% of the

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[155] We use the Emissions Approach rather than the SRE/Feed Approach when we use normal rather than compliance test data to establish the standard, as discussed previously.

sources.[156] The compliance test chromium stack emissions in our database range from 2 to 900 ug/dscm. These emissions are expressed as mass of chromium (from all feedstocks) per unit of stack gas. Hazardous waste thermal emissions, available for 13% of sources, range from 3.2E–6 to 8.8E–4 lbs chromium emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste.

To identify the floor level, we evaluated all compliance test thermal emissions data using the SRE/Feed Approach (see discussion in Section VI.C above). The calculated floor is 1.1E–4 lbs chromium emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste feed, which considers emissions variability. This is an emission level that the average of the best performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this floor level is being achieved by 36% of sources and would reduce chromium emissions by 9.4 tons per year.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified two potential beyond-the-floor techniques for control of chromium emissions: (1) Use of a fabric filter to improve particulate matter control; and (2) control of chromium in the hazardous waste feed. For reasons discussed below, we are not proposing a beyond-the-floor standard for chromium.

a. Use of a Fabric Filter to Improve Particulate Matter Control. We evaluated use of a fabric filter as beyond-the-floor control for further reduction of chromium emissions. We evaluated a beyond-the-floor level of 5.5E–5 lbs chromium emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. The national incremental annualized compliance cost for liquid fuel-fired boilers to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $5.9 million and would provide an incremental reduction in chromium emissions beyond the MACT floor controls of 0.50 tons per year. We evaluated nonair quality health and environmental impacts and energy effects and determined that this beyond-the-floor option would increase the amount of hazardous waste generated by approximately 160 tons per year and would increase electricity usage by 3.0 million kW-hours per year. Based on these impacts and a cost of approximately $12 million per additional ton of chromium removed, we are not proposing a beyond-the-floor standard based on improved particulate matter control.

b. Feed Control of Chromium in the Hazardous Waste. We evaluated additional feed control of chromium in the hazardous waste as a beyond-the-floor control technique to reduce floor emission levels by 25% to achieve a standard of 8.8E–5 lbs chromium emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. This beyond-the-floor level of control would reduce chromium by an additional 0.20 tons per year at a cost-effectiveness of $22 million per ton of chromium removed. Nonair quality health and environmental impacts and energy effects are not significant factors for feedrate control. We conclude that use of additional hazardous waste chromium feedrate control would not be cost-effective and are not proposing a beyond-the-floor standard based on this control technique.

For the reasons discussed above, we do not propose a beyond-the-floor standard for chromium. Consequently, we propose to establish the emission standard for existing liquid fuel-fired boilers at the floor level: a hazardous waste thermal emission standard of 1.1E–4 lbs chromium emissions attributable to hazardous waste per million Btu of hazardous waste feed.

3. What Is the Rationale for the MACT Floor for New Sources?

The MACT floor for new sources for chromium would be 3.6E–5 lbs chromium emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste feed. This is an emission level that the single best performing source identified with the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated use of an advanced fabric filter using high efficiency membrane bag material and a low air to cloth ratio as beyond-the-floor control to reduce chromium emissions to a beyond-the-floor level of 1.8E–5 lbs chromium emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. The incremental annualized compliance cost for a new liquid fuel-fired boiler with average gas flowrate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $0.15 million and would provide an incremental reduction in chromium emissions of 0.014 tons per year, for a cost-effectiveness of $11 million per ton of chromium removed. We evaluated the nonair quality health and environmental impacts and energy effects of this beyond-the-floor standard and estimate that, for a new liquid fuel-fired boiler with average gas flowrate, the amount of hazardous waste generated would increase by 2 tons per year and electricity consumption would increase by 0.54 million kW-hours per year. Considering these factors and cost-effectiveness, we conclude that a beyond-the-floor standard is not warranted. Therefore, we propose a chromium emission standard for new sources based on the floor level: 3.6E–5 lbs chromium emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste feed.

F. What Is the Rationale for the Proposed Standards for Total Chlorine?

We are proposing to establish a standard for existing liquid fuel-fired boilers that limit emissions of hydrogen chloride and chlorine gas (*i.e.*, total chlorine) to 2.5E–2 lbs total chlorine emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. The proposed standard for new sources would be 7.2E–4 lbs total chlorine emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Most liquid fuel-fired boilers that burn hazardous waste do not have back-end controls such as wet scrubbers for total chlorine control. For these sources, total chlorine emissions are controlled by most sources by controlling the feedrate of chlorine in the hazardous waste feed. Approximately 15% of sources use wet scrubbing systems to control total chlorine emissions.

We have compliance test data representing maximum emissions for 40% of the boilers. Total chlorine emissions range from less than 1 to 900 ppmv. Hazardous waste thermal emissions, available for 27% of boilers, range from 1.00E–4 to 1.4 lbs total

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[156] Several owners and operators have used the emissions data as "data in lieu of testing" emissions from other, identical boilers at the same facility. For purposes of identifying the number of boilers represented in this paragraph, the percentages include the data-in-lieu sources.

chlorine emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste.

The calculated floor is 2.5E–2 lbs total chlorine emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste using the SRE/Feed Approach to identify the best performing sources (*see* discussion in section VI.C above). This is an emission level that the average of the performing sources could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this floor level is being achieved by 70% of sources and would reduce total chlorine emissions by 660 tons per year.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We identified two potential beyond-the-floor techniques for control of total chlorine emissions: (1) Use of a wet scrubber; and (2) control of chlorine in the hazardous waste feed. For reasons discussed below, we are not proposing a beyond-the-floor standard for total chlorine.

a. Use of Wet Scrubbing. We considered a beyond-the-floor standard of 1.3E–2 lbs total chlorine emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste based on wet scrubbing to reduce emissions beyond the floor level by 50 percent. The national incremental annualized compliance cost for liquid fuel-fired boilers to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $7.8 million and would provide an incremental reduction in total chlorine emissions beyond the MACT floor controls of 430 tons per year. We evaluated nonair quality health and environmental impacts and energy effects and determined that this beyond-the-floor option would increase both the amount of hazardous wastewater generated and water usage by approximately 3.2 billion gallons per year and would increase electricity usage by 30 million kW-hours per year. Considering these impacts and a cost-effectiveness of approximately $18,000 per additional ton of total chlorine removed, we are not proposing a beyond-the-floor standard based on wet scrubbing.

b. Feed Control of Chlorine in the Hazardous Waste. We evaluated additional feed control of chlorine in the hazardous waste as a beyond-the-floor control technique to reduce floor emission levels by 20% to achieve a standard of 2.0E–2 lbs total chlorine emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. The national incremental annualized compliance cost for liquid fuel-fired boilers to meet this beyond-the-floor level rather than comply with the floor controls would be approximately $3.9 million and would provide an incremental reduction in total chlorine emissions beyond the MACT floor controls of 170 tons per year. Nonair quality health and environmental impacts and energy effects are not significant factors for feedrate control. We conclude that use of additional hazardous waste chlorine feedrate control would not be cost-effective at $23,000 per ton of total chlorine removed and are not proposing a beyond-the-floor standard based on this control technique.

For the reasons discussed above, we propose a total chlorine standard for existing liquid fuel-fired boilers based on the floor level: 2.5E–2 lbs total chlorine emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste.

3. What Is the Rationale for the MACT Floor for New Sources?

The MACT floor for new sources for total chlorine would be 7.2E–4 lbs total chlorine emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. This is an emission level that the single best performing source identified with the SRE/Feed Approach could be expected to achieve in 99 of 100 future tests when operating under operating conditions identical to the compliance test conditions during which the emissions data were obtained.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated wet scrubbing as beyond-the-floor control for further reductions in total chlorine emissions to achieve a beyond-the-floor level of 3.6E–4 lbs total chlorine emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste. The incremental annualized compliance cost for a new liquid fuel-fired boiler with an average gas flowrate to meet this beyond-the-floor level, rather than comply with the floor level, would be approximately $0.44 million and would provide an incremental reduction in total chlorine emissions of approximately 0.13 tons per year, for a cost-effectiveness of $3.3 million per ton of total chlorine removed. We evaluated nonair quality health and environmental impacts and energy effects and determined that, for a new source with average an average gas flowrate, this beyond-the-floor option would increase both the amount of hazardous wastewater generated and water usage by approximately 140 million gallons per year and would increase electricity usage by 1.3 million kW-hours per year. After considering these impacts and cost-effectiveness, we conclude that a beyond-the-floor standard based on wet scrubbing for new liquid fuel-fired boilers is not warranted.

For the reasons discussed above, we propose a total chlorine standard for new sources based on the floor level: 7.2E–4 lbs total chlorine emissions attributable to the hazardous waste per million Btu heat input from the hazardous waste.

G. What Is the Rationale for the Proposed Standards for Carbon Monoxide or Hydrocarbons?

To control emissions of organic HAP, existing and new sources would be required to comply with either a carbon monoxide standard of 100 ppmv or a hydrocarbon standard of 10 ppmv.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Liquid fuel-fired boilers that burn hazardous waste are currently subject to RCRA standards that require compliance with either a carbon monoxide standard of 100 ppmv, or a hydrocarbon standard of 20 ppmv. Compliance is based on an hourly rolling average as measured with a CEMS. See § 266.104(a). We are proposing today floor standards of 100 ppmv for carbon monoxide or 10 ppmv for hydrocarbons.

Floor control for existing sources is operating under good combustion practices including: (1) Providing adequate excess air with use of oxygen CEMS and feedback air input control; (2) providing adequate fuel/air mixing; (3) homogenizing hazardous waste fuels (such as by blending or size reduction) to control combustion upsets due to very high or very low volatile content wastes; (4) regulating waste and air feedrates to ensure proper combustion temperature and residence time; (5) characterizing waste prior to burning for combustion-related composition (including parameters such as heating value, volatile content, liquid waste viscosity, *etc.*); (6) ensuring the source is operated by qualified, experienced operators; and (7) periodic inspection and maintenance of combustion system components such as burners, fuel and air supply lines, injection nozzles, *etc.* Given that there are many interdependent parameters that affect combustion efficiency and thus carbon monoxide and hydrocarbon emissions, we are not able to quantify "good combustion practices.''

All liquid fuel-fired boilers are currently complying with the RCRA carbon monoxide limit of 100 ppmv on an hourly rolling average. No boilers are complying with the RCRA hydrocarbon limit of 20 ppmv on an hourly rolling average.

We propose a floor level for carbon monoxide level of 100 ppmv because it is a currently enforceable Federal standard. Although the best performing sources are achieving carbon monoxide levels below 100 ppmv, it is not appropriate to establish a lower floor level because carbon monoxide is a surrogate for nondioxin/furan organic HAP. As such, lowering the carbon monoxide floor may not significantly reduce organic HAP emissions. In addition, it would be inappropriate to apply a MACT methodology to the carbon monoxide emissions from the best performing sources because those sources may not be able to replicate their emission levels. This is because there are myriad factors that affect combustion efficiency and, subsequently, carbon monoxide emissions. Extremely low carbon monoxide emissions cannot be assured by controlling only one or two operating parameters We note also that we used this rationale to establish a carbon monoxide standard of 100 ppmv for Phase I sources in the September 1999 Final Rule.

We propose a floor level for hydrocarbons of 10 ppmv even though the currently enforceable standard is 20 ppmv because: (1) The two sources that comply with the RCRA hydrocarbon standard can readily achieve 10 ppmv; and (2) reducing hydrocarbon emissions within the range of 20 ppmv to 10 ppmv should reduce emissions of nondioxin/furan organic HAP. We do not apply a prescriptive MACT methodology to establish a hydrocarbon floor below 10 ppmv, however, because we have data from only two sources. In addition, we note that the hydrocarbon emission standard for Phase I sources established in the September 1999 Final Rule is 10 ppmv also.

There would be no incremental emission reductions associated with these floors because all sources are currently achieving the floor levels.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We considered beyond-the-floor levels for carbon monoxide and hydrocarbons based on use of better combustion practices but conclude that they may not be replicable by the best performing sources nor duplicable by other sources given that we cannot quantify good combustion practices. Moreover, as discussed above, we cannot ensure that lower carbon monoxide or hydrocarbon levels would significantly reduce emissions of nondioxin/furan organic HAP.

Nonair quality health and environmental impacts and energy requirements are not significant factors for use of better combustion practices as beyond-the-floor control.

For these reasons, we conclude that beyond-the-floor standards for carbon monoxide and hydrocarbons are not warranted for existing sources.

3. What Is the Rationale for the MACT Floor for New Sources?

MACT floor for new sources would be the same as the floor for existing sources—100 ppmv for carbon monoxide and 10 ppmv for hydrocarbons—and based on the same rationale.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

As discussed in the context of beyond-the-floor considerations for existing sources, we considered beyond-the-floor standards for carbon monoxide and hydrocarbons for new sources based on use of better combustion practices. But we conclude that beyond the floor standards may not be replicable by the best performing sources nor duplicable by other sources given that we cannot quantify good combustion practices. Moreover, we cannot ensure that lower carbon monoxide or hydrocarbon levels would significantly reduce emissions of nondioxin/furan organic HAP.

Nonair quality health and environmental impacts and energy requirements are not significant factors for use of better combustion practices as beyond-the-floor control.

For these reasons, we are not proposing a beyond-the-floor standard for carbon monoxide and hydrocarbons.

H. What Is the Rationale for the Proposed Standard for Destruction and Removal Efficiency?

To control emissions of organic HAP, existing and new sources would be required to comply with a destruction and removal efficiency (DRE) of 99.99% for organic HAP. For sources burning hazardous wastes F020, F021, F022, F023, F026, or F027, however, the DRE standard is 99.9999% for organic HAP.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Liquid fuel-fired boilers that burn hazardous waste are currently subject to RCRA DRE standards that require 99.99% destruction of designated principal organic hazardous constituents (POHCs). For sources that burn hazardous wastes F020, F021, F022, F023, F026, or F027, however, the DRE standard is 99.9999% destruction of designated POHCs. See § 266.104(a).

The DRE standard helps ensure that a combustor is operating under good combustion practices and thus minimizing emissions of organic HAP. Under the MACT compliance regime, sources would designate POHCs that are organic HAP or that are surrogates for organic HAP.

We propose to establish the RCRA DRE standard as the floor for existing sources because it is a currently enforceable Federal standard. There would be no incremental costs or emission reductions associated with this floor because sources are currently complying with the standard.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We considered a beyond-the-floor level for DRE based on use of better combustion practices but conclude that it may not be replicable by the best performing sources nor duplicable by other sources given that we cannot quantify better combustion practices. Moreover, we cannot ensure that a higher DRE standard would significantly reduce emissions of organic HAP given that DRE measures the destruction of organic HAP present in the boiler feed rather than gross emissions of organic HAP. Although a source's combustion practices may be adequate to destroy particular organic HAP in the feed, other organic HAP that may be emitted as products of incomplete combustion may not be controlled by the DRE standard.[157]

For these reasons, and after considering nonair quality health and environmental impacts and energy requirements, we are not proposing a beyond-the-floor DRE standard for existing sources.

3. What Is the Rationale for the MACT Floor for New Sources?

We propose to establish the RCRA DRE standard as the floor for new sources because it is a currently enforceable Federal standard.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

Using the same rationale as we used to consider a beyond-the-floor DRE

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[157] The carbon monoxide/hydrocarbon emission standard would control organic HAP that are products of incomplete combustion by also ensuring use of good combustion practices.

standard for existing sources, we conclude that a beyond-the-floor DRE standard for new sources is not warranted. Consequently, after considering nonair quality health and environmental impacts and energy requirements, we are proposing the floor DRE standard for new sources.

XII. How Did EPA Determine the Proposed Emission Standards for Hazardous Waste Burning Hydrochloric Acid Production Furnaces?

The proposed standards for existing and new hydrochloric acid production furnaces that burn hazardous waste are summarized in the table below. See proposed § 63.1218.

PROPOSED STANDARDS FOR EXISTING AND NEW HYDROCHLORIC ACID PRODUCTION FURNACES

Hazardous air pollutant or surrogate	Emission standard[1]	
	Existing sources	New sources
Dioxin and furan	0.40 ng TEQ/dscm	0.40 ng TEQ/dscm.
Hydrochloric acid and chlorine gas[2]	14 ppmv or 99.9927% System Removal Efficiency.	1.2 ppmv or 99.99937% System Removal Efficiency.
Carbon monoxide or hydrocarbons[3]	100 ppmv carbon monoxide or 10 ppmv hydrocarbons.	100 ppmv carbon monoxide or 10 ppmv hydrocarbons.
Destruction and Removal Efficiency	For existing and new sources, 99.99% for each principal organic hazardous constituent (POHC). For sources burning hazardous wastes F020, F021, F022, F023, F026, or F027, however, 99.9999% for each POHC.	

[1] All emission standards are corrected to 7% oxygen, dry basis.

[2] Combined standard, reported as a chloride ($Cl^{(-)}$) equivalent.

[3] Hourly rolling average. Hydrocarbons reported as propane.

A. What Is the Rationale for the Proposed Standards for Dioxin and Furan?

The proposed standard for dioxin/furan for existing and new sources is 0.40 ng TEQ/dscm.

1. What Is the Rationale for the MACT Floor for Existing Sources?

The proposed MACT floor for existing sources is compliance with the proposed CO/HC emission standard and compliance with the proposed DRE standard.

Hydrochloric acid production furnaces use wet scrubbers to remove hydrochloric acid from combustion gases to produce the hydrochloric acid product and to minimize residual emissions of hydrochloric acid and chlorine gas. Thus, dioxin/furan cannot be formed on particulate surfaces in the emission control device as can happen with electrostatic precipitators and fabric filters. Nonetheless, dioxin/furan emissions from hydrochloric acid production furnaces can be very high. We have dioxin/furan emissions data for 18 test conditions representing 14 of the 17 sources. Dioxin/furan emissions range from 0.02 ng TEQ/dscm to 6.8 ng TEQ/dscm.

We investigated whether it would be appropriate to establish separate dioxin/furan standards for furnaces equipped with waste heat recovery boilers versus those without boilers. Ten of the 17 hydrochloric acid production furnaces are equipped with boilers. We considered whether waste heat recovery boilers may be causing the elevated dioxin/furan emissions, as appeared to be the case for incinerators equipped with boilers. See 62 FR at 24220 (May 2, 1997) where we explain that heat recovery boilers preclude rapid temperature quench of combustion gases, thus allowing particle-catalyzed formation of dioxin/furan. The dioxin/furan data for hydrochloric acid production furnaces indicate, however, that furnaces with boilers have dioxin/furan emissions ranging from 0.05 to 6.8 ng TEQ/dscm, while furnaces without boilers have dioxin/furan emissions ranging from 0.02 to 1.7 ng TEQ/dscm. Based on a statistical analysis of the data sets (see discussion in Part Two, Section II.E), we conclude that the dioxin/furan emissions for furnaces equipped with boilers are not significantly different from dioxin/furan emissions for furnaces without boilers. Thus, we conclude that separate dioxin/furan emission standards are not warranted.

We cannot identify or quantify a dioxin/furan control mechanism for these furnaces. Consequently, we conclude that establishing a floor emission level based on emissions from the best performing sources would not be appropriate because the best performing sources may not be able to replicate their emission levels, and other sources may not be able to duplicate those emission levels.

We note, however, that dioxin/furan emissions can be affected by the furnace's combustion efficiency. Operating under poor combustion conditions can generate dioxin/furan and organic precursors that may contribute to post-combustion dioxin/furan formation. Because we cannot quantify a dioxin/furan floor level and because hydrochloric acid production furnaces are currently required to operate under good combustion practices by RCRA standards for carbon monoxide/hydrocarbons and destruction and removal efficiency, we identify those RCRA standards as the proposed MACT floor. See § 266.104 requiring compliance with destruction and removal efficiency and carbon monoxide/hydrocarbon emission standards.[158] We also find, as required by CAA section 112(h)(1), that these proposed standards are consistent with section 112(d)'s objective of reducing emissions of these HAP to the extent achievable.

We also request comment on an alternative MACT floor expressed as a dioxin/furan emission concentration. Although it would be inappropriate to identify a floor concentration based on the average emissions of the best performing sources as discussed above, we could identify the floor as the highest emission concentration from any source in our data base, after considering emissions variability. Under this approach, the highest emitting source could be expected to achieve the floor 99 out of 100 future tests when

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[158] Section 266.104 requires compliance with a carbon monoxide limit of 100 ppmv or a hydrocarbon limit of 20 ppmv, while we are proposing today a carbon monoxide limit of 100 ppmv or a hydrocarbon limit of 10 ppmv (see Section XII.H in the text). Although today's proposed hydrocarbon limit is more stringent than the current limit for hydrochloric acid production furnaces, all sources chose to comply with the 100 ppmv carbon monoxide limit.

operating under the same conditions as it did when the emissions data were obtained. A floor that is expressed as a dioxin/furan emission level would prevent sources from emitting at levels higher than the (currently) worst-case source (actually, the worst-case performance test result) currently emits. We specifically request comment on this alternative MACT floor.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We evaluated use of an activated carbon bed (preceded by gas reheating to above the dewpoint) as beyond-the-floor control for dioxin/furan. Carbon beds can achieve greater than 99% reduction in dioxin/furan emissions.[159] We considered alternative beyond-the-floor levels of 0.40 ng TEQ/dscm and 0.20 ng TEQ/dscm.

The incremental annualized cost of a beyond-the-floor emission level of 0.40 ng TEQ/dscm would be $1.9 million and would provide an incremental reduction in dioxin/furan emissions of 2.3 grams TEQ per year, for a cost-effectiveness of $0.83 million per gram TEQ removed.[160] A beyond-the-floor emission level of 0.20 ng TEQ/dscm would provide very little incremental emissions reduction—0.1 grams TEQ per year—at additional costs. We evaluated nonair quality health and environmental impacts and energy effects and determined that this beyond-the-floor option would increase the amount of hazardous wastewater generated by 210 tons per year, and would increase electricity usage by 1.8 million kW-hours per year and natural gas consumption by 96 trillion Btu per year.

We judge that the cost to achieve a beyond-the-floor standard of 0.40 ng TEQ/dscm is warranted given our special concern about dioxin/furan. Dioxin/furan are some of the most toxic compounds known due to their bioaccumulation potential and wide range of health effects, including carcinogenesis, at exceedingly low doses. Exposure via indirect pathways is a chief reason that Congress singled out dioxin/furan for priority MACT control in CAA section 112(c)(6). See S. Rep. No. 128, 101st Cong. 1st Sess. at 154–155. In addition, we note that the beyond-the-floor emission level of 0.40 ng TEQ/dscm is consistent with historically controlled levels under MACT for hazardous waste incinerators and cement kilns, and Portland cement plants. See §§ 63.1203(a)(1), 63.1204(a)(1), and 63.1343(d)(3). Also, EPA has determined previously in the 1999 Hazardous Waste Combustor MACT final rule that dioxin/furan in the range of 0.40 ng TEQ/dscm or less are necessary for the MACT standards to be considered generally protective of human health under RCRA (using the 1985 cancer slope factor), thereby eliminating the need for separate RCRA standards under the authority of RCRA section 3005(c)(3) and 40 CFR 270.10(k). Finally, we note that this decision is not inconsistent with EPA's decision not to promulgate beyond-the-floor standards for dioxin/furan for hazardous waste burning lightweight aggregate kilns, cement kilns, and incinerators at cost-effectiveness values in the range of $530,000 to $827,000 per additional gram of dioxin/furan TEQ removed. See 64 FR at 52892, 52876, and 52961. In those cases, EPA determined that controlling dioxin/furan emissions from a level of 0.40 ng TEQ/dscm to a beyond-the-floor level of 0.20 ng TEQ/dscm was not warranted because dioxin/furan levels below 0.40 ng TEQ/dscm are generally considered to be below the level of health risk concern.

For these reasons, we believe that proposing a beyond-the-floor standard of 0.40 ng TEQ/dscm is warranted notwithstanding the nonair quality health and environmental impacts and energy effects identified above and costs of approximately $0.83 million per additional gram of dioxin/furan TEQ removed. We specifically request comment on our decision to propose this beyond-the-floor standard.

3. What Is the Rationale for the MACT Floor for New Sources?

MACT floor for new sources is the same as for existing sources under the same rationale: compliance with the carbon monoxide/hydrocarbon emission standard and compliance with the destruction and removal efficiency standard.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

As for existing sources, we evaluated use of an activated carbon bed as beyond-the-floor control for new sources to achieve an emission level of 0.40 ng TEQ/dscm. We estimate that the incremental annualized cost for a new hydrochloric acid production furnace with average gas flowrate to reduce dioxin/furan emissions at the floor of 0.68 ng TEQ/dscm[161] to achieve a beyond-the-floor emission level of 0.40 ng TEQ/dscm would be $0.15 million. These controls would provide an incremental reduction in dioxin/furan emissions of 0.66 grams TEQ per year, for a cost-effectiveness of $230,000 per gram TEQ removed. We evaluated nonair quality health and environmental impacts and energy effects and determined that, for a new source with an average gas flowrate, this beyond-the-floor option would increase the amount of hazardous wastewater generated by 9 tons per year, and would increase electricity usage by 0.14 million kW-hours per year and natural gas consumption by 9.2 trillion Btu per year.

We judge that the cost to achieve a beyond-the-floor standard of 0.40 ng TEQ/dscm is warranted given our special concern about dioxin/furan. Dioxin/furan are some of the most toxic compounds known due to their bioaccumulation potential and wide range of health effects, including carcinogenesis, at exceedingly low doses. Exposure via indirect pathways is a chief reason that Congress singled our dioxin/furan for priority MACT control in CAA section 112(c)(6). See S. Rep. No. 128, 101st Cong. 1st Sess. at 154–155. In addition, we note that the beyond-the-floor standard of 0.40 ng TEQ/dscm is consistent with historically controlled levels under MACT for hazardous waste incinerators and cement kilns, and Portland cement plants. See §§ 63.1203(a)(1), 63.1204(a)(1), and 63.1343(d)(3). Also, EPA has determined previously in the 1999 Hazardous Waste Combustor MACT final rule that dioxin/furan in the range of 0.40 ng TEQ/dscm or less are necessary for the MACT standards to be considered generally protective of human health under RCRA (using the 1985 cancer slope factor), thereby eliminating the need for separate RCRA standards under the authority of RCRA section 3005(c)(3) and 40 CFR 270.10(k).

For these reasons, we believe that proposing a beyond-the-floor standard of 0.40 ng TEQ/dscm is warranted notwithstanding the nonair quality health and environmental impacts and energy effects identified above and costs of approximately $0.23 million per additional gram of dioxin/furan TEQ removed. We specifically request comment on our decision to propose this beyond-the-floor standard.

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[159] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume V: Emissions Estimates and Engineering Costs,'' March 2004, Chapter 4.

[160] Please note that, under the proposed floor level, sources would not incur retrofit costs or achieve dioxin/furan emissions reductions because they currently comply with the floor controls under current RCRA regulations at 40 CFR 266.104.

[161] We estimate beyond-the-floor control costs assuming a new source emits the highest levels likely under floor control based on compliance with the carbon monoxide and destruction and removal efficiency standards.

B. What Is the Rationale for the Proposed Standards for Mercury, Semivolatile Metals, and Low Volatile Metals?

We propose to require compliance with the total chlorine standard as a surrogate for the mercury, semivolatile metals, and low volatile metals standards.

As discussed above, hydrochloric acid production furnaces use wet scrubbers to remove hydrochloric acid from combustion gases to produce the hydrochloric acid product and to minimize residual emissions of hydrochloric acid and chlorine gas. Wet scrubbers also remove metal HAP, including mercury, from combustion gases. To minimize contamination of hydrochloric acid product with metals, hydrochloric acid production furnaces generally feed hazardous waste with low levels of metal HAP. Moreover, the wet scrubbers used to recover the hydrochloric acid product and minimize residual emissions of hydrochloric acid and chlorine gas also control emissions of metal HAP to very low levels. Based on emissions testing within the range of normal emissions (*i.e.*, not compliance test, maximum allowed emissions), hydrochloric acid production furnaces emit mercury at levels from 0.1 to 0.4 µg/dscm, semivolatile metals at levels from 0.1 to 4.1 µg/dscm, and low volatile metals at levels from 0.1 to 43 µg/dscm.[162, 163]

We also note that these sources emit low levels of particulate matter. Compliance test, maximum allowable emissions of particulate matter range from 0.001 to 0.013 gr/dscf.

Because wet scrubbers designed to recover the hydrochloric acid product and control residual emissions of hydrogen chloride and chlorine gas also control emissions of mercury, and semivolatile and low volatile metals (including nonenumerated metals), use of MACT wet scrubbers to comply with the proposed total chlorine standard discussed below will also ensure MACT control of metal HAP. Accordingly, we propose to use the total chlorine standard as a surrogate for the mercury, semivolatile metals, and low volatile metals standards.

C. What Is the Rationale for the Proposed Standards for Total Chlorine?

The proposed standards for total chlorine are 14 ppmv or 99.9927 percent total chlorine system removal efficiency (SRE) for existing sources and 1.2 ppmv or 99.99937 percent total chlorine SRE for new sources. A source may elect to comply with either standard.

1. What Is the Rationale for the MACT Floor for Existing Sources?

The proposed MACT floor for existing sources is compliance with either a total chlorine emission level of 14 ppmv or a total chlorine SRE of 99.9927 percent.

Hydrochloric acid production furnaces use wet scrubbers to remove hydrochloric acid from combustion gases to produce the hydrochloric acid product and to minimize residual emissions of hydrochloric acid and chlorine gas. We have compliance test, maximum allowable total chlorine emissions data for all 17 hydrochloric acid production furnaces. Total chlorine emissions range from 0.4 to 500 ppmv, and total chlorine system removal efficiencies (SRE) range from 98.967 to 99.9995 percent.

As discussed in Section VI.C above, control of the feedrate of chlorine in hazardous waste fed to the furnace is not an appropriate MACT emission control technique because hydrochloric acid production furnaces are designed to produce hydrochloric acid from chlorinated feedstocks. Consequently, the approaches we normally use to identify the best performing sources—SRE/Feed Approach or Emissions Approach—are not appropriate because they directly or indirectly consider chlorine feedrate. More simply, limiting feedrate means not producing the intended product, a result inconsistent with MACT. See 2 *Legislative History* at 3352 (House Report) (“MACT is not intended to * * * drive sources to the brink of shutdown’’). To avoid this concern, we identify a floor SRE, and provide an alternative floor as a total chlorine emission limit based on floor SRE and the highest chlorine feedrate for any source in the data base. By using the highest chlorine feedrate to calculate the alternative total chlorine emission limit, we ensure that feedrate control (*i.e.*, nonproduction of product) is not a factor in identifying the proposed MACT floor. The alternative total chlorine emission limit would require a source that may not be achieving floor SRE to achieve total chlorine emission levels no greater than the level that would be emitted by any source achieving floor SRE.

The floor SRE is 99.9927 percent. It is calculated from the five best SREs, and considers emissions variability. Floor SRE is an SRE that the average of the performing sources could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. We estimate that this SRE is being achieved by 29% of sources.

The alternative floor emission limit is 14 ppmv, and is the emission level that the source with the highest chlorine feedrate—2.9E+8 µg/dscm—would achieve when achieving 99.9927 percent SRE.

Approximately 24% of sources are achieving the alternative floor levels, and these floor levels would reduce total chlorine emissions by 145 tons per year.

2. EPA’s Evaluation of Beyond-the-Floor Standards for Existing Sources

We evaluated improved design, operation, and maintenance of existing scrubbers to achieve a beyond-the-floor emission level of 7 ppmv for total chlorine for existing sources, assuming a 50% reduction in emissions from the floor level.

The national annualized compliance cost for hydrochloric acid production furnaces to comply with this beyond-the-floor standard would be $0.25 million, and emissions of total chlorine would be reduced by 3 tons per year. The cost-effectiveness of this beyond-the-floor standard would be $76,000 per ton of total chlorine removed.

We evaluated nonair quality health and environmental impacts and energy effects and determined that this beyond-the-floor option would increase both the amount of hazardous wastewater generated and water usage by approximately 82 million gallons per year and would increase electricity usage by 0.34 million kW-hours per year. Generation of nonwastewater hazardous waste would decrease by 7 tons per year. Considering these impacts and cost-effectiveness as well, we conclude that a beyond-the-floor standard for existing sources would not be warranted.

For these reasons, we propose a floor total chlorine standard of 14 ppmv or 99.9927% SRE for existing sources.

3. What Is the Rationale for the MACT Floor for New Sources?

The proposed MACT floor for new sources is compliance with either a total chlorine emission level of 1.2 ppmv or

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[162] USEPA, “Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards,’’ March 2004, Chapter 2.

[163] Except that one source emitted 330 µg/dscm low volatile metals and 0.043 gr/dscf particulate matter during compliance testing. This source apparently detuned the acid gas absorber and other acid gas control equipment given that it achieved less than 99% system removal efficiency for total chlorine and had total chlorine emissions of 500 ppmv. This source would not be allowed to operate under these conditions under today’s proposed rule: 14 ppmv total chlorine emission limit, or 99.9927 system removal efficiency. Thus, under the proposed rule, emissions of low volatile metals and particulate matter would be substantially lower.

a total chlorine SRE of 99.99937 percent. We use the same rationale for identifying alternative floors for new sources as discussed above in the context of existing sources.

The new source floor SRE is the SRE that the single best performing source (*i.e,* source with the best SRE) could be expected to achieve in 99 of 100 future tests when operating under conditions identical to the compliance test conditions during which the emissions data were obtained. The new source floor alternative emission limit is an emission level that the source with the highest chlorine feedrate—2.9E+8 µg/dscm—would achieve when achieving 99.99937 percent SRE.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

We evaluated a beyond-the-floor standard for new sources of 0.60 ppmv based on achieving a 50 percent reduction in emissions by improving the design/operation/maintenance of the wet scrubber. The incremental annualized cost for a new solid fuel-fired boiler with average gas flowrate to meet a beyond-the-floor level of 0.60 ppmv would be approximately $0.15 million and would provide an incremental reduction in total chlorine emissions of 0.07 tons per year, for a cost-effectiveness of $2.1 million per ton of total chlorine removed.

We evaluated nonair quality health and environmental impacts and energy effects and determined that, for a new source with average gas flowrate, this beyond-the-floor option would increase both the amount of hazardous wastewater generated and water usage by approximately 26 million gallons per year and would increase electricity usage by 0.25 million kW-hours per year. Considering these impacts and cost-effectiveness as well, we conclude that a beyond-the-floor standard for new sources would not be warranted.

For the reasons discussed above, we propose a total chlorine standard of 1.2 ppmv or a total chlorine SRE of 99.99937 percent for new sources.

D. What Is the Rationale for the Proposed Standards for Carbon Monoxide or Hydrocarbons?

To control emissions of organic HAP, existing and new sources would be required to comply with either a carbon monoxide standard of 100 ppmv or a hydrocarbon standard of 10 ppmv.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Hydrochloric acid production furnaces that burn hazardous waste are currently subject to RCRA standards that require compliance with either a carbon monoxide standard of 100 ppmv, or a hydrocarbon standard of 20 ppmv. Compliance is based on an hourly rolling average as measured with a CEMS. See § 266.104(a). All hydrochloric acid production furnaces have elected to comply with the 100 ppmv carbon monoxide standard. We propose floor standards of 100 ppmv for carbon monoxide or 10 ppmv for hydrocarbons for the same reasons discussed above in the context of liquid fuel-fired boilers.

There would be no incremental emission reductions associated with these floors because sources are currently achieving the carbon monoxide standard.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

Our considerations for beyond-the-floor standards for existing hydrochloric acid production furnaces are identical to those discussed above for existing liquid fuel-fired boilers. For the reasons discussed above in the context of liquid fuel-fired boilers, we conclude that beyond-the-floor standards for carbon monoxide and hydrocarbons for existing hydrochloric acid production furnaces are not warranted.

3. What Is the Rationale for the MACT Floor for New Sources?

MACT floor for new sources would be the same as the floor for existing sources—100 ppmv for carbon monoxide and 10 ppmv for hydrocarbons—and based on the same rationale.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

Our considerations for beyond-the-floor standards for new hydrochloric acid production furnaces are identical to those discussed above for new liquid fuel-fired boilers. For the reasons discussed above in the context of liquid fuel-fired boilers, we conclude that beyond-the-floor standards for carbon monoxide and hydrocarbons for new hydrochloric acid production furnaces are not warranted.

E. What Is the Rationale for the Proposed Standard for Destruction and Removal Efficiency?

To control emissions of organic HAP, existing and new sources would be required to comply with a destruction and removal efficiency (DRE) of 99.99% for organic HAP. For sources burning hazardous wastes F020, F021, F022, F023, F026, or F027, however, the DRE standard is 99.9999% for organic HAP.

1. What Is the Rationale for the MACT Floor for Existing Sources?

Hydrochloric acid production furnaces that burn hazardous waste are currently subject to RCRA DRE standards that require 99.99% destruction of designated principal organic hazardous constituents (POHCs). For sources that burn hazardous wastes F020, F021, F022, F023, F026, or F027, however, the DRE standard is 99.9999% destruction of designated POHCs. See § 266.104(a).

The DRE standard helps ensure that a combustor is operating under good combustion practices and thus minimizing emissions of organic HAP. Under the MACT compliance regime, sources would designate POHCs that are organic HAPs or that are surrogates for organic HAPs.

We propose to establish the RCRA DRE standard as the floor for existing sources because it is a currently enforceable Federal standard. There would be no incremental emission reductions associated with this floor because sources are currently complying with the standard.

2. EPA's Evaluation of Beyond-the-Floor Standards for Existing Sources

We considered a beyond-the-floor level for DRE based on use of better combustion practices but conclude that it may not be replicable by the best performing sources nor duplicable by other sources given that we cannot quantify better combustion practices. Moreover, we cannot ensure that a higher DRE standard would significantly reduce emissions of organic HAP given that DRE measures the destruction of organic HAP present in the boiler feed rather than gross emissions of organic HAP. Although a source's combustion practices may be adequate to destroy particular organic HAP in the feed, other organic HAP may be emitted as products of incomplete combustion.

For these reasons, and after considering nonair quality health and environmental impacts and energy requirements, we are not proposing a beyond-the-floor DRE standard for existing sources.

3. What Is the Rationale for the MACT Floor for New Sources?

We propose to establish the RCRA DRE standard as the floor for new sources because it is a currently enforceable Federal standard.

4. EPA's Evaluation of Beyond-the-Floor Standards for New Sources

Using the same rationale as we used to consider a beyond-the-floor DRE standard for existing sources, we conclude that a beyond-the-floor DRE standard for new sources is not warranted. Consequently, after considering nonair quality health and environmental impacts and energy requirements, we are proposing the floor DRE standard for new sources.

XIII. What Is the Rationale for Proposing an Alternative Risk-Based Standard for Total Chlorine in Lieu of the MACT Standard?

Under authority of CAA section 112(d)(4), we propose standard procedures to allow you to establish a risk-based emission limit for total chlorine in lieu of compliance with the section 112(d)(2) MACT emission standard. See proposed § 63.1215. The risk-based approach would be applicable to all hazardous waste combustors except hydrochloric acid production furnaces. Because we are proposing to use the MACT standard for total chlorine as a surrogate to control metal HAP for the hydrogen chloride production furnace source category, we cannot allow any variance from the standard. For the other hazardous waste combustor source categories, we are proposing the section 112(d)(4) standard as an alternative to the MACT standard. Sources could choose which of these two standards they would prefer to apply.

The alternative risk-based emission limit for total chlorine would be based on national exposure standards established by EPA that ensure protection of public health with an ample margin of safety. The standard would consist of a nationally-applicable, uniform algorithm that would be used to establish site-specific emission limitations based on site-specific input from each source choosing to use this approach. Thus, these standards would provide a uniform level of risk reduction, consistent with the requirement of section 112(d)(4) that EPA establish "emission standards'', *i.e.*, a requirement established by EPA which limits quantity, rate or concentration of air emissions (see CAA section 302(k)).

We also request comment on an alternative approach to implement section 112(d)(4) for cement kilns in which we establish a national risk-based emission standard for total chlorine that would be applicable to all cement kilns. Under this approach, EPA would issue a single total chlorine emission standard using an emission level that meets our national exposure standards if each cement kiln were to emit at that level.

We believe that most hazardous waste combustors are likely to consider establishing risk-based standards for total chlorine because the MACT standards proposed today are more stringent, and in some cases substantially more stringent, than currently applicable standards (*e.g.*, the total chlorine standard for incinerators is currently 77 ppmv while we propose today a MACT standard of 1.4 ppmv).

A. What Is the Legal Authority To Establish Risk-Based Standards?

Under the authority of section 112(d)(4), the Administrator may establish emission standards based on risk, in lieu of the technology-based MACT standards, when regulating HAP for which health threshold levels have been established. Under section 112(d)(4), Congress gave EPA the discretion to consider the health threshold of any HAP and to use that health threshold, with an ample margin of safety, to set emission standards for the source category or subcategory. In the legislative history accompanying this provision, the Senate Report stated,

> "To avoid expenditures by regulated entities that secure no public health or environmental benefit, the Administrator is given discretionary authority to consider the evidence for a health threshold higher than MACT at the time the standard is under review. The Administrator is not required to take such factors into account; that would jeopardize the standard-setting schedule imposed under this section with the kind of lengthy study and debate that has crippled the current program. But where health thresholds are well established, for instance in the case of ammonia, and the pollutant presents no risk of other adverse health effects, the Administrator may use the threshold with an ample margin of safety (and not considering cost) to set emissions limitations for sources in the category or subcategory.'' (S. Rep. No. 228, 101st Cong. 1st Sess. at 171 (1989); see also *id.* at 175–176 (1989).)

EPA has previously used section 112(d)(4) authority in the Industrial Boiler and Process Heater MACT Final Rule signed Feb. 26, 2004, the Pulp and Paper MACT Phase II (66 FR 3180, January 12, 2001) and the Lime Manufacturing MACT (69 FR 394, January 5, 2004), and has proposed to use it in a different manner in several other MACT rulemakings (*e.g.*, the Reciprocating Internal Combustion Engine MACT (67 FR 77830, December 19, 2002).[164] The approach we propose today is nearly identical to the approach EPA recently adopted for the Industrial Boiler and Process Heater MACT source category, which allows a source to establish a site-specific risk-based emission limit for threshold HAP using prescribed procedures. This approach differs from the previous MACT rules where EPA simply determined, on a national basis, what level of exposure from each source in the category would be protective of public health with an ample margin of safety, and did not pose significant adverse environmental impacts. This previous approach resulted in a determination that no standard was necessary because no source in the category could exceed such a risk-based standard. Today's proposal varies in that the level of protection afforded by the standard is uniform, but the limits for individual sources differ due to site-specific factors. As explained later in this section of the preamble, EPA is, however, also considering for cement kilns applying the single national standard approach adopted in earlier rules.

B. What Is the Rationale for the National Exposure Standards?

We identify as national exposure standards threshold levels that are protective of human health from both chronic and acute exposure. In addition, because EPA has discretion whether or not to promulgate risk-based standards pursuant to section 112(d)(4), we would not allow an alternative standard where emission levels may result in adverse environmental effects that would otherwise be reduced or eliminated. We would not issue the alternative standard even though it may be shown that emissions do not approach or exceed levels requisite to protect public health with an ample margin of safety because we believe the statute requires that we consider effects on terrestrial animals, plants, and aquatic ecosystems in addition to public health in establishing a standard pursuant to section 112(d)(4). See S. Rep. 228 at 176: "Employing a health threshold or safety level rather than the MACT criteria to set standards shall not result in adverse environmental effects which would otherwise be reduced or eliminated.''

1. What Are the Human Health Threshold Levels?

a. Chronic Exposure. Hydrogen chloride is corrosive to the eyes, skin, and mucous membranes. Chronic exposure may cause gastritis, bronchitis, dermatitis, and dental discoloration and erosion. Chronic exposure to chlorine gas can cause respiratory effects

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[164] The Agency also proposed to use Section 112(d)(4) authority in two other MACT rulemakings—the Combustion Turbine MACT (68 FR 1888, January 14, 2003), and the Chlorine Production MACT (67 FR 44671)—but determined that MACT standards for those source categories are not warranted and delisted the source categories from the section 112(c) list of major sources pursuant to the authority in section 112(c)(9).

including eye and throat irritation and airflow obstruction. *See* discussion in Part One, Section I.E of this preamble.

Given that neither hydrogen chloride nor chlorine gas is known to produce a carcinogenic response,[165] we use reference air concentrations (RfC) to assess the likelihood of non-cancer health effects in humans. The RfC is an estimate of a continuous inhalation exposure to the human population, including sensitive subgroups, that is likely to be without an appreciable risk of deleterious effects over a lifetime. We use an RfC for hydrogen chloride of 20 μg/m^3, as presented in EPA's Integrated Risk Information System (IRIS). We propose to use an RfC for chlorine gas of 0.2 μg/m^3 based on a provisional assessment prepared by EPA on inhalation hazards from chlorine.[166] This is the same as the value for chlorine used by the State of California's Office of Environmental Health Hazard Assessment, which they refer to as a chronic "Reference Exposure Level'' (REL). Because RfCs can change over time based on new information, the rule would require you to use the current RfC value found at *http://epa.gov/ttn/atw/toxsource/summary.html.*

We considered how to account for the fact that chlorine gas photolyzes in the atmosphere in bright sunlight to chlorine ions and then quickly reacts with hydrogen or methane to form hydrogen chloride. The half-life of chlorine due to photolysis in bright sunlight is estimated to be 10 minutes.[167] Nonetheless, this is generally sufficient time for the plume to reach nearby ground-level receptors without significant transformation. In addition, such transformation is possible only a portion of the time. Photolysis does not occur at night and is reduced on overcast or cloudy days. Generally speaking, the rate of photolysis depends on the particular wavelength and intensity of solar radiation reaching the earth's surface which varies greatly depending on the solar angle which changes with the time of day, the season of the year, and the latitude at a given location. While the ideal approach would be explicit modeling of photolysis rates as a function of solar insolation, sky conditions, absorption cross-section, quantum yield, and subsequent transformation to hydrogen chloride, to our knowledge no such regulatory air dispersion model currently exists.

Because it is reasonable to believe that receptors will be exposed to chlorine gas before appreciable transformation occurs due to the variability and complexity of the transformation and the fact that chlorine gas is considerably more toxic than hydrogen chloride, we conclude that, for the purpose of protection of public health, it is prudent to assume that chlorine gas is not transformed to hydrogen chloride.

b. Acute Threshold Levels. Short-term exposure to hydrogen chloride may cause eye, nose, and respiratory tract irritation and inflamation and pulmonary edema. Short-term exposure to high levels of chlorine gas can result in chest pain, vomiting, toxic pneumonitis, and pulmonary edema. At lower levels, chlorine gas is a potent irritant to the eyes, the upper respiratory tract, and lungs. *See* Part One, Section I.E. Please note that, although we discuss here how we would consider acute exposure, we conclude below that you need not assess acute exposure to establish an emission limit for total chlorine. *See* discussion in Section B.2.e.

To assess effects from acute exposure, we would use the acute exposure guideline level (AEGL). AEGL toxicity values are estimates of adverse health effects due to a single exposure lasting 8 hours or less. Consensus toxicity values for effects of acute exposures have been developed by several different organizations. EPA, in conjunction with the National Research Council and National Academy of Sciences, is in the process of setting acute exposure guideline levels. A national advisory committee organized by EPA has developed AEGLs for priority chemicals for 10-minute, 30-minute, 1-hour, 4-hour, and 8-hour airborne exposures. They have also determined for each exposure duration the levels of these chemicals that will protect against notable discomfort (AEGL–1), serious effects (AEGL–2), and life-threatening effects or death (AEGL–3).[168] To be protective of public health, we propose to use the AEGL–1 values to assess acute exposure: 2.7 mg/m^3 (1.8 ppm) for hydrogen chloride, and 1.4 mg/m^3 (0.5 ppm) for chlorine gas.[169] Airborne concentrations of a substance above the AEGL–1 could cause notable discomfort, irritation, or certain asymptomatic nonsensory effects in the general population, including susceptible individuals. Please note, however, that airborne concentrations below the AEGL–1 could produce mild odor, taste, or other sensory irritations. Effects above the AEGL–1 (but below the AEGL–2) are not disabling and are transient and reversible upon cessation of exposure.

2. What Exposures Would You Be Required to Assess?

We discuss below the following issues: (1) Use of the Hazard Index to assess exposure to both hydrogen chloride and chlorine gas; (2) exposure to emissions of respiratory irritant HAP other than hydrogen chloride and chlorine gas; (3) exposure to emissions of respiratory irritant HAP from collocated sources; (4) exposure to ambient background levels of respiratory irritant HAP; and (5) our conclusion that acute exposure need not be assessed to establish emission limits because the Hazard Index for chronic exposure is expected to be higher in all situations.

a. Hazard Index. Noncancer risk assessments typically use a metric called the Hazard Quotient (HQ) to assess risks of exposures to noncarcinogens. The HQ is the ratio of a receptor's potential exposure (or modeled concentration) to the health reference value or threshold level (*e.g.*, RfC or AEGL) for an individual pollutant. HQ values less than 1.0 indicate that exposures are below the

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[165] EPA conducted an assessment of the carcinogenicity of chlorine gas and concluded that it is not likely to be a human carcinogen (*see* EPA's June 22, 1999 Risk Assessment Issue Paper for Derivation of a Provisional Chronic Inhalation RfC for Chlorine, p.12). The International Agency for Research on Cancer (IARC) concluded that hydrochloric acid is not classifiable as to its carcinogenicity to humans (*see* IARC Monographs, Vol. 54: Occupational Exposures to Mists and Vapours from Strong Inorganic Acids; and Other Industrial Chemicals (1992) p.189).

[166] *See* EPA's externally peer-reviewed "Risk Assessment Issue Paper for Derivation of a Provisional Chronic Inhalation RfC for Chlorine'' (June 22, 1999) that can be found in the docket for today's proposal.

[167] As determined by a modeling analysis done by the Air Pollution Research Center at the University of California at Riverside, as reported in a California Air Resources Board fact sheet, "Toxic Air Contaminant Identification List Summaries—ARB/SSD/SES,'' p. 231, September 1997. *See also http://www.arb.ca.gov/toxics/tac/factshts/chlorine.pdf.*

[168] The full definitions of the AEGL values are more nuanced. AEGL 1: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure. AEGL 2: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape. AEGL 3: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

[169] For hydrogen chloride and chlorine gas (individually), the AEGL–1 values for 10-minute, 30-minute, 1-hour, and 8-hour exposures are the same. Therefore, when comparing predicted ambient levels of exposure to the AEGL–1 value, we believe it is reasonable to evaluate maximum 1-hour ground level concentrations.

health reference value or threshold level and, therefore, that such exposures are without appreciable risk of adverse effects in the exposed population. HQ values above 1 do not necessarily imply that adverse effects will occur, but that the likelihood of such effects in a given population increases as HQ values exceed 1.0.[170]

When the risk of noncancer effects from exposure to more than one pollutant to the same target organ must be assessed, the effects are generally considered to be additive and the HQ values for each pollutant are summed to form an analogous metric called the Hazard Index (HI). Assuming additivity, HI values less than 1.0 indicate that exposures to the mixtures are likely to be without appreciable risk of adverse effects in the exposed population. HI values above 1.0 do not necessarily imply that adverse effects from exposure to the mixture will occur, but that the likelihood of such effects in a given population increases as HI values exceed 1.0.

For purposes of establishing risk-based emission limits for total chlorine, we propose to allow a maximum HI value of not greater than 1.0.

b. Exposure to Emissions of HAP other than Hydrogen Chloride and Chlorine Gas that Have a Common Mechanism of Action. We have identified in the table below 40 HAP that are respiratory irritants, including hydrogen chloride and chlorine gas. Because these HAP have a common mechanism of action, we must determine whether exposure to these HAP must be considered when determining that the HI is less than or equal to 1.0.

Respiratory Irritant HAP

1,2-Epoxybutane
1,3-dichloropropene
2,4-Toluene diisocyanate
2-Chloroacetophenone
Acetaldehyde
Acrolein
Acrylic acid
Acrylonitrile
Antimony
Beryllium
Bis(2-ethylhexyl)phthalate
Chlorine
Chloroprene
Chromium
Cobalt
Diethanolamine
Epichlorohydrin
Ethylene glycol
Formaldehyde
Hexachlorocyclopentadiene
Hexamethylene 1,6-diisocyanate
Hydrochloric acid
Maleic anhydride
Methyl bromide
Methyl isocyanate
Methyl methacrylate
Methylene diphenyl diisocyanate
N-hexane
Naphthalene
Nickel
Nitrobenzene
Phosgene
Phthalic anhydride
Propylene dichloride
Propylene oxide
Styrene oxide
Titanium tetrachloride
Toluene
Triethylamine
Vinyl acetate

In making this determination, we would consider only those respiratory irritants that are HAP (as opposed to also considering respiratory irritants that are criteria pollutants) not only because section 112 deals with control of emissions of HAP, but also because ambient levels of criteria pollutants that have a common mechanism of action with hydrogen chloride and chlorine gas (*e.g.*, SO_X, NO_X, PM, ozone) are controlled through the applicable State Implementation Plans demonstrating compliance with the National Ambient Air Quality Standards for these pollutants.

In addition to hydrogen chloride and chlorine gas, several of the respiratory irritant HAP listed in the table above may be emitted by hazardous waste combustors, including the metals antimony trioxide, beryllium, chromium (VI), cobalt, and nickel, and the organic compounds Bis(2-ethylhexyl)phthalate, formaldehyde, napthalene, and toluene.[171] We do not believe, however, that these respiratory irritant HAP would be emitted by hazardous waste combustors at levels that would result in significant Hazard Quotient values. Beryllium and chromium would be controlled by emission standards for low volatile metals and the remaining metal HAP would be controlled by a particulate matter standard. Emissions of the respiratory irritant organic HAP would be controlled to trace levels by the MACT standards for carbon monoxide or hydrocarbons and destruction and removal efficiency (DRE). Accordingly, we propose to require you to quantify and assess emissions from the hazardous waste combustor of hydrogen chloride and chlorine gas only; you would not be required to account for these other respiratory irritant HAP because they would not contribute substantially to the Hazard Index.

c. Exposure to Emissions of Respiratory Irritant HAP from Collocated Sources. You would be required to account for exposure to emissions of hydrogen chloride and chlorine gas from all on-site hazardous waste combustors subject to subpart EEE, part 63. EPA will address exposure to emissions of respiratory irritant HAP from other sources that may be collocated with a hazardous waste combustor—for example, process vents and fossil fuel boilers—under the residual risk requirements of section 112(f) for both hazardous waste combustors and (potentially) other MACT source categories. *See A Legislative History of the Clean Air Act Amendments of 1990* (Senate Print 103–38, 103d Cong. 1st sess.) vol. 1 at 868–69 (floor statement of Sen. Durenberger (Senate floor manager for section 112) during debate on the Conference Report, indicating that EPA is obligated to consider "combined risks of all sources that are collocated with such sources within the same major source'' but going on to state that the determination of ample margin of safety from emissions from all collocated sources need not occur at the same time, but rather can be spread out over the course of the residual risk determination process for all major sources.

d. Exposure to Ambient Background Levels of Respiratory Irritant HAP. Background levels of respiratory irritant HAP attributable to emissions from off-site sources would not be considered when establishing risk-based limits for total chlorine under section 112(d)(4). Rather, these background levels will be addressed (as may be necessary) through other CAA programs such as the urban air toxics program.

e. Acute Exposure Need Not Be Assessed. We have determined that you need not assess acute exposure to establish an emission limit for total chlorine. You would not be required to model maximum 1-hour average off-site ground level concentrations to calculate a Hazard Index (HI) based on acute exposure for purposes of establishing an emission limit for total chlorine. We conclude that the chronic exposure Hazard Index (HI) for the hazardous waste combustor(s) would always exceed the acute exposure HI. Thus, the emission limit for total chlorine based on chronic exposure would always be more stringent than the limit based on

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[170] See US EPA Glossary of Key Terms for National Air Toxics Assessment, at *http://www.epa.gov//ttn/atw/nata/gloss1.html.*

[171] Betty Willis, et al., Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services, "Public Health Reviews of Hazardous Waste Thermal Treatment Technologies: A Guidance Manual for Public Health Assessors,'' March 2002, Table 4.

acute exposure. As an example, the Cement Kiln Recycling Coalition evaluated both chronic and acute exposure to hydrogen chloride and chlorine gas for the 14 cement facilities that burn hazardous waste.[172] In all cases, the chronic HI exceeded the acute HI. In addition, we determined that the Hazard Quotient (HQ) for chronic exposure was always higher than the HQ for acute exposure for the HAP we evaluated in the risk assessment we used to support the 1999 Final MACT Rule for hazardous waste combustors.[173]

Not requiring an acute exposure analysis reduces the burden on both the regulated community and regulatory officials to develop and review an analysis that would be superseded by the chronic exposure analysis when establishing an emission limit for total chlorine.

Please note that this discussion relates to evaluating acute exposure in establishing an emission limit for total chlorine. Although we conclude that the chronic exposure Hazard Index would always be higher than the acute exposure Hazard Index, and thus would be the basis for the total chlorine emission rate limit, this relates to acute versus chronic exposure to a constant, maximum average (*e.g.*, a maximum annual average) emission rate of total chlorine from a hazardous waste combustor. Acute exposure must be considered, however, when establishing operating requirements (*e.g.*, feedrate limit for total chlorine and chloride) to ensure that short-term emissions do not result in an acute exposure Hazard Index of 1.0 or greater even though long-term (*e.g.*, annual average) emissions do not exceed the limit. *See* discussion in Section G.1 below.

3. Does the Proposed Approach Ensure an Ample Margin of Safety?

Section 112(d)(4) allows EPA to develop risk-based standards for HAP “for which a health threshold has been established'', and the resulting standard is to provide an “ample margin of safety.'' The “ample margin of safety'' standard, at least as applied to nonthreshold pollutants, typically connotes a two-step process (based on the standard first announced in the so-called *Vinyl Chloride* decision (*NRDC* v. *EPA,* 824 F. 2d at 1146 (D.C. Cir. 1987)), whereby EPA “first [determines] * * * a ‘safe' or ‘acceptable' level of risk considering only health factors, followed by a second step to set a standard that provides an ‘ample margin of safety', in which costs, feasibility, and other relevant factors in addition to health may be considered.'' 54 FR at 38045. It is not clear that Congress intended this analysis to apply to section 112(d)(4) standards, since the principal legislative history to the provision indicates that costs are not to be considered in setting standards under section 112(d)(4) (S. Rep. 228 at 173), whereas cost normally is a relevant consideration in the second part of the ample margin of safety process, as described above. Further, if issues of feasibility, cost, and other non-health factors are to be taken into account in establishing section 112(d)(4) standards, it would be exceedingly difficult, if not practically impossible, to do so on a site-specific basis, undermining the approach we are proposing here. Nor is it clear that the two-step approach is necessarily warranted when considering threshold pollutants, since there is greater certainty regarding levels at which adverse health effects occur. See *Vinyl Chloride*, 824 F. 2d at 1165 n. 11.[174]

We specifically request comment on how to ensure that the emission limits calculated using the health threshold values (*e.g.*, RfCs and AEGL–1 values), and after considering emissions of respiratory irritant HAP from collocated hazardous waste combustors, achieve an ample margin of safety.

4. How Are Effects on Terrestrial Animals Addressed?

We believe the RfC values for hydrogen chloride and chlorine gas should be generally protective for chronic effects in most, if not all, fauna. We note that the RfC values are based on animal studies. Although the AEGL–1 values for acute exposure are based on human data, we nonetheless expect that they too would be generally protective of most fauna, absent information to the contrary.

5. How Are Effects on Plants Addressed?

EPA has not established ecotoxicity values that are protective of vegetation. Nonetheless, for the reasons discussed below we do not believe that ambient concentrations of hydrogen chloride and chlorine gas that meet the human health threshold values discussed above will pose adverse effects on plants.

As discussed in the preamble to the Lime Manufacturing NESHAP proposed rule (67 FR 78056),[175] chronic exposure to about 600 $\mu g/m^3$ can be expected to result in discernible effects, depending on the plant species. Effects of acute, 20-minute exposures of 6,500 to 27,000 $\mu g/m^3$ include leaf injury and decrease in chlorophyll levels in various species. The hydrogen chloride RfC of 20 $\mu g/m^3$ is well below the 600 $\mu g/m^3$ effect level, and the AEGL–1 value for hydrogen chloride of 2,700 $\mu g/m^3$ is far below the 6500 $\mu g/m^3$ acute effect level. Therefore, no adverse exposure effects are anticipated.

We specifically request additional information on ecotoxicity for both acute and chronic exposure of vegetation to hydrogen chloride and chlorine gas.

C. How Would You Determine if Your Total Chlorine Emission Rate Meets the Eligibility Requirements Defined by the National Exposure Standards?

Under the risk-based approach to establish an alternative to the MACT standard for your total chlorine emission limit, you would have to demonstrate that emissions of total chlorine from on-site hazardous waste combustors result in exposure to the actual most-exposed individual residing off site of a Hazard Index of less than or equal to 1.0. (Put another way, we are proposing to establish this level of risk as the national emission limitation, with the rule further establishing the mechanisms by which this demonstration can be made, such demonstrations yielding a site-specific limit for total chlorine.)[176] The rule would also establish two ways by which you could make this demonstration: by a look-up table analysis or by a site-specific compliance demonstration (as explained below). The look-up table is much simpler to use, but establishes emission rates that are quite conservative because there are few site-specific parameters considered and

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[172] See Trinity Consultants, “Analysis of HCl/Cl2 Emissions from Cement Kilns for 112(d)(4) Consideration in the HWC MACT Replacement Standards,'' September 17, 2003.

[173] See USEPA, “Human Health and Ecological Risk Assessment Support to the Development of Technical Standards for Emissions from Combustion Units Burning Hazardous Wastes: Background Document,'' July 1999.

[174] Indeed, using the classic two-step approach to “ample margin of safety'' could result in the same standards we are proposing as MACT for HCl and Cl2 for all of the affected source categories (if one assumes that all of the standards would be below protective risk-based levels for all sources), since we believe that the proposed technology-based standards would be justifiable based on considerations of technical feasibility and cost, and so would provide a reasonable margin of safety beyond the risk-based level considered protective.

[175] EPA published the final rule at 69 FR 394, January 5, 2004.

[176] Rather than establishing emission rate limits for hydrogen chloride and chlorine gas, or for total chlorine, for each combustor, you would actually establish an HCl-equivalent emission rate limit for each combustor, as discussed below in the text.

therefore the model's default assumptions are conservative. If you elect not to comply with those conservative emission rates, you may perform a site-specific compliance demonstration.

The look-up table identifies the total chlorine emission limit in terms of a toxicity-weighted HCl-equivalent emission rate. Under the site-specific compliance demonstration alternative, the total chlorine limit would also be expressed as a toxicity weighted HCl-equivalent emission rate even though you would model emissions of hydrogen chloride and chlorine gas from each on-site hazardous waste combustor. We define the toxicity-weighted HCl-equivalent emission rate below.

1. Toxicity-Weighted HCl-Equivalent Emission Rates

Although the MACT emission standards for total chlorine are expressed as a stack gas emission concentration—ppmv—we must use an emission rate (*e.g.*, lb/hr) format for risk-based standards. This is because health and environmental risk is related to the mass rate of emissions over time.

In addition, we propose to use a toxicity-weighted HCl-equivalent emission rate (HCl-equivalents) as the metric for the combined emissions of hydrogen chloride and chlorine gas. The HCl-equivalent emission rate considers the RfCs of hydrogen chloride and chlorine gas when calculating the combined emission rate according to this equation:

$$ER_{dtw} = \Sigma(ER_i \text{ x } (RfC_{HC1}/RfC_i))$$

where:

ER_{tw} is the HC1-equivalent emission rate, lb/hr

ER_i is the emission rate of HAP i in lbs/hr

RfC_i is the reference concentration of HAP i

RfC_{HC1} is the reference concentration of HCl

Expressing the risk-based emission limit as HCl-equivalents enables you to use the equation to apportion the emission rate limit between hydrogen chloride and chlorine gas as you choose. Thus, you need to be concerned with ensuring compliance with the HCl-equivalent emission rate only, rather than with emission rates for hydrogen chloride and chlorine gas individually.

Under the look-up table analysis discussed below, you would use the hydrogen chloride and chlorine gas emission rates you choose for each on-site hazardous waste combustor to calculate the HCl-equivalent emission rate for the combustor. You would sum the HCl-equivalent emission rates for your hazardous waste combustors. If you elect to use the site-specific compliance demonstration to document eligibility, you would model emission rates of hydrogen chloride and chlorine gas that you choose for each on-site hazardous waste combustor to document that the facility Hazard Index is less than or equal to 1.0. You would then use the hydrogen chloride and chlorine gas emission rates you model to establish an HCl-equivalent emission rate limit for each combustor.

2. How Would You Conduct a Look-Up Table Analysis?

You would sum the HCl-equivalent rates for all combustors, and compare the sum to the appropriate allowable emission rate in Table 1 of proposed § 63.1215. Emission rates are provided as a function of stack height and distance to the nearest property boundary. If you have more than one hazardous waste combustor at your facility, you would use the average value for stack height (*i.e.*, the averaged stack heights of the different hazardous waste combustors at your facility), and the minimum distance between any hazardous waste combustor stack and the property boundary.[177]

If one or both of these values for stack height and distance to nearest property boundary do not match the exact values in the look-up table, you would use the next lowest table value. This would ensure that the HCl-equivalent emission rate limits are protective.

You would not be eligible for the look-up table analysis if your facility is located in complex terrain because the plume dispersion models used to calculate the emission rates are not applicable to sources in complex terrain.

You would be eligible to comply with the risk-based alternative HCl-equivalent emission rate limits you calculate for each combustor if the facility HCl-equivalent emission rate limit (*i.e.*, the sum of the HCl-equivalent emission rates for all hazardous waste combustors) does not exceed the appropriate value specified in the look-up table. Please note, however, that we also propose to cap the HCl-equivalent emission rate limits for incinerators, cement kilns, and lightweight aggregate kilns at a level that ensures that the current total chlorine emission standards are not exceeded. See discussion below in Section D.

Please note that the emission rates provided in Table 1 are different from those provided for industrial boilers in the Industrial Boiler and Process Heater MACT rule recently promulgated. This is because the key parameters used by the SCREEN3 atmospheric dispersion model to predict the normalized air concentrations that EPA used to establish HCl-equivalent emission rates as a function of stack height and distance to property boundary for industrial boilers—stack diameter, stack exit gas velocity, and stack exit gas temperature—are substantially different for hazardous waste burning incinerators, cement kilns, and lightweight aggregate kilns. Thus, the maximum HCl-equivalent emission rates for hazardous waste combustors would generally be lower than those EPA established for industrial boilers.

To ensure that the HCl-equivalent emission rate limits in a look-up table analysis for hazardous waste combustors would not result in a Hazard Index of more than 1.0, we propose to establish limits based on the maximum annual average normalized air concentrations in U.S. EPA, "A Tiered Modeling Approach for Assessing the Risk Due to Sources of Hazardous Air Pollutants,'' March 1992, Table 1. Those normalized air concentrations are based on conservative simulations of toxic pollutant sources with Gaussian plume dispersion models. The simulations are conservative regarding factors such as meteorology, building downwash, plume rise, *etc.*

We specifically request comment on whether the HCl-equivalent emission rates in Table 1 are too conservative and thus have limited utility because they apply to all hazardous waste combustors generically. Alternatively, we could establish less conservative emission rates in look-up tables specific to various classes of hazardous waste combustors (*e.g.*, cement kilns, incinerators) that have similar stack properties that affect predicted emissions. We request comment on whether industry stakeholders would be likely to use the proposed look-up table eligibility demonstration or revised

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[177] HCl production furnaces are not eligible for the risk-based total chlorine emission limits because we are proposing that the MACT standard for total chlorine would be used as a surrogate to control metal HAP. Nonetheless, if you operate an HCl production furnace at a facility where you would establish risk-based emission limits for total chlorine for other hazardous waste combustors, you would account for total chlorine emissions from the HCl production furnace in your risk-based eligibility demonstration for the other combustors. If, for example, you use the look-up table to demonstrate eligibility, you would include the stack height of the HCl production furnace in the calculation of average stack height for your combustors, and you would consider whether the HCl production furnace stack is the closest hazardous waste combustor stack to the property boundary.

look-up tables tailored to specific classes of hazardous waste combustors, in lieu of the site-specific compliance eligibility demonstration.

3. How Would You Conduct a Site-Specific Compliance Demonstration?

If you fail to demonstrate that your facility is able to comply with the alternative risk-based emission limit using the look-up table approach, you may choose to perform a site-specific compliance demonstration. We are proposing that you may use any scientifically-accepted peer-reviewed risk assessment methodology for your site-specific compliance demonstration. An example of one approach for performing the demonstration for air toxics can be found in the EPA's "Air Toxics Risk Assessment Reference Library, Volume 2, Site-Specific Risk Assessment Technical Resource Document,'', which may be obtained through the EPA's Air Toxics Web site at *http://www.epa.gov/ttn/atw.*

Your facility would be eligible for the alternative risk-based total chlorine emission limit if your site-specific compliance demonstration shows that the maximum Hazard Index for hydrogen chloride and chlorine gas emissions from all on-site hazardous waste combustors at a location where people live (*i.e.*, the maximum *actual* most exposed individual) is less than or equal to 1.0, rounded to the nearest tenths decimal place (0.1).[178] You would estimate long-term inhalation exposures for this individual most exposed to the facility's emissions through the estimation of annual or multi-year average ambient concentrations. You would use site-specific, quality-assured data wherever possible, and health-protective default assumptions wherever site-specific data are not available. You would document the data and methods used for the assessment so that it is transparent and can be reproduced by an experienced risk assessor and emissions measurement expert.

Your site-specific compliance demonstration need not assume any attenuation of exposure concentrations due to the penetration of outdoor pollutants into indoor exposure areas. In addition, we are proposing that the demonstration need not assume any reaction or deposition of hydrogen chloride and chlorine gas from the emission point to the point of exposure. In particular, you would assume that chlorine gas is not photolyzed to hydrogen chloride, as discussed in Section B.1 above.

If your site-specific compliance demonstration documents that the maximum Hazard Index from your hazardous waste combustors is less than or equal to 1.0, you would establish a maximum HCl-equivalent emission rate limit for each combustor using the hydrogen chloride and chlorine gas emission rates you modeled in the site-specific compliance demonstration. Please note, however, that we also propose to cap the HCl-equivalent emission rate limits for incinerators, cement kilns, and lightweight aggregate kilns at a level that ensures that the current total chlorine emission standards are not exceeded. See discussion below in Section D.

D. What Is the Rationale for Caps on the Risk-Based Emission Limits?

The HCl-equivalent emission rate limits would be capped for incinerators, cement kilns, and lightweight aggregate kilns at a level that ensures total chlorine emissions do not exceed the interim standards provided by §§ 63.1203, 63.1204, and 63.1205. These caps on the risk-based emission limits would ensure that emission levels do not increase above the emission levels that sources are currently required to achieve, thus precluding "back-sliding.'' Given the discretionary nature of section 112(d)(4), and the general purpose of the section 112(d) standard-setting process to lock-in performance of current emission control technology, we think it appropriate to invoke the provision in a manner that does not result in emission increases over current regulatory levels.

We considered whether to propose emission caps for boilers at the levels allowed by the RCRA emission standards under § 266.107 but conclude that this would be inappropriate. This is because the RCRA emission standards are also risk-based standards but are based on risk criteria that we considered appropriate in 1987 when we proposed those rules. The risk criteria we propose today are substantially different from those used to implement § 266.107. For example, the RfC for hydrogen chloride is higher now while the RfC for chlorine gas is lower. In addition, we considered a Hazard Index of 0.25 acceptable under the RCRA rule, while we propose today a Hazard Index limit of less than or equal to 1.0. Because the risk criteria for the current RCRA rules are substantially different from the risk criteria we propose today for invoking Section 112(d)(4), we do not believe it is appropriate to use the RCRA standards as a cap for establishing risk-based standards under Section 112(d)(4).

Capping risk-based emission limits for incinerators, cement kilns, and lightweight aggregate kilns at an HCl-equivalent emission rate corresponding to the MACT interim standards would not increase compliance costs (by definition). Thus, the cap would help ensure that emissions are protective of public health with an ample margin of safety, and that there are no significant adverse environmental impacts.

To implement the cap, you would ensure that the hydrogen chloride and chlorine gas emission rates you use to calculate the HCl-equivalent emission rate for incinerators, cement kilns, and lightweight aggregate kilns would not result in total chlorine emission concentrations exceeding the standards provided by §§ 63.1203, 63.1204, and 63.1205.

E. What Would Your Risk-Based Eligibility Demonstration Contain?

To enable regulatory officials to review and approve the results of your risk-based demonstration, you would include the following information, at a minimum: (1) Identification of each hazardous waste combustor combustion gas emission point (*e.g.*, generally, the flue gas stack); (2) the maximum capacity at which each combustor will operate, and the maximum rated capacity for each combustor, using the metric of stack gas volume emitted per unit of time, as well as any other metric that is appropriate for the combustor (*e.g.*, million Btu/hr heat input for boilers; tons of dry raw material feed/hour for cement kilns); (3) stack parameters for each combustor, including, but not limited to stack height, stack area, stack gas temperature, and stack gas exit velocity; (4) plot plan showing all stack emission points, nearby residences, and property boundary line; (5) identification of any stack gas control devices used to reduce emissions from each combustor; (6) identification of the RfC values used to calculate the HCl-equivalent emissions rate; (7) calculations used to determine the HCl-equivalent emission rate as prescribed above; (8) for incinerators, cement kilns, and lightweight aggregate kilns, calculations used to determine that the HCl-equivalent emission rate limit for each combustor does not exceed the standards for total chlorine at §§ 63.1203, 63.1204, and 63.1205; and (9) the HCl-equivalent emission rate limit for each hazardous waste

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[178] When calculating Hazard Index values, the final HI value should be rounded to one decimal place given the uncertainties in the analyses. For example, an HI calculated to be 0.94 would be presented as 0.9, while an HI calculated to be 0.96 would be presented as 1.0 (which would pass the eligibility demonstration). Intermediate calculations should use as many significant figures as appropriate.

combustor that you will certify in the Documentation of Compliance required under § 63.1211(d) that you will not exceed, and the limits on the operating parameters specified under § 63.1209(o) that you will establish in the Documentation of Compliance.

If you use the look-up table analysis to demonstrate that your facility is eligible for the risk-based alternative for the total chlorine emission limit, your eligibility demonstration would also contain, at a minimum, the following: (1) Calculations used to determine the average stack height of on-site hazardous waste combustors; (2) identification of the combustor stack with the minimum distance to the property boundary of the facility; (3) comparison of the values in the look-up table to your maximum HCl-equivalent emission rate.

If you use a site-specific compliance demonstration to demonstrate that your facility is eligible for the risk-based alternative for the total chlorine emission limit, your eligibility demonstration would also contain, at a minimum, the following: (1) Identification of the risk assessment methodology used; (2) documentation of the fate and transport model used; and (3) documentation of the fate and transport model inputs, including the stack parameters listed above converted to the dimensions required for the model. In addition, you would include all of the following that apply: (1) Meteorological data; (2) building, land use, and terrain data; (3) receptor locations and population data; and (4) other facility-specific parameters input into the model. Your demonstration would also include: (1) Documentation of the fate and transport model outputs; (2) documentation of any exposure assessment and risk characterization calculations; and (3) documentation of the predicted Hazard Index for HCl-equivalents and comparison to the limit of less than or equal to 1.0.

F. When Would You Complete and Submit Your Eligibility Demonstration?

You would be required to submit your eligibility demonstration to the permitting authority for review and approval.[179] In addition you would submit an electronic copy of the demonstration to *reag@epa.gov* (preferably) or a hard copy to: U.S. EPA, Risk and Exposure Assessment Group, Emission Standards Division (C404–01), Attn: Group Leader, Research Triangle Park, North Carolina 27711.

Requiring prior approval of these eligibility demonstrations is warranted because hazardous waste combustor may feed chlorine at high feedrates which may result in emissions of hydrogen chloride and chlorine gas that approach or exceed the RfCs (*i.e.*, absent compliance with either the MACT standards or the section 112(d)(4) risk-based standards). Thus, prior approval of alternative HCl-equivalent emission rate limits is warranted to ensure that emissions are protective with an ample margin of safety.

1. Existing Sources

If you operate an existing source, you must be in compliance with the emission standards on the compliance date. Consequently, if you elect to comply with the alternative risk-based emission rate limit for total chlorine, you must have completed the eligibility demonstration and received approval from your delegated permitting authority by the compliance date.

You would submit documentation supporting your eligibility demonstration not later than 12 months prior to the compliance date.

Your permitting officials will notify you of approval or intent to disapprove your eligibility demonstration within 6 months after receipt of the original demonstration, and within 3 months after receipt of any supplemental information that you submit. A notice of intent to disapprove your eligibility demonstration will identify incomplete or inaccurate information or noncompliance with prescribed procedures and specify how much time you will have to submit additional information. If your permitting authority has not approved your eligibility demonstration to comply with a risk-based HCl-equivalent emission rate(s) by the compliance date, you must comply with the MACT emission standards for total chlorine gas under §§ 63.1216, 63.1217, 63.1219, 63.1220, and 63.1221.[180]

2. New Sources

If you operate a source that is not an existing source and that becomes subject to Subpart EEE, you must comply with the MACT emission standards for total chlorine unless and until your eligibility demonstration has been approved by the permitting authority.

If you operate a new or reconstructed source that starts up before the effective date of the emission standards proposed today, or a solid fuel-fired boiler or liquid fuel-fired boiler that is an area source that increases its emissions or its potential to emit such that it becomes a major source of HAP before the effective date of the emission standards proposed today (and thus becomes subject to emission standards applicable to major sources, including the standard for total chlorine), you would be required to comply with the emission standards under §§ 63.1216 and 63.1217 until your eligibility demonstration is completed, submitted, and approved by your permitting authority.

If you operate a new or reconstructed source that starts up after the effective date of the emission standards proposed today, or a solid fuel-fired boiler or liquid fuel-fired boiler that is an area source that increases its emissions or its potential to emit such that it becomes a major source of HAP after the effective date of the emission standards proposed today (and thus becomes subject to emission standards applicable to major sources including the standard for total chlorine), you would be required to comply with the emission standards under §§ 63.1216 and 63.1217 until your eligibility demonstration is completed, submitted, and approved by your permitting authority.

G. How Would the Risk-Based HCl-Equivalent Emission Rate Limit Be Implemented?

Upon approval by the permitting authority of your eligibility demonstration, the HCl-equivalent emission rate limit established in the demonstration for your hazardous waste combustor(s) becomes the applicable emission limit for total chlorine in lieu of the MACT standard for total chlorine.

1. What Are the Testing and Monitoring Requirements?

To ensure compliance with the alternative HCl-equivalent emission rate limit for your combustor(s), you would conduct performance testing as required for the MACT standards and establish limits on the same operating parameters that apply to sources complying with the MACT standards for total chlorine under § 63.1209(o). You would establish and comply with these operating parameter limits just as you would establish and comply with the limits for the MACT emission standard for total chlorine, with the exception of the

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[179] Since the Title V permitting authority is delegated to States in virtually all instances, the permit limit would thus be issued as a matter of State authority (generally in parallel with a delegation of section 112 authority pursuant to CAA section 112(l)), and be reviewable only in State courts.

[180] Please note that, if your eligibility demonstration is not approved prior to the compliance date, a request to extend the compliance date to enable you to undertake measures to comply with the MACT standards for total chlorine will not be approved unless you made a good faith effort to submit a complete, accurate, and timely eligibility demonstration and to respond to concerns raised by the permitting authority or U.S. EPA.

chlorine feedrate limit, as discussed below. For example, existing sources would establish these limits in the Documentation of Compliance required under § 63.1211(c) and begin complying with them not later than the compliance date. Existing sources would also revise the operating limits as necessary based on the initial comprehensive performance test and begin complying with the revised operating limits not later than when the Notification of Compliance is postmarked, as required under §§ 63.1207(j) and 63.1210(b).

The limit on chlorine feedrate required under § 63.1209(o)(1) would be established differently to ensure compliance with the HCl-equivalent emission rate limit rather than the total chlorine emission standard. To ensure that facility-wide hazardous waste combustor emissions of HCl-equivalents result in exposures equivalent to a Hazard Index of less than or equal to 1.0, the feedrate limit for chlorine would be established as the average of the test run averages and the averaging period for compliance would be one year. A yearly rolling average is appropriate for risk-based emission limits rather than the 12-hour rolling average applicable to the MACT standards because the risk-based emission limit is based on chronic exposure.

As discussed in Section B.2.e above, although we conclude that the chronic exposure Hazard Index would always be higher and thus be the basis for the total chlorine emission rate limit, we still must be concerned about acute exposure attributable to short-term emission rates higher than the maximum average emission rate limit. For example, the annual average limit on chlorine (*i.e.*, total chlorine and chloride) feedrate would allow a source to feed very high levels of chlorine for short periods of time, potentially resulting in exceedances of the acute exposure Hazard Index based the AEGL–1 values for hydrogen chloride and chlorine gas. We specifically request comment on how a short-term limit on chlorine feedrate could be established for each hazardous waste combustor to ensure that the acute exposure Hazard Index is less than or equal to 1.0. One approach would be for you to extrapolate from the chlorine feedrate during the comprehensive performance test to the feedrate projected to achieve emission rates of hydrogen chloride and chlorine gas that result in an acute exposure Hazard Index of 1.0.[181] This feedrate would be a 1-hour average feedrate limit. This approach uses the reasonable assumption that there is a proportional relationship between chlorine feedrate and the emission rate of hydrogen chloride and chlorine gas. To extrapolate feedrates, you would consider the system removal efficiency achieved during the performance test for sources equipped with wet or dry acid gas scrubbers and for cement kilns.[182] Other sources would assume a zero system removal efficiency because any removal efficiency that may be measured would be incidental and not reproducible.

The approach discussed above would be applicable if you use the site-specific compliance eligibility demonstration. If you use the look-up table for your eligibility demonstration, an alternative approach would be needed to establish a short-term chlorine feedrate limit. One approach would be to establish a look-up table for maximum 1-hour average HCl-equivalents based on acute exposure. Acute exposure HCl-equivalents would be calculated using the AEGL–1 values for hydrogen chloride and chlorine gas, and the look-up table of acute exposure maximum emission rate limits would be based on normalized air concentrations for maximum 1-hour average ground level concentrations.[183] You would extrapolate the chlorine feedrate from the level achieved during the comprehensive performance test to a level that would not exceed the acute exposure HCl-equivalent emission rate limit for each combustor provided in the look-up table. This feedrate would be a 1-hour average feedrate limit.

We specifically request comment on these approaches to establish a short-term limit on the feedrate of total chlorine and chloride to ensure that the acute exposure Hazard Index for hydrogen chloride and chlorine gas is less than or equal to 1.0.

2. What Test Methods Would You Use?

Although you would comply with the MACT standard for total chlorine using stack Method 26/26A, certain sources would not be allowed to use that method to demonstrate compliance with the risk-based HCl-equivalent emission rate limit.[184] Cement kilns and sources equipped with a dry acid gas scrubber should use EPA Method 320/321 or ASTM D 6735–01 to measure hydrogen chloride, and the back-half (caustic impingers) of Method 26/26A to measure chlorine gas. Incinerators, boilers, and lightweight aggregate kilns should use EPA Method 320/321 or ASTM D 6735–01 to measure hydrogen chloride, and Method 26/26A to measure total chlorine, and calculate chlorine gas by difference if: (1) the bromine/chlorine ratio in feedstreams is greater than 5 percent; or (2) the sulfur/chlorine ratio in feedstreams is greater than 50 percent.

a. Method 26/26A Has a Low Bias for Hydrogen Chloride in Certain Situations. Method 26/26A has a low bias for hydrogen chloride for sources that emit particulate matter than can adsorb hydrogen chloride: cement kilns and sources equipped with a dry acid gas scrubber. Particulate matter caught by the Method 26/26A filter scrubs hydrogen chloride from the sample gas, and can result in measurements that are biased low by 2 to 30 times.[185] Chlorine gas is not adsorbed so that chlorine gas emissions are not biased by this mechanism.

b. Method 26/26A Can Have a Low Bias for Chlorine Gas and a High Bias for Hydrogen Chloride, but Has No Bias for Total Chlorine. Method 26/26A also has a low bias for chlorine and a high bias for hydrogen chloride when bromine is present at significant levels. Bromine has a strong effect on the bias. Although the various interhalogen reactions are extremely complex and may depend on a variety of system parameters, it appears that each bromine molecule can react with a chlorine molecule in the acidic impingers of Method 26/26A where hydrogen chloride is captured, converting the chlorine to chloride ions which are

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[181] We also request comment on whether extrapolation of the chlorine feedrate should be allowed to 100% of the Hazard Index limit of 1.0, or whether a more conservative approach of limited extrapolation to a fraction of the Hazard Index (*e.g.*, 0.8) would be warranted, given the uncertainties inherent in projecting emissions from extrapolated feedrates.

[182] We request comment on whether the system removal efficiency a cement kiln demonstrates during a performance test because of the alkalinity of the raw material is reasonably indicative of the system removal efficiency it routinely achieves (*i.e.*, is the system removal efficiency reasonably reproducible).

[183] We would use the normalized maximum 1-hour average concentrations in U.S. EPA, "A Tiered Modeling Approach for Assessing the Risk Due to Sources of Hazardous Air Pollutants,'' March 1992, Table 2.

[184] Even though Method 26/26A may bias total chlorine emission measurements low for cement kilns for reasons discussed in the text, it is appropriate to allow compliance with the technology-based MACT emission standards for total chlorine using that method. Because the MACT standards are developed using data obtained using Method 26/26A, allowing that method for compliance will achieve reductions in total chlorine emissions. For the same reason, it would be inappropriate to require compliance with unbiased methods because the average of the best performing sources might not be able to achieve the standard.

[185] USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume III: Selection of MACT Standards and Technologies,'' March 2004.

reported as hydrogen chloride. Total chlorine measurements (*i.e.*, hydrogen chloride and chlorine gas, combined, reported as Cl-equivalents), however, are not affected. To minimize this bias, we propose to require sources that have a bromine/chlorine feedrate exceeding 5 percent to use alternative methods discussed below. Given the strong bias that bromine can have on M26/26A measurements, we believe a 5 percent limit on the ratio is within the range of reasonable values that we could select. We specifically request comment on this or other approaches to minimize the bromine bias.

Method 26/26A also has a low bias for chlorine and a high bias for hydrogen chloride when sulfur is present at substantial levels relative to the levels of chlorine. The capture of chlorine in the acidic impingers that collect hydrogen chloride has been shown to rapidly increase when the ratio of SO2/HCl (both expressed in ppmv) exceeds 0.5. Again, total chlorine measurements are not biased. To minimize this bias, we believe that a 50 percent limit on the ratio of the sulfur/chlorine feedrate is within the range of reasonable values that we could select. We specifically request comment on this or other approaches to minimize the sulfur dioxide bias.

c. Unbiased Methods Are Available. The Agency recently developed three methods for hydrogen chloride in the context of the Portland Cement MACT rule for purposes of area source determinations: Methods 320, 321, and 322. Although M322 (GFCIR, Gas Filter Correlation Infra-Red) is easier to use and less expensive than M320/M321 (FTIR, Fourier Transform Infra-Red), the Agency did not promulgated M322 in the final Portland Cement MACT rule because of accuracy concerns resulting from emissions sampling of lime manufacturing kilns in the context of developing the Lime Manufacturing MACT rule.

The Agency has also adopted an American Society of Testing and Materials (ASTM) standard for measuring hydrogen chloride emissions: ASTM D 6735–01. This method (and M321) is allowed for area source determinations under the Lime Manufacturing MACT rule. 69 FR 394 (Jan. 5, 2004). The method is an impinger method, like M26/26A, but with several improvements. For example, the method uses a rejection probe (*i.e.*, the probe is directed counter to the gas flow), the filter is heated to minimize adsorption of hydrogen chloride on particulate matter that may catch on the filter, glassware must be conditioned, and improved quality assurance/quality control procedures are prescribed.

H. How Would You Ensure That Your Facility Remains Eligible for the Risk-Based Emission Limit?

1. Changes Over Which You Have Control

Changes in design, operation, or maintenance of a hazardous waste combustor that may affect the rate of emissions of HCl-equivalents from the combustor are subject to the requirements of § 63.1206(b)(5).

If you change the information documented in the demonstration of eligibility for the HCl-equivalent emission rate limit which is used to establish the HCl-equivalent emission rate limit, you would be subject to the following procedures.

a. Changes that Would Decrease the Allowable HCl-Equivalent Emission Rate Limit. If you plan to make a change that would decrease the allowable HCl-equivalent emission rate limit documented in your eligibility demonstration, you would comply with § 63.1206(b)(5)(i)(A–C) regarding notifying the permitting authority of the change, submitting a comprehensive performance test schedule and test plan, comprehensive performance testing, and restriction on burning hazardous waste prior to submitting a revised Notification of Compliance. An example of a change that would decrease the allowable HCl-equivalent emission rate limit is location of the property boundary closer to the nearest hazardous waste combustor stack when using the look-up table to make the eligibility demonstration.

b. Changes that Would Not Decrease the Allowable HCl-Equivalent Emission Rate Limit. If you determine that a change would not decrease the allowable HCl-equivalent emission rate limit documented in your eligibility demonstration, you would document the change in the operating record upon making such change. If the change would increase your allowable HCl-equivalent emission rate limit and you elect to establish a higher HCl-equivalent limit, you must submit a revised eligibility demonstration for review and approval. Upon approval of the revised eligibility demonstration, you must comply with § 63.1206(b)(5)(i)(A)(2), (B), and (C) regarding submitting a comprehensive performance test schedule and test plan, comprehensive performance testing, and restriction on burning hazardous waste prior to submitting a revised Notification of Compliance.

2. Changes Over Which You Do Not Have Control

Over time, factors and information over which you do not have control and which you use to make your eligibility demonstration may change. For example, if you use a site-specific compliance demonstration, individuals may locate within the area impacted by emissions such that the most exposed individual may be exposed to higher ground level concentrations than previously estimated. This could lower your allowable HCl-equivalent emission rate limit. Consequently, you would be required to review the documentation you use in your eligibility demonstration every five years on the anniversary of the comprehensive performance test and submit for review with the test plan either a certification that the information used in your eligibility demonstration has not changed in a manner that would decrease the allowable HCl-equivalent emission rate limit, or a revised eligibility demonstration for a revised HCl-equivalent emission rate limit.

If you determine that you cannot demonstrate compliance with a lower allowable HCl-equivalent emission rate limit during the (subsequent) comprehensive performance test because you cannot complete changes to the design or operation of the source prior to the test, you may request that the permitting authority grant you additional time as necessary to make those changes, not to exceed three years.

I. Request for Comment on an Alternative Approach: Risk-Based National Emission Standards

As noted earlier, another approach to implement section 112(d)(4)—and one EPA has used in past MACT rules—would be to establish national emission standards for each source category to ensure that the emissions from each source within the category are protective of public health with an ample margin of safety (and do not pose adverse environmental impacts). Under this approach, dispersion modeling of representative worst-case sources (or all sources) within a category would be used to identify an emission level that meets the section 112(d)(4) criteria for all sources within the category. Thus, the same risk-based national emission standard would be established for each source in each source category under this approach, rather than the approach we discuss above of establishing a national exposure standard based on a uniform level of protection that you would use to establish a site-specific emission limit.

The approach of establishing a risk-based national emission standard for a source category has the advantage of being less burdensome to implement both for the regulated community and regulatory authorities. It has the disadvantage, however, of requiring documentation "up front'' to support the proposed emission standards. EPA does not have the time, data, or resources to conduct the analyses required to support this approach.

The Cement Kiln Recycling Coalition (CKRC), however, has submitted documentation supporting a national risk-based emission standard for total chlorine for cement kilns.[186] CKRC uses normalized air concentrations from ISC–PRIME and ISCST3 to estimate maximum annual average and maximum 1-hour average off-site ground level concentrations of hydrogen chloride and chlorine gas for each source. CKRC assumes that each kiln emits total chlorine at 130 ppmv, the current Interim Standard, and that emissions of hydrogen chloride and chlorine gas partition at the same ratio as measured during the most recent compliance test. The analysis indicates that the facility Hazard Index for 1-hour exposures was below 0.2 for the kilns at all facilities, and the facility Hazard Index for long-term exposures was below 0.2 for the kilns at 8 of 14 facilities. Emissions from kilns at the remaining 6 facilities can potentially result in facility Hazard Index values up to 0.7.

Notwithstanding that CKRC followed the guidance we suggested to identify a section 112(d)(4) risk-based emission standard for a source category, we conclude that establishing a stack gas concentration-based total chlorine standard of 130 ppmv may not be protective with an ample margin of safety. Even though the highest Hazard Index for any facility in the category is below the maximum HI of less than 1.0, the Hazard Index value for a facility could increase even though sources do not exceed an emission standard of 130 ppmv. This is because the Hazard Index is affected by the mass emission rate (*e.g.*, lb/hr) of hydrogen chloride and chlorine gas individually. Thus the Hazard Index could increase from the values CKRC has calculated even though each source complies with a 130 ppmv total chlorine emission standard given that: (1) The RfC for chlorine gas is 100 times lower than the RfC for hydrogen chloride; (2) the partitioning of total chlorine between hydrogen chloride and chlorine gas could change so that a greater portion is emitted as chlorine; and (3) the mass emission rate of hydrogen chloride and chlorine gas would increase if the stack gas flowrate increases.

Because of these concerns, the more appropriate metric for a risk-based standard for total chlorine would be the toxicity-weighted HCl-equivalent emission rate discussed above in Section C.1.

To achieve our dual objective of establishing a protective risk-based emission standard expressed as a toxicity-weighted HCl-equivalent emission rate (lb/hr) and ensuring that the standard does not allow total chlorine emission concentrations (ppmv) higher than the current interim standard of 130 ppmv, we propose that an HCl-equivalent emission rate limit be established that is achievable by all cement facilities. This would be an HCl-equivalent emission rate for which on-site cement kiln emissions of hydrogen chloride and chlorine gas do not exceed a Hazard Index of 1.0. To make this determination, facilities would assume that emissions of hydrogen chloride and chlorine gas partition at the same ratio as measured during the most recent compliance test. Finally, the HCl-equivalent emission rate limit would be capped, if necessary, at a limit that ensures that total chlorine concentrations for each kiln do not exceed 130 ppmv.

If this information and supporting documentation is provided to us, we would promulgate a toxicity-weighted HCl-equivalent emission rate that would be applicable to cement kilns.

On a related matter, we evaluated whether using hydrogen chloride and chlorine gas emissions data obtained with stack sampling Method 26/26A to project hydrogen chloride and chlorine gas emissions in CKRC's analysis compromised the results. Method 26/26A is known to underestimate hydrogen chloride emissions from cement kilns.[187] We discuss above in Section F.2 concerns about Method 26/26A and the rationale for proposing to require sources to use methods other than Method 26/26A to measure emissions of hydrogen chloride and chlorine gas for compliance with risk-based standards. Briefly, Method 26/26A results for hydrogen chloride are biased low for cement kilns, although results for chlorine gas are unaffected. Even though CKRC used Method 26A results to apportion the 130 ppmv total chlorine assumed emissions between hydrogen chloride and chlorine gas for each source, the calculated Hazard Index values are not compromised. Given that the hydrogen chloride emission levels are biased low, the chlorine gas/hydrogen chloride ratio that CKRC used to apportion the 130 ppmv total chlorine emissions between chlorine gas and hydrogen chloride emissions for each source is biased high. Thus, CKRC projected chlorine gas emissions that are biased high and hydrogen chloride emissions that are biased low. These biases result in calculating conservative (*i.e.*, higher than actual) Hazard Index values because the health threshold values are lower for chlorine gas than for hydrogen chloride.[188] Thus, actual Hazard Index values at an emission level of 130 ppmv total chlorine would be lower than those that CKRC calculated.

XIV. How Did EPA Determine Testing and Monitoring Requirements for the Proposed Rule?

The CAA requires us to develop regulations that include monitoring and testing requirements. CAA section 114 (a) (3). The purpose of these requirements is to allow us to determine whether an affected source is operating in compliance with the rule.

We propose testing and monitoring requirements for solid fuel-fired boilers, liquid fuel-fired boilers and hydrochloric acid production furnaces that are identical to those applicable to incinerators, cement kilns, and lightweight aggregate kilns under §§ 63.1207, 63.1208, and 63.1209.[189] Please note, however, that we discuss below a proposed requirement for boilers that would not be subject to a numerical dioxin/furan emission standard to conduct a one-time test for dioxin/furan emissions. In addition, in Part Three of today's preamble, we request comment on, or propose revisions to, several compliance requirements. Any amendments to the compliance requirements that we promulgate would be applicable to all hazardous waste combustors. In addition, we discuss below in this

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[186] Trinity Consultants, "Analysis of HCl/Cl2 Emissions from Cement Kilns for 112(d)(4) Consideration in the HWC MACT Replacement Standards,'' September 17, 2003.

[187] *See* 63 FR at 14196 (March 24, 1998).

[188] For the same reasons, HCl-equivalent emission rates that CKRC may use in an eligibility demonstration for the source category would be biased conservatively high.

[189] Please note that we also propose to revise the existing schedule for the initial comprehensive performance test for incinerators, cement kilns, and lightweight aggregate kilns. Under the proposed revised schedule, owners and operators of incinerators, cement kilns, and lightweight aggregate kilns would be required to conduct the initial comprehensive performance test to document compliance with the replacement standards proposed today (§§ 63.1219, 63.1220, and 63.1221) within 12 months of the compliance date. *See* discussion in Part Three, Section I.F.

section proposed compliance procedures for emission standards that would be based on normal rather than compliance test data and that would be applicable to all hazardous waste combustors subject to such a standard. Finally, we discuss below in this section proposed compliance procedures for emission standards based on hazardous waste thermal emissions that would be applicable to all hazardous waste combustors.

The rationale for the testing and monitoring requirements, and implementation of the requirements, is the same as discussed in the rulemakings promulgating those requirements for hazardous waste-burning incinerators, cement kilns, and lightweight aggregate kilns, and as discussed in Part Three of today's preamble. *See* 61 FR 43501 (August 23, 1996), 62 FR 24212 (May 2, 1997), 67 FR 6791 (February 13, 2002), and 67 FR 6967 (February 14, 2002). For this reason, we only summarize those identical requirements and our rationale for them in today's notice.[190]

A. What Is the Rationale for the Proposed Testing Requirements?

The proposed rule requires solid fuel-fired boilers and liquid fuel-fired boilers to perform an initial comprehensive performance test for dioxin/furan,[191] mercury, particulate matter, semivolatile metals, low volatile metals, and total chloride to demonstrate compliance with emission standards. Hydrochloric acid production furnaces would be required to perform an initial comprehensive performance test for dioxin/furan and total chloride to demonstrate compliance with emission standards. All three source categories are also subject to the destruction and removal efficiency standard. Compliance with the destruction and removal efficiency standard, however, is based on a one-time emissions test, and previous destruction and removal efficiency testing under RCRA requirements may be used for that demonstration if design, operation, or maintenance of the source has not changed in a manner that could adversely affect combustion efficiency and, thus, destruction and removal efficiency. Finally, all three source categories would be required to demonstrate compliance with the carbon monoxide/hydrocarbon emission standard during the comprehensive performance test (and at all other times).

The comprehensive performance test would be conducted every five years to ensure that the performance of the air pollution control device has not deteriorated and that other factors that may affect emissions have not caused an increase in emissions above the standards.

The proposed rule also requires confirmatory testing to ensure compliance with the dioxin/furan emission standards, the test to be conducted mid-way between comprehensive performance tests when operating under typical conditions rather than at performance test conditions. More frequent confirmatory testing for dioxin/furan is needed because dioxin/furan emissions can be affected by various and interrelated factors, some of which are not fully understood, and because of the particular health hazard posed by emissions of dioxin/furan.

To ensure continuous compliance with the emissions standards, you would be required to establish limits on key operating parameters susceptible to continuous monitoring. The limits would be based on operating values achieved during the comprehensive performance test when the source successfully demonstrates compliance.[192] Because operating limits are calibrated based on operations during the comprehensive performance test, sources generally operate at the upper end of the range of normal operations during these tests. These proposed requirements are discussed below in Section XII.C.

B. What Are the Dioxin/Furan Testing Requirements for Boilers That Would Not Be Subject to a Numerical Dioxin/Furan Emission Standard?

As explained earlier, we are not proposing numerical dioxin/furan emission standards for solid fuel-fired boilers and for those liquid fuel-fired boilers that are equipped with wet scrubbers or no particulate control device. Rather, those boilers would be subject to the carbon monoxide/hydrocarbon emission standard and the destruction and removal efficiency standard to help minimize dioxin/furan emissions. *See* discussion in Part Two, Sections X.A and XI.A.

We propose that solid fuel-fired boilers and those liquid fuel-fired boilers that would not be subject to a numerical dioxin/furan emission standard conduct a one-time dioxin/furan emission test to quantify the effectiveness of today's proposed surrogate dioxin/furan emission controls. This test would be performed no later than the initial comprehensive performance test required under the proposed standards. The results of this one-time test would be reported with the test results for the first comprehensive performance test. *See* proposed § 3.1207(b)(3).

1. What Is the Rationale for Requiring the Test?

We are adopting this provision pursuant to our authority in CAA section 114 (a)(1)(D), which allows EPA to require "any person * * * who is subject to any requirement of this chapter'' (which includes section 112) on a one-time, periodic or continuous basis, to "sample such emissions (in accordance with such procedures or methods, at such locations, at such intervals, during such periods and in such manner as the Administrator shall prescribe)''. The purpose of such monitoring is "developing or assisting in the development of'' standards under various provisions of the Act, including section 112. In this case, monitoring will assist in making determinations under both section 112(d)(6) and section 112(f), which could lead to development of standards under either or both of these provisions.

Section 112(d)(6) of the Act requires us to "review, and revise as necessary emission standards promulgated under this section no less than every eight years.'' We believe testing that results from compliance with today's proposed standards will, in nearly all cases, establish an adequate database for us to perform this review. However, we would not have sufficient dioxin/furan emissions data for those boilers that are subject to the carbon monoxide/hydrocarbon standard and destruction and removal efficiency standard in lieu of a numerical dioxin/furan standard. We have data from approximately one-third of the boilers that are not subject to a numerical dioxin/furan standard. Although those data indicate that these sources emit low concentrations of dioxin/furan despite the absence of any dioxin/furan control equipment, we are concerned about extrapolating this performance to the entire universe of

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[190] For this reason, in the technical support documents for today's proposed rule we also refer extensively to the technical support documents for the Phase I rule.

[191] Those boilers that would be subject to a numerical dioxin/furan standard (*i.e.*, liquid fuel-fired boilers equipped with an electrostatic precipitator or fabric filter) would be required to conduct periodic comprehensive and confirmatory testing. Other boilers would be required to conduct a one-time test for dioxin/furan emissions under the conditions discussed below in the text.

[192] Because the dioxin/furan confirmatory test is conducted under operating conditions that are within the range of normal operations rather than at the upper end of the range of normal operations as during a comprehensive performance test, you would not reestablish operating conditions for dioxin/furan based on the confirmatory performance test.

the subject boilers because our data set may not be statistically random and the potential hazard posed by dioxin/furan is high. In fact, the design of these sources would seem to have the potential for formation of significant dioxin/furan concentrations.[193] We think this proposed testing would add a one-time cost of approximately $10,000 for each source for which dioxin/furan test data are not already available, and the cost appears reasonable to enable us to meet our section 112(d)(6) and 112(f) mandates. Section 112(d)(6) requires EPA, at specified times, to determine if further technology-based emission reductions are warranted. Quantified dioxin/furan emission information from these sources will assist in this determination. Section 112(f) requires EPA (among other things) to determine if emissions from all sources subject to section 112(d) standards must be further reduced in order to assure an ample margin of safety to protect public health. Having actual emission data from these sources obviously will assist in making the required section 112(f) determinations for these sources.

2. What Are the Operating Requirements for the Test?

You must perform the dioxin/furan test under feed and operating conditions that are most likely to maximize dioxin/furan emissions, similar to a dioxin/furan comprehensive performance test. Based on currently available research, the following factors should be considered for the testing: (1) Dioxin/furan testing should be conducted at the point in the maintenance cycle for the boiler when the boiler tubes are more fouled and soot-laden, and not after maintenance involving soot or ash removal from the tubes; (2) dioxin/furan testing should be performed following (or during) a period of feeding normal or greater quantities of metals; (3) dioxin/furan testing should be performed while feeding normal or greater quantities of chlorine; (4) the flue gas temperature in some portion of the heat recovery section of the boiler should be within the dioxin formation temperature window of 750 to 400°F during the testing; (5) the testing should not be conducted under optimal combustion conditions; (6) for units equipped with wet air pollution control systems, the testing should be conducted after a high solids loading has developed in the scrubber system; and (7) for solid fuel-fired boilers, the sulfur content of the coal should be equivalent to or lower than normal coal sulfur levels, and the gas temperature at the inlet to the electrostatic precipitator or fabric filter should be close to the operating limit. In addition, unless sulfur compounds are routinely fed to the unit, dioxin/furan testing should not be performed after a period of firing high sulfur fuel or injection of sulfur additives.

The majority of these recommendations are based on research demonstrating that soot deposits can enhance dioxin/furan formation in the presence of chlorine and catalytic metal contaminants, with formation continuing even after cessation of those contaminant feeds to the system.[194, 195] The boiler tube deposits serve as a sink and source for dioxin/furan reactants (catalytic metals and chlorine), and combined soot-copper deposits have been shown to cause more dioxin/furan formation than a deposit of soot or copper alone. From analysis of soot deposits taken from different sections of a firetube boiler, the highest measured dioxin/furan concentrations were found in those deposits containing the highest concentrations of copper and chloride. Those same deposits were removed from the boiler passages where flue gas temperatures ranged from 600–300°C, which is within the often-cited optimal temperature region for dioxin/furan formation. Tube deposits have also been shown to have a negative effect on dioxin emissions when those deposits have been affected by sulfur dioxide, which is why dioxin/furan testing is not recommended following a period of feeding higher-than-normal levels of sulfur to the boiler.

The recommendation not to test under optimal combustion conditions has been explained previously in the September 1999 Final Rule preamble discussion. *See* 64 FR at 52937. Good combustion practices minimize dioxin/furan emissions by: (1) Destroying trace dioxins/furans that may be present in feed streams; (2) minimizing gas-phase formation of dioxins/furans; and (3) minimizing dioxin/furan precursors that may enhance post-combustion formation.

For units equipped with wet air pollution control systems, it is also recommended that testing be conducted after a high solids loading has developed in the scrubber system. Research conducted to explore the phenomenon of increased dioxin/furan flue gas concentrations across some wet scrubber systems has shown differing flue gas outlet dioxin/furan homologue profiles than flue gas inlet profiles to the scrubber, but similar flue gas outlet homologue profiles to scrubber suspended solids and sludge profiles.[196] This result suggests that some type of memory effect may be associated with suspended solids in a scrubber system which can cause higher dioxin/furans emissions.

You may use data-in-lieu of testing to document dioxin/furan emissions for similar on-site boilers. In addition, dioxin/furan emission data from previous testing would be acceptable, provided the test was performed in a manner likely to maximize dioxin/furan emissions.

C. What Are the Proposed Test Methods?

The proposed emission standards are method-based standards, meaning that the stack test methods used for compliance must be the same as those used to generate the emissions data we used to calculate the standards. Because alternative stack methods may report lower emissions, it is appropriate to require use of the same methods for compliance as sources used to generate the emissions data in our data base.

For this reason, you would be required to use the following stack test methods for compliance: (1) Method 29 for mercury, semivolatile metals, and low volatile metals; and (2) Method 26/26A for total chlorine.[197] For dioxin/furan, the rule would require use of Method 0023A unless you receive approval to use Method 23. We discuss the rationale for allowing site-specific approvals to use Method 23 in Part Three, Section II.D of today's preamble. In addition, for particulate matter, you would be required to use either Method 5, the method used to generate the data in our data base or Method 5i. We allow use of Method 5i because it is more

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[193] Incinerators equipped with waste heat recovery boilers are known to emit high levels of dioxin/furan, and hydrochloric acid production furnaces with waste heat recovery boilers can also emit high levels of dioxin/furan. Because the mechanisms that affect formation and control of dioxin/furan are complex and not fully understood, we are concerned that some of the factors that cause high dioxin/furan emissions from incinerators and hydrochloric acid production furnaces equipped with waste heat recovery boilers may also affect dioxin/furan emissions from boilers.

[194] Lee, C.W.; Kilgroe, J.D.; Raghunathan, K. *Environ. Eng. Sci.* 1998, 15(1), 71–84.

[195] Gullett, B.K.; Touati, A.; Lee, C.W. *Environ. Sci. Technol.* 2000, 34, 2069–2074.

[196] Takaoka, M.; Liao, P.; Takeda, N.; Fujiwara, T.; Oshita, K. *Chemosphere* 2003, 53, 153–161.

[197] Please note that we discuss in Section XIII of the preamble above concerns with the accuracy of M26/26A for measuring emissions of total chlorine for cement kilns. As we explain there, although M26/26A is appropriate for demonstrating compliance with the MACT standards for cement kilns, it is not acceptable for demonstrating compliance with risk-based standards developed under authority of section 112(d)(4) of the Act.

precise than Method 5 at lower particulate matter loadings.

These test methods are codified in 40 CFR part 60, appendix A.[198]

D. What Is the Rationale for the Proposed Continuous Monitoring Requirements?

The most direct means of ensuring compliance with emissions limits is the use of continuous emission monitoring systems (CEMS). We consider other options when CEMS are not available or when we consider the impacts of including such requirements unreasonable. When monitoring options other than CEMS are considered, it is often necessary for us to balance more reasonable costs against the quality or accuracy of the emissions monitoring data. Although monitoring operating parameters cannot provide a direct measurement of emissions, it is often a suitable substitute for CEMS. The information provided can be used to ensure that air pollution control equipment is operating properly. Because most parameter requirements are calibrated during comprehensive performance testing,[199] they provide a reasonable surrogate for direct monitoring of emissions. This information reasonably assures the public that the reductions envisioned by the proposed rule are being achieved.

1. What CEMS Requirements Did EPA Consider?

To comply with the carbon monoxide or hydrocarbon emission limits, you would be required to use a carbon monoxide or hydrocarbon CEMS as well as an oxygen CEMS to correct the carbon monoxide or hydrocarbon values to 7% oxygen. *See* § 63.1209(a). Because boilers and hydrochloric acid production furnaces are currently required to use these CEMS to comply with existing RCRA emission standards for carbon monoxide or hydrocarbons, there would be a minimal incremental compliance cost.[200]

We also evaluated the cost of applying hydrogen chloride CEMS to boilers and hydrochloric acid production furnaces. We estimate the capital costs for hydrogen chloride CEMS to be $88,000 per unit and annualized costs to be $33,000 per unit. We determined these costs would be unreasonably high considering: (1) The CEMS detects hydrogen chloride but not chlorine gas, so that compliance with the total chlorine emission standard could not be monitored; (2) the effectiveness of operating parameter limits to ensure compliance with the emission standard for total chlorine; and (3) the relatively low level of hazard posed by emissions of total chlorine.

Finally, we conclude that the use of CEMS to document compliance with particulate matter or metal HAP emission standards has not been demonstrated on hazardous waste combustors in the United States.

2. What Operating Parameter Limits Would Be Required?

To ensure continuous compliance with the proposed emission limits, you would be required to establish limits on key operating parameters and continuously monitor the parameters including: feedrate of metals, chlorine, and, for some source categories, ash; key combustor operating parameters; and key operating parameters of the control device. *See* § 63.1209(j–o). You would also be required to document monitoring by recordkeeping and reporting. We selected the following requirements based on reasonable cost, ease of execution, and usefulness of the resulting data to both owners and operators and EPA for ensuring continuous compliance with the emission limits.

To ensure continuous compliance with the dioxin/furan emission limit, you would be required to establish: (1) A limit on maximum gas temperature at the inlet to a dry particulate matter control device; (2) a limit on minimum combustion chamber temperature; (3) a limit on maximum flue gas flowrate or production rate; (4) a limit on maximum waste feedrate; (5) if your combustor is equipped with an activated carbon injection system: limits on the particulate matter control device, as discussed below; a limit on minimum carbon injection rate; a limit on minimum carrier fluid flowrate or pressure drop; and you must specify and use the brand (*i.e.*, manufacturer) and type of carbon used during the comprehensive performance test, unless you document key parameters that affect adsorption and establish limits on those parameters based on the carbon used in the comprehensive performance test; (6) if your combustor is equipped with a carbon bed: you must monitor the bed life to ensure that it has not reached the end of its useful life to minimize dioxin/furan (and mercury) emissions at least to the levels required by the emission standards; you must replace the bed or bed segment before it has reached the end of its useful life; you must specify and use the brand (*i.e.*, manufacturer) and type of carbon used during the comprehensive performance test, unless you document key parameters that affect adsorption and establish limits on those parameters based on the carbon used in the comprehensive performance test; and you must establish a limit on maximum gas temperature either at the bed inlet or outlet; (7) if your combustor is equipped with a catalytic oxidizer: limits on minimum and maximum gas temperature at the inlet to the catalyst; you must replace the oxidizer when it has reached the maximum service time specified by the manufacturer; and when replacing the catalyst, the new catalyst must be equivalent to or better than the one used during the previous comprehensive performance test as measured by catalytic metal loading for each metal, space time, and substrate construction; (8) if you feed a dioxin/furan inhibitor into the combustion system: a limit on minimum inhibitor feedrate; and you must specify and use the brand (*i.e.*, manufacturer) and type of inhibitor used during the comprehensive performance test, unless you document key parameters that affect the effectiveness of the inhibitor and establish limits on those parameters based on the inhibitor used in the comprehensive performance test. *See* § 63.1209(k).

To ensure continuous compliance with the mercury emission limit, owners and operators of boilers would be required to establish: (1) A limit on the total feedrate of mercury in all feedstreams for solid fuel-fired boilers, and a limit on mercury in hazardous waste feedstreams per million Btu of hazardous waste fired for liquid-fuel-fired boilers;[201, 202] (2) if your boiler is equipped with a wet scrubber, limits prescribed for control of total chlorine with a wet scrubber, except for a limit on minimum pH of the scrubber water; (3) if your boiler is equipped with an activated carbon injection system, limits on the particulate matter control device as discussed below, and limits on the activated carbon injection system as

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[198] Method 0023A, however, is included in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW–846 Third Edition (November 1986), as amended.

[199] Except that some parameters are limited based on the recommendations/specifications of the manufacturer of the control device.

[200] If you elect to comply with the carbon monoxide standard rather than the hydrocarbon standard, you would be required to document that hydrocarbon emissions during the comprehensive performance test meet the standard.

[201] This is because the mercury emission standard for liquid fuel-fired boilers is a hazardous waste thermal emission concentration. Liquid fuel-fired boilers would also be required to monitor the heating value of hazardous waste feeds to ensure compliance with the hazardous waste thermal emission concentration.

[202] The mercury feedrate limit would be based on levels fed during the comprehensive performance test unless the regulatory authority approves a request for you to extrapolate to a higher allowable feedrate (and emission rate) limit.

discussed above for dioxin/furan; and (4) if your boiler is equipped with an activated carbon bed, limits on the carbon bed as discussed above for dioxin/furan.

You may comply with mercury feedrate limits only, however, if you elect to assume that all mercury in the feed is emitted. For solid fuel-fired boilers, you would assume that all mercury in all feedstreams is emitted under this alternative approach. You would also establish a limit on minimum flue gas flowrate to ensure compliance with the mercury emission standard. For liquid fuel-fired boilers where the mercury emission standard is expressed as hazardous waste thermal emissions, you would assume that all mercury in all hazardous waste feedstreams is emitted. You would have to comply with a hazardous waste thermal feed concentration that would be expressed as the mass of mercury in the hazardous waste per million Btu heat input contributed by the hazardous waste. Also, please note that these compliance requirements would not apply to hydrochloric acid production furnaces because (as explained earlier) we propose to use the total chlorine standard as a surrogate for the mercury, particulate matter, semivolatile metal, and low volatile metal standards for these sources. *See* § 63.1209(l).

To ensure continuous compliance with the particulate matter emission limit, you would be required to establish: (1) Limits on the control device operating parameters; (2) a limit on maximum flue gas flowrate or production rate; and a limit on maximum ash feedrate. If your boiler is equipped with a wet scrubber, you would establish limits on: (1) For high energy scrubbers only, minimum pressure drop across the scrubber and either minimum liquid to gas ratio or minimum scrubber water flowrate and maximum flue gas flowrate; and (2) for all scrubbers, the solids content of the scrubber liquid or a minimum blowdown rate. If your boiler is equipped with an electrostatic precipitator, ionizing wet scrubber, or fabric filter, please note that we discuss in Part Three, Section II.I. below proposed compliance parameters for these control devices. Briefly, if your boiler is equipped with a fabric filter, you must comply with bag leak detection system requirements. If your boiler is equipped with an electrostatic precipitator or ionizing wet scrubber, you must either: (1) Install and operate a particulate matter loading detector as a process monitor to indicate when you must take corrective measures; or (2) establish limits on key operating parameters, on a site-specific basis, that are representative and reliable indicators that the control device is operating within the same range of conditions as during the comprehensive performance test, and link those operating limits to the automatic waste feed cutoff system. Please note that the particulate matter compliance requirements would not apply to hydrochloric acid production furnaces, as discussed above. *See* § 63.1209(m).

To ensure continuous compliance with the semivolatile and low volatile metal emission limits, you would be required to establish: (1) A limit on the maximum inlet temperature to the primary dry particulate matter control device; (2) a limit on maximum feedrate of semivolatile and low volatile metals from all feedstreams for solid fuel-fired boilers, and a limit on semivolatile metals and low volatile metals in hazardous waste feedstreams per million Btu of hazardous waste fired for liquid-fuel-fired boilers;[203, 204] (3) limits (or process monitors) on the particulate matter control device as discussed above; (4) a limit on maximum feedrate of total chlorine or chloride in all feedstreams; and (5) a limit on maximum flue gas flowrate or production rate. You may comply with semivolatile and low volatile metal feedrate limits only, however, if you elect to assume that all semivolatile and low volatile metals in the feed is emitted. For solid fuel-fired boilers, you would assume that all semivolatile and low volatile metals in all feedstreams are emitted under this alternative approach. You would also establish a limit on minimum flue gas flowrate to ensure compliance with the semi- and low volatile metals emission standard. For liquid fuel-fired boilers where the semivolatile and low volatile metals emission standards are expressed as hazardous waste thermal emissions, you would assume that all semivolatile and low volatile metals in all hazardous waste feedstreams are emitted. You would have to comply with a hazardous waste thermal feed concentration that would be expressed as the mass of semivolatile (or low volatile) metals in the hazardous waste per million Btu heat input contributed by the hazardous waste. Also, please note that the semivolatile metal and low volatile metal compliance requirements would not apply to hydrochloric acid production furnaces, as discussed above. *See* § 63.1209(n).

To ensure continuous compliance with the total chlorine emission limit, you would be required to establish: (1) A limit on maximum feedrate of total chlorine and chloride from all feedstreams for solid fuel-fired boilers, and a limit on total chlorine and chloride in hazardous waste feedstreams per million Btu of hazardous waste fired for liquid-fuel-fired boilers;[205] (2) a limit on maximum flue gas flowrate or production rate; (3) if your combustor is equipped with a high or low energy wet scrubber: a limit on minimum pH of the scrubber water; a limit on either the minimum liquid to gas ratio or the minimum scrubber water flowrate and maximum flue gas flowrate; (4) if your combustor is equipped with a high energy wet scrubber, a limit on minimum pressure drop across the scrubber; (5) if your combustor is equipped with a low energy wet scrubber: a limit on minimum pressure drop across the scrubber; and a limit on minimum liquid feed pressure to the scrubber; and (6) if your combustor is equipped with a dry scrubber: a limit on minimum sorbent feedrate; a limit on minimum carrier fluid flowrate or nozzle pressure drop; and you must specify and use the brand (*i.e.*, manufacturer) and type of sorbent used during the comprehensive performance test, unless you document key parameters that affect the effectiveness of the sorbent and establish limits on those parameters based on the sorbent used in the comprehensive performance test. If your combustor is equipped with an ionizing wet scrubber, please note that we discuss in Part Three, Section II.I. below proposed compliance parameters for this control device. Briefly, if your combustor is equipped with an ionizing wet scrubber, you must either: (1) Install and operate a particulate matter loading detector as a process monitor to indicate when you must take corrective measures; or (2)

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[203] This is because the semivolatile metal and low volatile metal emission standards for liquid fuel-fired boilers are hazardous waste thermal emission concentrations. You would also be required to monitor the heating value of hazardous waste feedstreams to ensure compliance with the hazardous waste thermal emission concentration.

[204] The semivolatile and low volatile metal feedrate limits would be based on levels fed during the comprehensive performance test unless the regulatory authority approves a request for you to extrapolate to higher allowable feedrate (and emission rate) limits. Please note that the semivolatile and low volatile metal feed limits for liquid fuel-fired boilers are hazardous waste thermal concentration limits (pounds of metal per million Btu), not mass feedrate limits, given that the emission standards are expressed as hazardous waste thermal emissions.

[205] This is because the total chlorine emission standard for liquid fuel-fired boilers is a hazardous waste thermal emission concentration. You would also be required to monitor the heating value of hazardous waste feedstreams to ensure compliance with the hazardous waste thermal emission standard.

establish limits on key operating parameters, on a site-specific basis, that are representative and reliable indicators that the control device is operating within the same range of conditions as during the comprehensive performance test, and link those operating limits to the automatic waste feed cutoff system.

You may comply with a total chlorine and chloride feedrate limit only, however, if you elect to assume that all chlorine in the feed is emitted. For solid fuel-fired boilers, you would assume that all chlorine in all feedstreams is emitted under this alternative approach. You would also establish a limit on minimum flue gas flowrate to ensure compliance with the total chlorine standard. For liquid fuel-fired boilers where the total chlorine emission standard is expressed as hazardous waste thermal emissions, you would assume that all chlorine in all hazardous waste feedstreams is emitted. You would have to comply with a hazardous waste thermal feed concentration that would be expressed as the mass of chlorine in the hazardous waste per million Btu heat input contributed by the hazardous waste. *See* § 63.1209(o).

To ensure continuous compliance with the destruction and removal efficiency standard, you would be required to: (1) Establish a limit on minimum combustion chamber temperature; (2) establish a limit on maximum flue gas flowrate or production rate; (3) establish a limit on maximum hazardous waste feedrate; and (4) specify operating parameters and limits to ensure that good operation of each hazardous waste firing system is maintained. *See* § 63.1209(j).

E. What Are the Averaging Periods for the Operating Parameter Limits, and How Are Performance Test Data Averaged To Calculate the Limits?

Except as discussed in Section XIV.F below, we propose that owners and operators of solid fuel-fired boilers, liquid fuel-fired boilers, and hydrochloric acid production furnaces establish averaging periods for the operating parameter limits and calculate the limits from comprehensive performance test data under the same approaches required currently for incinerators, cement kilns, and lightweight aggregate kilns. A detailed discussion of how those approaches work, and the rationale for them, are provided at 64 FR at 52919–22 (September 30, 1999). That discussion is summarized below.

We propose the following averaging periods: (1) No averaging period (*i.e.*, instantaneous monitoring) for maximum combustion chamber pressure to control combustion system leaks;[206] (2) 12-hour rolling averages for maximum feedrate of mercury, semivolatile metals, low volatile metals, total chlorine and chloride, and ash; and (3) one-hour rolling averages for all other operating parameters. We propose a 12-hour rolling average for metal, total chlorine and chloride, and ash feedrate limits to correspond to the potential duration of three runs of a comprehensive performance test, considering that feedrate and emissions, are, for the most part, linearly related. We propose an hourly rolling average limit for all parameters that are based on operating data from the comprehensive performance test, except combustion chamber pressure and metal, chlorine, and ash feedrate limits. Hourly rolling averages are appropriate for these parameters rather than averaging periods based on the duration of the performance test because we are concerned that there may be a nonlinear relationship between operating parameter levels and emission levels of HAP or HAP surrogates.

We propose two approaches to calculate limits for operating parameters: (1) Calculate the limit as the average of the maximum (or minimum, as specified) rolling averages for each run of the test; or (2) calculate the limit as the average of the test run averages for each run of the test. Hourly rolling averages for two parameters—combustion gas flowrate or production rate and hazardous waste feedrate—would be based on the average of the maximum hourly rolling averages for each run. Hourly rolling average and 12-hour rolling average limits for all other parameters, however, would be based on the average level occurring during the comprehensive performance test. We conclude that this more conservative approach is appropriate for these parameters because they can have a greater effect on emissions, and because it is consistent with how manual emissions results are determined.[207] We also conclude that limits based on the average level occurring during the comprehensive performance are readily achievable. This is because sources generally conduct performance testing at the extreme upper end of the range of normal operations to provide the operating flexibility needed after establishing operating parameter limits. Because sources can readily control (during the performance test and thereafter) the parameters for which limits are established, the operating limits based on the average of the performance test runs should be readily achievable under routine operations.

F. How Would Sources Comply With Emissions Standards Based on Normal Emissions?

Several proposed emission standards would be based on emissions that are within the normal range of operations for the source rather than on compliance test emissions that represent the extreme upper end of the range of normal emissions:[208] mercury standards for cement kilns, lightweight aggregate kilns, and liquid fuel-fired boilers, and semivolatile metal emissions for liquid fuel-fired boilers. To ensure compliance with emission standards based on normal emissions data, you would document during the comprehensive performance test a system removal efficiency for the metals and back-calculate from the emission standard a maximum metal feedrate limit that must not be exceeded on an *annual* rolling average. If your source is not equipped with an emission control system (such as activated carbon to control mercury) for the metals in question, however, you must assume zero system removal efficiency. This is because a source that is not equipped with an emission control system may be able to document a positive system removal efficiency, but it is not likely to be reproducible. It is likely to be an artifact of the calculation of emissions and feeds rather than a removal efficiency that is reliable and reproducible.

To ensure that you can calculate a valid, reproducible system removal efficiency for sources equipped with a control system that effectively controls the metal in question, you may need to spike metals in the feed during the comprehensive performance test at levels that may result in emissions that are higher than the standard. This would be acceptable because compliance with an emission standard derived from normal emissions data is based on compliance with an annual average feedrate limit calculated as prescribed here, rather than compliance with the emission standard during the comprehensive performance test.

We propose a one-year averaging period for the metal feedrate limit

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[206] Please note, however, that we request comment on the appropriateness of these combustion system leak requirements in Part Three of today's preamble.

[207] Manual method emission test results for each run represent average emissions over the entire run.

[208] Compliance test emissions represent the upper range of emissions from a source because operating parameter limits for the HAP or HAP surrogate are established based on this compliance test.

because the emission standard represents normal, average emissions. Although the averaging period could be substantially shorter or longer, a one-year averaging period is within the range of reasonable averaging periods and would be readily achievable for a standard based on normal emissions. The annual rolling average metal feedrate would be updated each hour based on the average of the 60 previous 1-minute averages.

We propose to retain the hourly rolling average requirement for the other operating parameter limits, however, for the reasons discussed above (*i.e.*, to be conservative given the nonlinear relationship between the operating parameter and emissions, and because the limits would be readily achievable).

G. How Would Sources Comply With Emission Standards Expressed as Hazardous Waste Thermal Emissions?

Several proposed emission standards would be expressed as hazardous waste thermal emissions: mass of pollutant emissions attributable to the hazardous waste feed per million Btu of hazardous waste fed to the combustor.

To demonstrate compliance with a hazardous waste thermal emissions-based standard during a comprehensive performance test, you would calculate the hazardous waste thermal emissions by apportioning mass emissions of mercury, semivolatile metals, low volatile metals, or total chlorine according to the ratio of the mass feedrate of mercury, semivolatile metals, low volatile metals, or total chlorine and chloride from hazardous waste feedstreams to the feedrate for all feedstreams and dividing by the heat input rate (*i.e.*, million Btu/hr) attributable to the hazardous waste.

To ensure continuous compliance with the hazardous waste thermal emissions-based standard, you would calculate an operating limit based on the hazardous waste thermal feed concentration during the performance test.[209] The hazardous waste thermal feed concentration limit would be calculated as the mass feedrate (lb/hr) of mercury, semivolatile metals, low volatile metals, or total chlorine and chloride from hazardous waste feedstreams divided by the heat input rate (million Btu/hr) from hazardous waste feedstreams. For compliance, you would continuously monitor the feedrate of hazardous waste on a 12-hour rolling average updated each minute or, for standards based on normal emissions, on an annual rolling average updated each hour. You must know the concentration of mercury, semivolatile metals, low volatile metals, or total chlorine and chloride in the hazardous waste at all times, and the heating value of the hazardous waste at all times. Using this information, you would calculate and record the hazardous waste thermal feed concentration on a 12-hour rolling average, or for standards based on normal emissions, on an annual rolling average updated each hour.

H. What Happens if My Thermal Emissions Standard Limits Emissions to Below the Detection Limit of the Stack Test Methods?

Under today's proposed thermal emissions standards, the standard may limit emissions to levels that are below the analytical detection limit of the stack test method. For example, this may occur with the semi-volatile metals standard for liquid fuel boilers when allowable emission levels are below the analytical detection capabilities of Method 29 when the hazardous waste firing rate or heating value is low. To address this issue, we are requesting comment on an approach that would allow you to be in compliance with today's proposed thermal emission standards if certain sampling and analytical criteria are met.

The first criterion would ensure that the test crew accumulates enough of the analyte (*e.g.*, metal HAP) in the sample train to ensure that it is measurable by the laboratory. For example, the amount of HAP accumulated in a one hour sample may not be sufficient for the laboratory to quantify. On the other hand, a three hour test would be more likely to accumulate enough sample, since three times the amount of that HAP would be collected. Most Method 29 results that comprise our emissions database are from two to three hour samples. The first criterion would be met if the facility samples the flue gas for at least three hours for each run.

The second criterion would ensure that the laboratory uses adequate quality assurance procedures to measure the HAP in the sample. Section 13.2 of Method 29 provides the analytical detection limits for the various laboratory methods used to determine the amount of HAP accumulated in the sample. The second criterion would be met if the laboratory reports analytical detection limits that are less than or equal to those reported in section 13.2.

The final criterion is that no HAP represented by the standard can be present above the analytical detection limit. For the semi-volatile metals standard, this means that neither lead nor cadmium could be present above the analytical detection limits for any run of the test. You would assume that the HAP is present at the full detection limit, if lead or cadmium are present above the analytical detection limit during any run of the test.

If you wish to use this provision to demonstrate compliance with the standard, you would be required to show that all three criteria have been met in the Notification of Compliance sent to the appropriate permitting agency. You would not be required to provide advance notice or obtain prior approval from the permitting authority.

I. Are We Concerned About Possible Negative Biases Associated With Making Hydrogen Chloride Measurements in High Moisture Conditions?

Several industry stakeholders have brought several scientific papers to our attention that indicate that Method 26A, used for compliance with the hydrogen chloride and chlorine gas standards, may have a significant low bias at wet stacks with low hydrogen chloride concentrations. These stakeholders have asked us not to establish standards for hydrogen chloride and chlorine standard below 20 ppmv to address this substantial negative bias.

We agree that there was a concern early in the development and deployment of Method 26A that water droplets would not evaporate in the sampling train and would therefore dissolve hydrogen chloride in the sample train, before the hydrogen chloride can be caught by the impingers. EPA determined that this potential problem can be precluded by providing enough heat to the sample train to evaporate all water droplets that might collect in the sample probe or filter. Once the water is evaporated, the hydrogen chloride reenters the sample gas stream and is collected by the impingers.

EPA's Office of Research and Development (ORD) performed laboratory studies to document and fully understand this problem. We also monitored the application of Method 26A and it's SW–846 equivalent to determine how these concerns may impact hydrogen chloride measurements made on wet stacks. Our conclusion is that the situations encountered in ORD's laboratory studies are not encountered when making stack test measurements.

The Coalition for Responsible Waste Incineration, CRWI, provided a paper authored by Joette Steger, et al., which

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[209] If the hazardous waste thermal emission standard is derived from normal rather than compliance test emissions data, however, the hazardous waste thermal feed concentration would be calculated as discussed above in Section F of the preamble.

illustrates this point. (See memorandum to docket for today's proposed rule from H. Scott Rauenzahn, U.S. EPA, entitled "Method 26A and CRWI's Concerns,'' dated March 25, 2004.) Steger found that Method 26A has a significant negative bias when 40 to 50 percent of the water in the sample is in the form of water droplets. Under similar sample conditions, with 60 percent of the water in the form of droplets, Steger found that providing more heat to the sample train corrected the negative bias concern.

We also checked our hydrogen chloride emissions data for hazardous waste combustors to see if water droplets could be present in the sample line. We found that water droplets could be present in three of our incinerator test conditions: 327C10 at 5 percent water droplets; 808C1 at 12.5 percent water droplets; and 3024C1 at 8 percent water droplets. None of these stack conditions approach the 40 to 50 percent water droplets observed to be a problem by Steger. These stack gas conditions most closely resemble Steger's run B–5, with 10% water droplets. No negative bias was observed for Steger's run B–5. We conclude that this negative bias, while conceptually possible, is not encountered at hazardous waste combustors with wet stacks.

We request comments on our analysis of these trade association's concerns, and request more data regarding this issue.

J. What Are the Other Proposed Compliance Requirements?

We propose other compliance requirements for solid fuel-fired boilers, liquid fuel-fired boilers, and hydrochloric acid production furnaces that are the same as those currently in place at § 63.1206 for incinerators, cement kilns, and lightweight aggregate kilns. The rationale for the requirements is the same as discussed in previous rulemakings for incinerators, cement kilns, and lightweight aggregate kilns, and compliance procedures would be the same as currently required for those sources.

The other compliance requirements include provisions for: startup, shutdown, and malfunction plans; operation and maintenance plans including a requirement for bag leak detector systems for fabric filters; automatic hazardous waste feed cutoff systems, including a requirement for exceedance reporting; combustion system leak requirements; changes in design, operation, or maintenance that could adversely affect compliance with emission standards; operator training and certification requirements; and requirements for sources that elect to comply with the carbon monoxide standard to document one-time that hydrocarbons also meet the hydrocarbon standard; and provisions allowing a one-time demonstration of compliance with the destruction and removal efficiency standard.

Please note that we propose revisions to, or request comment on, some of these compliance requirements in Part Three of the preamble. Any revisions to these requirements that we might make in the final rule would be applicable to all hazardous waste combustors.

XV. How Did EPA Determine Compliance Times for this Proposed Rule?

Section 112 of the CAA specifies the dates by which affected sources must comply with the emission standards. New or reconstructed units must be in compliance with the proposed rule immediately upon startup or [DATE THE FINAL RULE IS PUBLISHED IN THE **Federal Register**], whichever is later. A new or reconstructed unit for purposes of complying with this proposed rule is one that begins construction after April 20, 2004.[210]

Existing sources are allowed up to three years to comply with the final rule. See proposed § 63.1206(a)(1)(ii) and (a)(2). This is the maximum period allowed by the CAA. We believe that three years for compliance is necessary to allow adequate time to design, install, and test control systems that will be retrofitted onto existing units.

XVI. How Did EPA Determine the Required Records and Reports for the Proposed Rule?

We propose notification, reporting, and recordkeeping requirements for solid fuel-fired boilers, liquid fuel-fired boilers and hydrochloric acid production furnaces that are identical to those already in place at §§ 63.1210 and 63.1211 and applicable to incinerators, cement kilns, and lightweight aggregate kilns. Please note, however, that we are proposing a new requirement applicable to all hazardous waste combustors that would require you to submit a Notification of Intent to Comply and a Compliance Progress Report.

A. Summary of Requirements Currently Applicable to Incinerators, Cement Kilns, and Lightweight Aggregate Kilns and That Would Be Applicable to Boilers and Hydrochloric Acid Production Furnaces

Owners and operators of solid fuel-fired boilers, liquid fuel-fired boilers, and hydrochloric acid production furnaces would be required to submit the following notifications to the Administrator in addition to those required by the NESHAP General Provisions, subpart A of 40 CFR part 63: (1) Notification of changes in design, operation, or maintenance (§ 63.1206(b)(5)(i)); (2) notification of performance test and continuous monitoring system evaluation, including the performance test plan and continuous monitoring system performance evaluation plan (§§ 63.1207(e)); and (3) notification of compliance, including results of performance tests and continuous monitoring system evaluations (§§ 63.1210(b), 63.1207(j); 63.1207(k), and 63.1207(l)). You would also be required to submit notifications to the Administrator if you request or elect to comply with various alternative requirements. Those notifications are listed at § 63.1210(a)(2).

Owners and operators of solid fuel-fired boilers, liquid fuel-fired boilers, and hydrochloric acid production furnaces would be required to submit the following reports to the Administrator in addition to those required by the NESHAP General Provisions, subpart A of 40 CFR part 63: (1) Startup, shutdown, and malfunction plan (if electing to comply with § 63.1206(c)(2)(ii)(B)); (2) excessive exceedances report (§ 63.1206(c)(3)(vi)); and (3) emergency safety vent opening reports (§ 63.1206(c)(4)(iv)).

Owners and operators of solid fuel-fired boilers, liquid fuel-fired boilers, and hydrochloric acid production furnaces would be required to keep records documenting compliance with the requirements of Subpart EEE. Recordkeeping requirements are prescribed in § 63.1211(b), and include requirements under the NESHAP General Provisions, subpart A of 40 CFR part 63.

B. Why Is EPA Proposing Notification of Intent to Comply and Compliance Progress Report Requirements?

1. What Is the Notification of Intent to Comply?

In the June 1998 "fast track'' rule (63 FR 33782), we required that sources subject to the Phase I subpart EEE standards complete a Notification of

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[210] Please note that a new or reconstructed unit for purposes of complying with the Interim Standards applicable to incinerators, cement kilns, and lightweight aggregate kilns is a unit that began operation after September 30, 1999.

Intent to Comply (NIC) no later than October 2, 2000 and conduct a NIC public meeting no later than July 31, 2000. The NIC and its associated public meeting served four primary purposes during the early implementation and compliance phases of the Phase I subpart EEE requirements which we believe were of benefit to regulators, sources and the public alike.

First, the NIC served as a compliance planning tool for Phase I sources because it required you to develop an outline of the key activities that needed to be completed in order to meet the subpart EEE standards by the compliance date. It also required that you include the estimated dates for each of those key activities. Because the NIC was required to be completed within the first year of implementing the Phase I requirements, it also may have had the added and important benefit of encouraging sources to reduce their HAP emissions early. By focusing a source's attention on the means by which it would achieve compliance well before the actual compliance date, the NIC may have prompted some sources to upgrade their combustion design and operations earlier, thereby yielding an early reduction in HAP emissions. The NIC also may have prompted earlier waste minimization efforts for the same reason.

Second, the NIC also served as a planning tool for regulatory authorities. Based on the information provided in the NIC, regulators could determine what activities were likely to occur and when over the course of the three-year compliance period. For example, they could estimate how many sources needed to modify their combustion units and existing RCRA permits prior to performance testing, how many sources intended to stop burning hazardous waste, and how many sources intended to apply for the comparable fuels exclusion. Using this information, regulators could plan how to most efficiently allocate their resources in response to the forthcoming compliance activities of the sources.

Third, the NIC promoted early public involvement by fostering an open dialogue between sources and the public regarding compliance strategies for meeting the Phase I subpart EEE standards. Experience has shown that members of the public are interested in being kept adequately informed of and having input into the compliance and permitting activities of hazardous waste combustion facilities. The NIC and its associated public meeting provided an opportunity for the public to share their views, thereby allowing the source to develop a final compliance strategy that met the goals of both the source and the surrounding community.

Fourth, the public involvement aspect of the NIC also offset any public participation opportunities that may have been "lost'' if sources chose to take advantage of the RCRA streamlined permit modification process. Many Phase I sources had to modify their combustion systems' design and/or operations in order to comply with the MACT standards. Sources that were already operating under RCRA combustion permits needed to first modify those permits before initiating any MACT compliance related changes. Normally, a Class 2 or 3 modification would be necessary to incorporate into a RCRA permit the types of changes we expected would be necessary for sources complying with Phase I standards. Given that Class 2 and 3 modifications could have consumed a year or more of a source's three-year subpart EEE compliance period, we developed a streamlined permit modification process solely for the purpose of implementing subpart EEE upgrades. Under the streamlined process, you could request a Class 1 modification with prior Agency approval to address and incorporate any necessary MACT upgrades into your RCRA permit. To be eligible to use the streamlined permit modification, however, you first must have complied with the NIC requirements, including those related to public involvement.

2. What Happened to the NIC Provisions?

We promulgated the NIC on June 19, 1998 (63 FR 33782) along with several other requirements related to the Phase I NESHAP. On May 14, 2001, we removed the NIC and two other provisions from the federal regulations in response to a court mandate to vacate. See 66 FR 24270. In *Chemical Manufacturers Ass'n* v *EPA,* 217 F. 3d 861 (D.C. Cir. 2000), the court vacated three provisions of the Phase I rule: the Early Cessation requirement, the NIC and the Compliance Progress Report.[211] While the panel majority held that we possessed the legal authority to impose an Early Cessation requirement, the panel also held that we had claimed the authority to do so without making a showing of a health and environmental benefit (such as reduced HAP emissions or less hazardous waste generated) and that this was an impermissible statutory interpretation. See 217 F. 3d at 865–67. The panel majority further held that because it could not determine whether we would have promulgated the NIC and Progress Report requirements absent the Early Cessation provision, both the NIC and Progress Report requirements should be vacated as well. However, the panel did agree to issue a stay of its mandate for a long enough period of time to allow sources to submit their NICs so that they would be eligible for the RCRA streamlined permit modification.

As discussed above, the NIC was intended to serve as a compliance planning and communication tool. We did not intend the NIC to serve as the basis for requiring a source to cease burning hazardous waste. However, as a planning and communication tool we expected sources that did not intend to comply with the standards to state this in their NIC and include a schedule of activities that the source would need to complete in order to stop burning hazardous waste within the two-year Early Cessation time frame. We believe that the court recognized this interpretation as our original intent in their agreement to stay their issuance of the mandate until after sources had submitted their final NICs on October 1, 2000. By allowing the Phase I sources to complete the NIC process, the court provided sources with the opportunity to effectively plan their compliance strategies and take advantage of the RCRA streamlined permit modification. It also provided the public with the opportunity for a level of participation that they may not have had otherwise.

3. Why Is EPA Proposing To Re-Institute the NIC for Phase I Sources?

As stated above, we believe that the NIC was a valuable planning and communication tool for sources, regulators, and the public during the early implementation and compliance stages of the 1999 Phase I subpart EEE requirements. The NIC also provided an additional benefit to sources upgrading their combustion systems by compensating for any "lost'' public participation opportunities when using the RCRA streamlined permit modification process. As discussed in Part One, I. B and D, we are proposing in today's notice to supplant the existing Phase I standards with final Replacement standards. We anticipate that a significant number of Phase I sources may need to conduct additional upgrades, or in some cases upgrade for the first time, to comply with the Replacements standards. See

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[211] Under the Early Cessation provision, we required sources that did not intend to comply with the Phase I standards to stop burning hazardous waste within two years of the effective date of the Phase I rule. Under the Compliance Progress Report provision, we required sources to report to their regulatory agencies the status of their progress toward compliance with the standards.

§§ 63.1219, 63.1220, and 63.1221. Re-instituting the NIC for these sources could provide the same planning and communication benefits during the initial Replacement standards compliance period that it did for the original Phase I standards.

Specifically, we expect that by focusing attention early on the necessary tasks and strategies for achieving compliance, Phase I sources will be in a better position to meet the Replacement standards by the compliance date. Regulators will gain insight from the information provided in the NIC to effectively allocate their resources to accommodate future regulatory activities. And, the NIC will provide the public with the opportunity and mechanism to keep abreast of any significant changes an existing source might need to make as a result of the Replacement standards. We do not believe that the same planning and communication opportunities gained from completing the NIC process are available from other portions of the air regulatory program. For example, although the public will be notified of a source's obligation to comply with the Replacement standards during the reopening or renewal of the source's title V, this notification, in most cases, will not occur as early in the three-year subpart EEE compliance period, nor is it likely to include the specific information regarding the source's compliance strategy.[212]

In addition, while we believe that there will be fewer Phase I sources in the position of having RCRA combustion permit conditions after demonstrating compliance with the Interim standards, for those that do and wish to use the streamlined permit modification process to allow any necessary Replacement standards upgrades, a second NIC would provide the same public participation benefits as did the first NIC.[213] 40 CFR 270.42(j) currently allows a source to use the RCRA streamlined modification process provided that the source first complied with the NIC requirements that were in place prior to October 11, 2000. Since many sources complied with those NIC requirements in 1999 and 2000, the existing regulatory language would allow those same sources to further modify their RCRA permits for Replacement standards upgrades. The regulatory language does not make any distinction regarding when the upgrades are to take place in relation to when the NIC requirements were to have been fulfilled. We do not believe that it is appropriate for a source to rely on previous informational and public participation activities carried out to comply with the earlier NIC requirements and emission standards to address upgrades occurring years later in response to a different set of standards any more than it would be appropriate to allow the public participation activities of a previous RCRA modification to suffice for a later modification. By requiring sources that choose to use the RCRA streamlined permit modification process for Replacement standards upgrades to first complete a NIC, including its associated public meeting, that specifically addresses those Replacement standards upgrades, the community will be kept better informed of additional changes to the combustion system and the impact on the RCRA permit.

4. Why Is EPA Proposing To Require the NIC for Phase II Sources?

We believe that the NIC would provide the same benefits with respect to communication and compliance strategy planning for the Phase II sources that it has for Phase I sources. In addition, without completing the NIC process, Phase II sources will not be eligible to take advantage of the RCRA streamlined permit modification when upgrading their combustion systems. We are proposing that Phase II sources comply with the same NIC requirements as their Phase I counterparts.

5. How Will the NIC Process Work?

We are proposing to apply a similar NIC process to that which we promulgated in the June 19, 1998 “fast track'' rule (63 FR 33782). The following is a general description of that process. Within nine months of the promulgation of the final Phase I Replacement standards and Phase II standards, you would develop and make publicly available a draft NIC. The draft NIC would contain general information such as whether you are a major or an area source and what waste minimization, emission control techniques, and emission monitoring techniques you might be considering. At the same time, you would also provide a notice to the public of at least one informal NIC public meeting. Within ten months, you would hold this public meeting to discuss the activities you described in the draft NIC for achieving compliance with the subpart EEE standards. The meeting provides an opportunity for a mutual understanding between you and the public regarding compliance options, including consideration of both technical (*e.g.*, equipment changes to upgrade air pollution control devices) and operational (*e.g.*, process changes to minimize waste generation) alternatives. We expect the exchange between you and the community at the meeting to be similar to that which would occur at RCRA pre-application meetings. That is, we intend for the meeting to provide an open, flexible and informal occasion for you and the public to discuss various aspects of your compliance strategy, provide an opportunity for sharing ideas and provide an opportunity for building a framework for a solid and positive working relationship. Lastly, you would submit a final NIC to your regulatory authority that would include the information provided in the draft NIC (revised as necessary after the public meeting) as well as a summary of the public meeting. This final NIC would be submitted to your regulatory authority within one year of the promulgation of the final Phase I Replacement standards and Phase II standards.

In summary, we believe that the NIC would provide important planning and communication opportunities for both Phase I and Phase II sources. It also would allow all Phase I, as needed, and Phase II sources to take advantage of the RCRA streamlined permit modification procedure. Thus, we are proposing NIC requirements for both Phase I and Phase II sources.

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[212] If a major title V source has a remaining permit term of three or more years on the date the Replacement standards are promulgated, the title V permitting authority must complete a reopening of the source's title V permit to incorporate the requirements of these standards not later than 18 months after promulgation. Major sources having remaining permit terms of less than three years on the date the Replacement standards are promulgated may wait until permit renewal to incorporate the new standards. Area sources with title V permits likewise may wait until permit renewal. Permitting authorities must follow the same public notice procedures for title V permit reopenings and renewals as is required for initial permit issuance under title V, including providing public notice of the action, providing a public comment period of at least 30 days, and providing an opportunity for a public hearing. See 40 CFR 70.7 and 71.7.

[213] Once a source conducts its CPT and submits an Notification of compliance documenting compliance with the Subpart EEE standards, the source may request that its RCRA permit be modified to remove any duplicative limits or conditions. Only those risk-based provisions that are more stringent than the MACT requirements as specified in the Notification of compliance or that address other emission hazards will remain in the RCRA permit. We expect that many sources will document compliance with the Phase I Interim standards between 2003 and 2004 and will request the removal of any duplicative, less stringent provisions from their RCRA permits shortly thereafter.

6. What Is the Compliance Progress Report?

In addition to the NIC, we also promulgated Compliance Progress Report requirements in the 1998 "fast track'' rule. See 63 FR 33782. The purpose of the Progress Report was to help regulatory agencies determine if sources were making reasonable headway in their efforts to come into compliance. The Progress Report was required to be submitted at the midpoint of the three-year compliance period and contain information that essentially built on the information you previously provided in the NIC. For example, if you indicated in the NIC that you needed to make specific physical modifications to your combustion system in order to comply with the standards, you would be expected to describe your progress in making those modifications in your Compliance Progress Report. Although the Progress Report was primarily intended as a tool for the regulatory agencies, we believe it also may have been beneficial to sources as well. For example, the Progress Report could have been used by sources as a mechanism to review and make any necessary changes to their original strategy for achieving compliance.

As discussed in the previous section, the Court vacated the early cessation, NIC and Compliance Progress Report provisions of the Phase I rule in *Chemical Manufacturers Ass'n* v *EPA,* 217 F. 3d 861 (D.C. Cir. 2000). Although the Court's primary focus was the early cessation provision, it also vacated the Progress Report requirements because it could not determine whether we would have promulgated those requirements absent the early cessation provision.

7. Why Is EPA Requesting Comment on Requiring the Compliance Progress Report for Phase I and Phase II Sources?

We believe that the Progress Report would be a useful tool for both regulators and sources in measuring progress toward achieving compliance with the Subpart EEE standards and determining if any revisions to a source's compliance strategy are necessary. Unlike the NIC, however, we do not have practical experience with the application of the Compliance Progress Report, because the Court vacated its requirements prior to their implementation. As a result, we are requesting comment on whether or not the Compliance Progress Report should be required for Phase I or Phase II sources.

8. How Would the Compliance Progress Report Requirement Work?

The Compliance Progress Report requirements would be similar to those promulgated for Phase I sources in the June 19, 1998 "fast track'' rule (63 FR 33782). Within two years of the promulgation of the final standards, you would develop and submit to your regulatory authority a Compliance Progress Report. The Report would include information which demonstrates your progress toward compliance. This could include, for example, completed engineering designs for any physical modifications to the combustion unit that are needed to comply with the standards; copies of construction applications; and binding contractual commitments to purchase, fabricate, and install any necessary equipment, devices, and ancillary structures. In addition, you would be expected to include a detailed schedule that lists the dates for all remaining key activities and projects that will bring you into compliance with the standards. For example, you would include bid and award dates for construction contracts, milestones for groundbreaking, and dates for the approval of permits and licenses. We would also expect you to include in your report any updates or changes to the information you previously provided in your NIC, including if you have changed your compliance plan based on engineering studies or evaluations that you have conducted since your NIC submittal.[214] Sources that intend to cease burning hazardous waste prior to or on the compliance date would still be expected to submit a report describing key activities and projected dates for initiating RCRA closure and discontinuing hazardous waste activities at the combustion unit.

XVII. What Are the Title V and RCRA Permitting Requirements for Phase I and Phase II Sources?

In today's notice of proposed rulemaking, we are maintaining the same general approach we took in the 1999 rule with respect to title V and RCRA permitting requirements and the Phase I sources. We feel that this approach, to place the MACT air emissions and related operating requirements in the title V permit and to continue to require RCRA permits for all other aspects of the combustion unit and the facility that are governed by RCRA, is still the most appropriate method to meet our obligations under both statutes. In 1999, our goal in developing a permitting scheme to accommodate both statutes with respect to air emission limitations and standards, was to avoid duplication to the extent practicable and to streamline requirements. We remain committed to that goal, as we revise and refine the permitting approach we finalized in 1999.

A. What Is the General Approach To Permitting Hazardous Waste Combustion Sources?

In the September 1999 rule, we finalized a permitting approach that places the MACT air emissions and related operating requirements in the title V permit and retains all other RCRA related requirements (*e.g.*, corrective action, general facility standards, other combustor specific concerns such as material handling, risk-based emission limits and operating requirements, and other hazardous waste management units) in the RCRA permit. See 64 FR 52828, 52833–52834 (September 30, 2000). Under this approach, sources comply with their RCRA emission limits and operating requirements until they demonstrate compliance with the MACT standards by conducting a comprehensive performance test and submitting a Notification of Compliance (NOC) to the Administrator (or authorized State) that documents compliance.[215] Upon documenting compliance through the NOC, sources may begin the transition from RCRA permitting to title V permitting.

We believe that this approach still makes the most sense in terms of providing flexibility and minimizing duplication between the two permitting programs, while ensuring that there is no break in regulatory coverage. It is also appropriate given where sources will be in the transition process of complying with the MACT Interim Standards upon promulgation of the Phase I Replacement standards and the Phase II standards. The majority of Phase I sources will have initiated a

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[214] For example, if you reported in your NIC that you intended to upgrade your existing unit, but later determined that it was more appropriate to replace the unit with a new unit, we would expect you to inform your regulatory agency of this change in your compliance plan in your Compliance Progress Report.

[215] There is no change to our decision to subject Phase I area sources to the same MACT standards and title V permitting requirements as the major sources. For Phase II sources, area sources are required to meet the same MACT standards as major sources, but only for: dioxin/furan, mercury, carbon monoxide/hydrocarbons, and destruction and removal efficiency. See Part Two, Section I.A. for more information on regulation of area sources. Therefore, Phase II area sources will be required to obtain a title V permit only for those MACT standards as discussed later in Paragraph C.4. of this section.

significant modification of their title V permits to include the operating requirements of their NOC and a modification of their RCRA permits to remove duplicative conditions. By this time, permitting authorities and sources are familiar with the current permitting approach and have worked through many issues to make compliance with the Interim Standards and the ensuing transition successful. We feel that permitting authorities and sources would prefer to draw upon their experiences and utilize the expertise they have developed, rather than exploring ways to implement a new permitting scheme. Therefore, we are retaining the same general approach to permitting for Phase I sources and are proposing to apply this same general approach to Phase II sources in today's Notice of proposed rulemaking: to place the MACT emission standards only in the CAA regulation at 40 CFR part 63 subpart EEE, and rely on implementation through the air program and operating permit programs developed under title V.

1. What Is the Authority for the Proposals Discussed in This Section?

EPA is issuing these proposals to modify RCRA permits under the authority of sections 1006(b), 2002, 3004, 3005 and 7004(b) of RCRA. With regard to the regulatory framework that would result from today's proposal, we are proposing to eliminate the existing RCRA stack emissions national standards for hazardous air pollutants for hazardous waste combustors. That is, after submittal of the NOC established by today's rule and, where applicable, RCRA permit modifications at individual facilities, RCRA national stack emission standards will no longer apply to these hazardous waste combustors. We originally issued emission standards under the authority of section 3004(a) and (q) of RCRA, which calls for EPA to promulgate standards "as may be necessary to protect human health and the environment.'' We believe that the proposed MACT standards are generally protective of human health and the environment, and that separate RCRA emission standards are not needed to protect human health and the environment. Refer to Part Four, Section IX. *How Does the Proposed Rule Meet the RCRA Protectiveness Mandate?* for a discussion on this topic.

In addition, RCRA section 1006(b) directs EPA to integrate the provisions of RCRA for purposes of administration and enforcement and to avoid duplication, to the maximum extent practicable, with the appropriate provisions of the Clean Air Act (and other federal statutes). This integration must be done in a way that is consistent with the goals and policies of these statutes. Therefore, section 1006(b) provides further authority for EPA to eliminate the existing RCRA stack emissions standards to avoid duplication with the new MACT standards.

We are not proposing, however, that RCRA permit conditions to control emissions from these sources will never be necessary, only that the national RCRA standards appear to be unnecessary. Under the authority of RCRA's "omnibus'' clause section 3005(c)(3); see 40 CFR 270.32(b)(2)), RCRA permit writers may impose additional terms and conditions on a site-specific basis as may be necessary to protect human health and the environment. Thus, if MACT standards are not protective of human health and the environment in an individual instance, RCRA permit writers will establish permit limits that are protective.

In RCRA, Congress gave EPA broad authority to provide for public participation in the RCRA permitting process. Section 7004(b) of RCRA requires EPA to provide for, encourage, and assist public participation in the development, revision, implementation, and enforcement of any regulation, guideline, information, or program under the Act.

2. Is EPA Proposing a Different Permitting Approach for New Sources?

As discussed above, we are maintaining the same general permitting approach as before. However, we are proposing to eliminate the unintended result of the previous regulatory construct, which caused new sources to initially be subject to the RCRA air emission and operating requirements. In particular, we want to specify that any hazardous waste burning incinerators, cement kilns, lightweight aggregate kilns, boilers, and hydrochloric acid production furnaces newly entering the RCRA permitting process (*e.g.*, sources that are seeking an initial RCRA permit or permit modification to include a new hazardous waste combustion unit) after promulgation of the Phase I Replacement standards and Phase II standards are not subject to certain specified RCRA permit requirements or performance standards. The approach we are proposing today is similar to the one we proposed in the July 3, 2001, proposed amendment rule (see 66 FR 35146), but was not finalized. The amendment was not finalized due to several unresolved issues and thus, it was agreed (during litigation settlement discussions), that we would revisit and address the issues in the Phase I Replacement standards and Phase II standards rulemaking.

a. Why Is EPA Proposing a Different Permitting Approach for New Sources? In the September 1999 rule, we had amended language in 40 CFR 264.340, 265.340, 266.100, 270.19, 270.22, 270.62, and 270.66 to accommodate the permit transition from RCRA to the CAA. To summarize, the amended language in these sections says that once a source demonstrates compliance with the standards in 40 CFR part 63 subpart EEE, the requirements in specified part 264, 265, 266, and part 270 sections would no longer apply. However, the amended language neglected to specifically address if, how, or when new sources would make the transition from RCRA permitting requirements to CAA MACT requirements.

As we discussed in the preamble to the July 3, 2001, proposed amendments, under RCRA, new sources must obtain a permit or a permit modification before they may start construction of a new source/unit. The way the current part 270 language reads, new sources subject to the 1999 rule and the Interim Standards rule are not able to demonstrate compliance with the part 63 standards until after a RCRA permit is issued, the source is built, and they conduct performance testing. This means they would have to submit a trial burn plan with their RCRA permit application and also submit suggested conditions for the various phases of operation—start-up/shake-down, trial burn, and post-trial burn. Likewise, RCRA permitted facilities that are adding a new combustion source would have to provide the same information with their permit modification request. Whether the source is new or adding a new combustion source, the permit writer would have to review this information and write conditions into the RCRA permit governing all phases of combustor operations. This expenditure of resources, on the part of the source and the permitting agency, is unnecessary given that the conditions will become inactive or be removed from the RCRA permit upon compliance with the MACT standards. For new sources, compliance with the MACT standards is upon start-up. Therefore, today we are proposing that new sources (whether a new source or a new source at an existing permitted source) who will be subject to the Phase I Replacement standards and Phase II standards upon start-up, not follow the RCRA permitting process for establishing combustor emissions and operating requirements (*i.e.*, submission of a trial burn plan with the RCRA permit application, submission of suggested conditions for the various phases of operation—start-up/shake-down, trial burn, and post-trial burn, and ultimately obtaining a permit with operating and emission standards).

b. How Is EPA Proposing to Change the Current Requirements for New Sources? In the July 3, 2001 proposal, we developed regulatory language to clarify our intent not to require new sources to obtain a RCRA permit with respect to combustor operations and emissions. In response to that proposal, we received comments from the Sierra Club expressing concerns that the increased opportunities for public participation established in the *RCRA Expanded Public Participation Rule* (60 FR 63417, December 11, 1995) would be lost. This rule involves communities earlier in the permitting process, provides more opportunities for participation, expands public access to information, and offers guidance on how facilities can improve public participation. In a follow-up discussion with the Sierra Club, they specifically expressed interest in being able to influence decisions on the construction of hazardous waste combustors. Upon consideration, we agree with the Sierra Club that in our previous effort to streamline the RCRA permitting process for new sources, we did not fully consider that important opportunities for public participation may be lost. Although we still believe that new sources, whether a new source or an existing source adding a new source, should not be required to follow the RCRA permitting process, we also believe that the Sierra Club's concerns have merit. It makes sense to afford the public the same (or as close as possible) public participation opportunities for new units under the HWC MACT/CAA framework that they had under the RCRA regulations. Therefore we are modifying our earlier proposal as discussed in the paragraphs below, to consider several options that will attempt to address these concerns, as well as provide a means to improve the existing regulatory requirements for new sources.

The RCRA Expanded Public Participation Rule implemented four new requirements for facilities and permitting agencies that enable communities to become more active participants throughout the permitting process. They are: (1) Permit applicants must hold an informal public meeting before applying for a permit; (2) permitting agencies must announce the submission of a permit application which will tell community members where they can view the application while the agency reviews it; (3) permitting agencies may require a facility to set up an information repository at any point during the permitting process if warranted; and (4) permitting agencies must notify the public *prior* to a trial (or test) burn. Consequently, we will focus on each of these and propose mechanisms that mirror or fulfill the RCRA public participation requirements.

We stated earlier in this section that under RCRA, new sources must obtain a permit (or a permit modification at an existing source) before they may start construction of a new source. This holds true regardless of whether we finalize an approach that does not require new sources to obtain a RCRA permit that contains the combustor operating and emissions standards (*i.e.*, a RCRA permit will still be required to address all other activities at the facility including corrective action, general facility standards, other combustor specific concerns such as material handling, risk-based emission limits and operating requirements, and other hazardous waste management units). So, in applying for a RCRA permit, new hazardous waste facilities/sources will still be required to meet the public participation requirements. However, the problem arises if new sources are not required to provide information relative to the combustor (*i.e.*, sources were formerly, at this point in the process, required to submit a trial burn plan), but only for the other proposed hazardous waste management activities at the source. Thus, the source would not be required to discuss the proposed combustor-specific operations and emissions at the informal public meeting, nor would the permit application that is made available to the public to review, contain information regarding the combustor operations or emissions.

In an effort to provide an opportunity for public participation equivalent to RCRA, we believe that the Notification of Intent to Comply (NIC) requirements, as proposed in Part Two, Section XVI.B., serve in place of the first two RCRA public participation requirements. The primary functions of the NIC are to serve as a compliance planning tool and to promote early public involvement in the permitting process. In terms of compliance planning, the draft NIC must contain general information including the waste minimization, emission control, and emission monitoring techniques that are being considered and how the source intends to comply with the emission standards. With regard to early public involvement, a draft of the NIC must be made available to the public for review within 9 months of the effective date of the final Replacement Standards and Phase II Standards rule. One month later, the source must hold an informal public meeting to discuss the activities described in the NIC. The NIC requirements apply to new sources as well (see § 63.1212(b)(1) in today's Notice), but the timing will vary according to the date a new source begins burning hazardous waste. For example, if a new source begins burning 3 months after the rule's effective date, then it will have only 6 months before it must prepare and make a draft NIC available for public review.[216] More significantly, according to 40 CFR 63.1212(b)(2), as proposed in today's Notice, new sources that are to begin burning more than 9 months after the effective date of the final rule will be required to meet all of the NIC and Compliance progress report requirements in §§ 63.1210(b) and (c), 63.1211(c), and 63.1212(a) prior to burning hazardous waste.

We feel that the NIC requirements are commensurate with the public participation requirements to hold an informal public meeting to inform the community of the proposed combustor operations and to make the compliance information available for public review and comment. On the other hand, we also recognize that there are a few gaps. For instance, the NIC requirements are not associated with a permit action and the regulatory agency is not required to be present at the NIC public meeting. We would, however, expect the source to consider any comments raised during the NIC process as it develops its final compliance strategy and final NIC.[217] Also, if a new source begins burning after the effective date of today's rule, but prior to 9 months after the effective date, the NIC is not required to be made available for public review before a new source begins burning. In other words, the public is not provided information relative to the combustor's operations, emissions, and compliance schedule prior to it beginning operations. Given these gaps, we are proposing a scenario in which the NIC requirements for new sources under MACT, could be crafted

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[216] Note that new sources must have prepared and included their documentation of compliance in the operating record upon start-up. New sources then have 6 months from the date of start-up to begin their comprehensive performance test.

[217] If necessary, concerns raised regarding the regulation of the combustor can be addressed through application of RCRA's omnibus provision (RCRA section 3005(c)(3)).

to achieve a comparable level of public participation as under RCRA.

We are proposing to require that all new sources prepare a draft NIC and make it available to the public at the same time as their RCRA pre-application meeting notice. We also propose that new sources submit their comprehensive performance test plan at this time. By submitting the NIC and CPT plan together, the public would be provided with compliance-related information relevant to the combustor as well as the proposed combustor operations and emissions (*i.e.*, the public is provided testing information through the CPT that they would have received via the trial burn plan). Lastly, as part of this option we propose that the NIC public meeting coincide with the informal public meeting for the RCRA permit. By holding a simultaneous meeting, the public is given the opportunity to inquire and comment on both the source's proposed activities and the combustor's proposed operations with regulatory officials from both the Air and RCRA programs present. We request comment on this discussion.[218]

With respect to the information repository regulations at 40 CFR 124.33, the purpose of the information repository is to make information (*i.e.*, documents, reports, data, and information deemed necessary) available to the public during the permit issuance process and during the life of a permit. While the Title V permit procedures specify that information relevant to the permitting decision be made available to the public,[219] this information would not be accessible prior to construction or operation of the combustor. Under RCRA, the information repository would be established some time after submission of the permit application, but before construction and operation of the combustor. Even though an information repository is not a required component of the RCRA permit process, the regulations provide a permitting agency with the discretion to evaluate the need for and require a source to establish and maintain one. Therefore, so that the public is afforded the same opportunities to view and copy information such as the NIC, test plans, draft Title V permit and application, reports and so forth under MACT, we are considering two options. We could include a provision similar to § 124.33 in the NIC regulations for new sources. It would allow a regulatory agency, on a case-by-case basis, to require a source to establish an information repository specific to the combustor. We believe the NIC regulations are a suitable location to place such a provision, since the NIC is the first opportunity for the public to discuss the combustor operations and emissions. Alternatively, rather than incorporate provisions for an information repository in the NIC regulations, the applicability language in § 124.33 could be amended to include new combustion sources that will comply with Part 63, subpart EEE upon start-up. We request comment on this discussion.

The last RCRA public participation requirement requires the permitting agency to notify the public prior to a trial burn or test burn at a combustion facility. If new sources are not required to follow the RCRA permitting process with respect to combustor emissions and operations, they also would not be required to submit a trial burn plan with their permit application or conduct a trial burn. However, under MACT, new (and existing) combustion sources are required to submit performance test and continuous monitoring system (CMS) performance evaluation test plans for approval. The MACT performance test serves the same purpose as the RCRA trial burn test: To demonstrate compliance with the relevant emission standards and to collect data to determine at what levels the corresponding operating conditions should be set. Similar, but not identical to the RCRA requirements at 40 CFR 270.62 and 270.66 requiring the permitting agency to notify the public prior to a trial/test burn, the MACT performance test regulations (see § 63.1207(e)(2)), specify that a source must issue a public notice announcing the approval of the test plans and provide a location where the public may view them. Although the timing of the public notices are slightly different, the regulations both provide notice to the public about testing. Under RCRA, notice is given to the public prior (usually 30 days) to commencement of the trial burn, whereas under MACT, notice is given when the test plans are approved. The newly amended regulations of § 63.1207(e)(2) proposed in this Notice, specify that sources must make the test plans available for review at least 60 days prior to commencement of the test and must provide the expected time period for commencing (and completing) the test. Thus, the public is informed of the test and provided estimates of test dates through public notice of the approved test plan.

Thus far, the approach we have proposed is intended to ensure that the public will have the same opportunities for participation and access to information as they would if new sources continued to be subject to the RCRA permit process to include the combustor emission and operating requirements. By proposing that new sources not be required to obtain a RCRA permit with combustor emission and operating requirements, it provides for the smoothest and most practical transition from RCRA requirements to MACT requirements.[220]

Aside from the approach we have focused on, there are others that may be worthy of consideration. We can also look at the option of a transition point for new sources that would specify how far a new source would proceed down the RCRA permit path before it could "transition'' over to compliance with the MACT standards and CAA permitting. There are three additional options we can consider relative to a transition point: (1) After the RCRA Part B application is submitted; (2) after the RCRA permit is issued; and (3) after the source places its Documentation of Compliance (DOC) in the operating record.

Beginning with the first option, each successive one moves in the direction toward the way new sources currently make the transition from RCRA to MACT and includes modifications to the RCRA information requirements. We envision each of these options to be a variation of the current RCRA permit process. Under the first option, the transition point would occur after the source submits its RCRA Part B application. The key to this option is that the source would be subject to the public participation requirements of 40 CFR 124.31 and 124.32, to hold an informal public meeting and to have the submission of the permit application noticed. However, new sources would

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[218] Since the public participation requirements of 40 CFR 124.31 and 124.32 only apply to initial RCRA permits and renewals with significant changes, a corresponding regulatory amendment would need to be made to the applicability paragraphs to include modifications to RCRA permits only for new combustion sources that will comply with Part 63, subpart EEE upon start-up. Also, 63.1212(b) would need to be amended to reference §§ 124.31 and 124.32.

[219] 40 CFR § 70.7(h)(2) requires that information including the draft Title V permit, the application, all relevant supporting materials, and other materials available to the permitting authority that are relevant to the permit decision, be made available to interested persons.

[220] This approach does not eliminate the possibility that some combustor-specific requirements may be retained in the RCRA permit such as: Risk-based conditions, compliance with an alternative MACT standard, compliance with startup, shutdown and malfunction events under RCRA rather than the CAA, *etc.* See section XVII, D.2. for a more complete discussion. Consequently, sources would be expected to include the applicable RCRA conditions in their RCRA permit application.

not be required to include the combustor's operation and emission information in the Part B application. Rather, the source would only be required to discuss the compliance-related activities related to the combustor as part of the informal public meeting. For the second option, the transition point would be after the permitting agency issues the RCRA permit. The source would not only discuss the combustor's compliance-related activities as part of the RCRA informal public meeting as in the first option, but it would also address the operations and emissions through development of a trial burn plan, or a CPT plan in lieu of the trial burn plan, or even a coordinated CPT/RCRA trial burn plan, if it is likely that the source will require some RCRA permit conditions (*i.e.*, risk-based conditions). With this option, even though all activities pre-permit issuance must address the source and the combustor's operations and emissions, the approved permit would not contain the operating and emission requirements (with the exception of risk-based or alternative standards). For the third option, the transition point would be after the source places its DOC in the operating record, which indicates the source's compliance with the MACT standards. Basically, the source would proceed down the RCRA permit path as in option two by complying with the public participation requirements, submitting a trial burn plan/CPT plan/ coordinated plan, suggesting conditions for the various phases of operation, and receiving a RCRA permit. However, in this option, the permit would need to address combustor operations and emissions to the extent that it would cover the construction and start-up/ shakedown periods.

With respect to the public participation requirements, all three options automatically factor in the first two RCRA public participation requirements (by virtue of where the transition would be made). However, we did not discuss how we would account for the remaining two public participation requirements. We believe that the information repository and the notification of a trial burn requirements can be addressed in the same manner as we discussed in our proposed approach. So, for these options, we would incorporate an appropriate requirement, either through the NIC regulations or the public participation regulations, that would allow for an information repository to be established. Regarding the notice of a trial burn, we believe that the notice of the performance test is equivalent.

In summary, our proposed approach involves modifying the NIC provisions to include RCRA public participation requirements. The second group of options consider a range of transition points that are also worthy of consideration. We invite comment on this discussion.

3. What Are the Proposed Changes to the RCRA Permitting Requirements That Will Facilitate the Transition to MACT?

To alleviate potential conflicts between the RCRA permit requirements and MACT, we are proposing an additional streamlined permit modification provision, requiring prior Agency approval, which would allow an existing RCRA permit to be better aligned with specific provisions contained in the Subpart EEE requirements. The intent of this provision is to reduce potential burdens associated with compliance with overlapping RCRA and MACT requirements, while still maintaining the overall integrity of the RCRA permit.

a. How Will the Overlap During Performance Testing Be Addressed? When we finalized the performance test requirements and the changes to the RCRA permitting requirements in the September 30, 1999, rule, we did not consider how sources would conduct their performance tests while at the same time, maintain compliance with their RCRA permit requirements. For instance, during the performance test, a source will likely want to conduct testing at the edge of the operating envelope or the worst case for certain parameters to ensure operating flexibility. This could conflict with established operating and emissions limits required in the source's RCRA permit and consequently, prevent the source from optimizing its testing range.

Currently, sources have three options that would allow them to resolve any potential conflicts between their performance test and their RCRA permit requirements. One option would be for a source to submit a RCRA Class 2 or 3 permit modification request to temporarily change or waive specific RCRA permit requirements during the MACT performance test (see § 270.42, appendix I, L.5). Another option would be for a source to request approval for such changes through its RCRA trial burn plan or coordinated MACT / RCRA test plan (see § 270.42, appendix I, L.7.a. or d.). In this case, a source could include proposed test conditions in its plan to temporarily waive specific RCRA permit requirements during the test. The last option would be for a source to request a temporary authorization that would allow specific RCRA permit requirements to be waived for a period of 180 days (see § 270.42(e)).

We do not believe that any of the options discussed above provide an optimal solution to resolving conflicts between a source's performance test protocol and its RCRA permit operating and emissions limits. A Class 2 or 3 RCRA permit modification may not be an option for many sources due to the time typically involved in processing these requests. Sources that choose to modify their permits would need to do so well in advance of conducting their performance test to ensure that the modification would be processed in time to conduct the test on schedule. This may result in sources submitting modification requests prior to approval of their performance test plans. We believe that RCRA permit writers are unlikely to approve any modifications to RCRA permit requirements without the assurance that the source will be operating under an approved test plan. Resolving conflicts using a trial burn or coordinated test plan is not a viable option for a source that has already completed its trial burn/risk burn testing. Lastly, while a temporary authorization is relatively streamlined, it is meant to be used in unique cases affecting an individual facility. We believe that it is most logical and easily implemented to propose a modification that can be used consistently to remedy a common problem affecting an entire group of facilities with similar operations (*e.g.*, hazardous waste burning combustors facing barriers to testing due to RCRA permit requirements). Therefore, in today's Notice, we are proposing to allow sources to waive specific RCRA permit operating and emissions limits during pretesting, initial, and subsequent performance testing through a new streamlined permit modification procedure.[221]

We believe that a process for waiving specific RCRA permit requirements during performance testing is consistent with our objectives to streamline requirements and minimize conflicts between the RCRA and CAA programs without sacrificing the protections afforded by RCRA. Moreover, we view this new permit modification to be complementary to the provisions of § 63.1207(h) for waiving operating parameter limits (OPLs) during

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[221] For subsequent performance tests, we anticipate that this modificaiton would be useful for sources that may have risk-based or alternative requirements in their RCRA permits.

performance testing. In the February 14, 2002 final amendments rule, we reiterated that OPLs in the Documentation of Compliance (DOC) may be revised at any time to reflect testing parameters for the initial performance test prior to submission of the NOC and so, in effect, are automatically waived. Also, we revised the language in § 63.1207(h)(1) and (2) to not require that subsequent performance test plans be approved in order to waive OPLs, but rather that sources only record the emission test results of the pretesting.

b. Are There Other Instances Where the New Streamlined Permit Modification Can Be Used? In addition to our efforts today to minimize overlapping permit requirements during performance testing, we are also proposing to allow the new streamlined permit modification to address other potential conflicts. In implementing the 1999 rule, it has become clear that there are several other instances when conflicts may arise where RCRA permit requirements overlap with MACT requirements. For example, the required averaging period for an operating parameter might be slightly different between MACT and the RCRA permit, requiring two different data acquisition schemes during the interim period between submittal of the Documentation of Compliance (DOC) and the final modification of the RCRA permit after receipt of the NOC. Or, if a RCRA permit requires periodic emissions testing, the specified test schedule in the permit might not be aligned with the required test schedule for MACT, causing a facility to perform duplicate testing instead of allowing a single coordinated RCRA/MACT test event. Conflicts in operating limitations, monitoring and recordkeeping requirements, and scheduling provisions can be especially prevalent during this interim period. Consequently, we believe the new streamlined permit modification procedure would be appropriate to address these probable overlaps.

c. Why Is a New Streamlined Permit Modification Procedure Being Proposed? This new streamlined modification differs from the one we finalized in the June 1998 “fast track’’ rule (63 FR 33782). In 1998, we provided for a streamlined RCRA permit modification process whereby you could request a Class 1 modification with prior Agency approval to address and incorporate any necessary MACT upgrades into your RCRA permit (see 40 CFR 270.42, appendix I, L(9)). The streamlined permit modification provision, which was intended solely for the purpose of implementing physical or operating upgrades, allowed sources that were already operating under RCRA combustion permits to modify their combustion systems’ design and/or operations in order to comply with the MACT standards without having to obtain a Class 2 or 3 RCRA permit modification. Thus, L(9) was not intended to account for overlapping requirements. Further, to be eligible to use L(9), you first must have complied with the NIC requirements, including those related to public involvement. Refer to Part Two, Section XVI for a discussion of the NIC.

However, similar to the streamlined modification we finalized as L(9), we feel that this new streamlined modification warrants a Class 1 modification with prior Agency approval. We feel that a Class 1 is appropriate considering that: we do not expect that there would be significant changes when requesting certain RCRA permit requirements to be waived; it would be applicable for a relatively short period of time; regulatory oversight is incorporated via approval of the modification request and; the intended goal of the modification is to achieve environmental improvement ultimately through implementation of more protective standards.

d. How Will the New Streamlined Permit Modification Work? Our proposed approach allows for a waiver of specific RCRA permit requirements provided that you: (1) Submit a Class 1 permit modification request specifying the requested changes to the RCRA permit, with an accompanying explanation of why the changes are necessary and how the revised provisions will be sufficiently protective, and (2) obtain Agency approval prior to implementing the changes.[222] When utilized to waive permit requirements during the performance test, you also must have an approved performance test plan prior to submitting your modification request. (We believe that the Class 1 modification with prior Agency approval will ensure that your proposed test conditions are reasonable with respect to your existing permit limits (*i.e.* that they are sufficiently protective); and that an approved performance test plan confirms that you have met the regulatory requirements for performance test plans.)

We propose that you submit your streamlined modification request in sufficient time to allow the Director a minimum of 30 days (with the option to extend the deadline for another 30 days) to review and approve your request. For purposes of performance testing, we propose that you submit your request at the time you receive approval of your performance test plan, which is 90 days in advance of the test and coincides with the time limitations imposed on the Director for approval. Additionally, we are requiring that the waiver of permit limits only be relevant during the actual testing events and during pretesting for an aggregate period of up to 720 hours of operation. In other words, it would not apply for the duration of time allotted to begin and complete the test (*i.e.*, the entire 60 days).

As a side note, we realize that some sources may not have an approved performance test plan by the date their test is scheduled to begin because the Administrator failed to approve (or deny) it within the specified time period, which could render this new streamlined modification impractical. However, we expect that sources would petition the Administrator to waive their performance test date for up to 6 months, with an additional 6 months possible, rather than to proceed with the performance test without the surety of an approved test plan.[223]

B. How Will the Replacement Standards Affect Permitting for Phase I Sources?

1. Where Will Phase I Sources Be in Their Transition to MACT With Respect to Their RCRA Permits?

We discussed earlier that by the time the Phase I Replacement standards and Phase II standards are finalized, most Phase I sources will have completed their initial comprehensive performance test and submitted their NOC documenting compliance with the MACT Interim Standards.[224] This marks the point at which sources will begin to transition from RCRA permitting requirements to CAA requirements and title V permitting. For sources with RCRA permits, they must continue to comply with the operating standards and emission limits in their permits until any duplicative requirements are either removed through a permit modification, expire, or are automatically inactivated via a sunset clause contained in the permit. For sources operating under interim status,

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[222] Refer to the new section in the RCRA permit modification table in 40 CFR 270.42, appendix I, L(10) and new regulatory language in 270.42(k), that must be used to waive specified permit requirements.

[223] *See* 40 CFR 63.1207(e)(3) for performance test time extension requirements.

[224] Some sources will receive extensions of up to one year to conduct their initial comprehensive performance test (see 40 CFR 63.1207(e)(3)). Therefore, their transition point will occur at a later time designated by the extension.

they must comply with the RCRA interim status requirements until they demonstrate and document compliance with the MACT Interim Standards. We anticipate that sources who are in the process of renewing their RCRA permits would work with their permit writers to include sunset clauses to inactivate duplicative requirements upon compliance with the MACT Interim Standards. Given the permit actions taken during the transition period leading up to compliance with the Interim Standards, we believe that many sources will have had duplicative requirements removed from their permits by the time the Replacement Standards are promulgated. For sources that have not had their RCRA permits modified, we expect that they will proceed with a modification to remove duplicative requirements.[225]

2. Where Will Phase I Sources Be in Their Transition to MACT With Respect to Their Title V Permits?

With regard to title V permits, Phase I major and area sources were required to submit a title V permit application 12 months after the effective date of the 1999 rule—or were required to reopen existing title V permits with 3 or more years remaining in the permit term, 18 months after the effective date—to include the MACT standards. Sources with less than 3 years remaining could wait until renewal to incorporate the 1999 standards.[226] Upon promulgation of the Interim Standards on February 13, 2002, major sources were required to reopen their permits or could wait until renewal to include the revised standards according to the same time frames mentioned above. Therefore, we expect that all Phase I sources would have title V permits containing the MACT Interim Standards and potentially, operating standards in accordance with their DOC, at the time the Replacement Standards rule is promulgated. Furthermore, most sources will have initiated a significant modification to their permits to include the revised operating requirements of their NOC. Regardless of these required compliance activities leading up to the promulgation date of the Replacement Standards rule, Phase I sources will again need to reopen within 18 months or wait until renewal to incorporate the MACT Replacement standards.

3. What Is Different With Respect To Permitting in Today's Notice of Proposed Rulemaking?

Based upon our decision to utilize the same general permitting approach as in the 1999 and Interim Standards rules, we expect sources to follow the same transition scheme as it relates to RCRA permit requirements and the CAA requirements and title V permitting for the Replacement Standards rule. One aspect, however, that was not addressed in those rules was how the permitting of new sources would be affected. Hence, we discuss approaches in this Notice of Proposed Rulemaking (see Section A.1. above) that would require them to obtain RCRA permits only for corrective action, general facility standards, other combustor specific concerns such as material handling, risk-based emission limits and operating requirements, and other hazardous waste management units at the source. Should the approach we are proposing be finalized, there may not be any operating requirements and emission standards to remove from their RCRA permits.

We also discussed a new streamline permit modification procedure in section A.2. "What Are the Proposed Changes to the RCRA Permitting Requirements that Will Facilitate the Transition to MACT?''. This new procedure allows sources to waive specific RCRA permit operating and emission limits during pretesting, performance testing, and other instances where there may be conflicts during the interim period between submission of the Documentation of Compliance and final RCRA permit modification.

Another important difference is our proposal to codify the authority for permit writers to evaluate the need for and, where appropriate, require Site-Specific Risk Assessments (SSRA). We are also proposing to codify the authority for permit writers to add conditions to RCRA permits that they determine, based on the results of an SSRA, are necessary to protect human health and the environment. In doing so, our intent is to change the regulatory mechanism that is the basis for SSRAs, while retaining the same SSRA policy from a substantive standpoint. Under this approach, permitting authorities continue to have the responsibility to ensure the protectiveness of RCRA permits.

Next, we have proposed to re-institute the NIC (see Part Two, Section XVI for a discussion of the NIC) for Phase I sources and to require the NIC for Phase II sources. While the NIC serves as a compliance planning tool and to promote early public involvement, it is also a requirement before the streamlined permit modification procedure in 40 CFR 270.42(j) and 270.42, appendix I, section L.9, can be utilized to make changes to either the combustor design or operations, in order to comply with the final Replacement Standards. Thus, sources who have not yet made the transition from their RCRA permits to title V permits must comply with the NIC requirements to take advantage of the streamlined permit modification.

Last, a subtle difference pertaining to the transition scheme stems from the time span between compliance with the Interim Standards and the effective date of the Replacement Standards relative to RCRA permits. Sources who received extensions to the date for commencing their initial comprehensive performance test, whether a 6 month or 12 month extension, will not be required to submit an NOC until either a few months before or just after the effective date of the final Replacement Standards rule. Therefore, these sources would be modifying their RCRA permits just before or after the effective date of the final rule. Nevertheless, we anticipate that sources will proceed with modification of their RCRA permits to remove duplicative requirements.

C. What Permitting Requirements Is EPA Proposing for Phase II Sources?

Phase II sources are presently subject to the RCRA permitting requirements for hazardous waste combustors provided in 40 CFR 270.22 and 270.66. We are proposing in today's notice to apply the same approach to permitting Phase II sources that we did for Phase I sources in the September 1999 rule. Specifically, we propose to:

(1) Place the new Phase II emission standards only in the CAA regulations at 40 CFR part 63, subpart EEE, and rely on their implementation through the air program,

(2) Specify that, with few exceptions, the analogous standards in the RCRA regulations no longer apply once a facility demonstrates compliance with the MACT standards in subpart EEE, and

(3) Require that the new standards be incorporated into operating permits issued under title V of the CAA rather than be incorporated into RCRA permits.

Our goal with regard to permitting Phase II sources remains the same as the goal that we had for Phase I sources—to accommodate the requirements of

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[225] A streamlined permit modification was developed in the 1999 rule to allow the removal of duplicative conditions from RCRA permits (*see* § 270.42, appendix I, section A.8).

[226] Only major sources are required to reopen their title V permits when 3 or more years remain in the permit term. Even though area sources were subject to the same standards and title V permit requirements, they can wait until renewal regardless of the time remaining to incorporate new or revised standards. The reopening provisions of 40 CFR 70.7(f) and 71.7(f) only apply to major sources.

both the RCRA and CAA statutes, while at the same time avoiding duplication between the two programs to the extent practicable. The permitting approach we developed for Phase I sources in the September 1999 rule enables us to achieve this goal. In that rule, we amended the applicability of 40 CFR 270.19, 270.22, 270.62, and 270.66 so that once a source demonstrates compliance with the MACT standards, it is no longer subject to the full array of RCRA combustion permitting activities, unless the Director of the permitting agency decides to apply specific RCRA regulatory provisions, on a case-by-case basis, for purposes of information collection in accordance with §§ 270.10(k) and 270.32(b)(2). We are proposing to make a similar change to 40 CFR 270.22 and 270.66 for Phase II sources. In addition, we are proposing for Phase II sources, as we are for Phase I sources, that new sources not follow the RCRA permitting process for establishing combustor emissions and operating requirements. Of course, as for Phase I sources, Phase II sources would remain subject to the RCRA permitting requirements for all other aspects of their combustion unit and facility operations, including general facility standards, corrective action, other combustor-specific concerns such as materials handling, risk-based emission limits and operating requirements, as appropriate, and other hazardous waste management units at the site.[227] Also, some sources will retain specific RCRA permitting requirements if they choose to comply with an alternative MACT standard; address startup, shutdown and malfunction events under RCRA rather than the CAA; or, if an area source, comply with the RCRA metals, particulate matter, or chlorine standards and associated requirements. It is also important to note that if you later decide to add a new combustion unit to your facility, you must first modify your RCRA permit to include the new unit. This is because your RCRA permit must reflect all hazardous waste management units at the facility. Although the emissions from the new unit will be regulated under the CAA MACT standards, as noted above, your RCRA permit must address any other related requirements for the new unit.

1. What Other Permitting Requirements Are We Proposing To Apply To Phase II Sources?

As part of the Phase I rule, we promulgated additional specific changes to the RCRA permitting requirements in 40 CFR part 270 to facilitate implementation of the new standards and permit transition from RCRA to the CAA. First, we added a streamlined RCRA permit modification process to allow sources to make changes to either their combustor design or operations, as necessary, in order to comply with the Phase I standards. This modification process, a Class 1 with prior Agency approval, was promulgated in the June 19, 1998 "Fast Track'' rule and is provided in 40 CFR 270.42(j) and 270.42, appendix I, section L.9. See 63 FR 33785. Second, we further amended the § 270.42, appendix I permit modification table to add a new line item that streamlines modification procedures for removing conditions from a permit that are no longer applicable (*e.g.*, because the standards upon which they are based are no longer applicable to the source). This new line item is a Class 1 modification requiring prior Agency approval and is provided in section A.8 of appendix I.[228] Third, we added a new section, 40 CFR 270.235, to the RCRA permitting requirements that address startup, shutdown, and malfunction events and the integration of those requirements between the RCRA program and the CAA program. Fourth, we amended the requirements in 40 CFR 270.72 governing changes that facilities can make while they are operating under interim status.[229] We believe that each of the above changes that we made to the RCRA permitting regulations for Phase I sources are also appropriate for Phase II sources and thus, are proposing that these same features apply to Phase II sources. They will serve to ease implementation of the new standards and transition combustion sources from RCRA to the CAA.

We did not amend any title V regulations in 40 CFR parts 70 or 71 for Phase I sources. It was our intent during the Phase I rulemaking, and continues to be our intent for Phase II, to rely on the existing air program to implement the new MACT requirements, including their incorporation into a title V operating permit. Thus, we are proposing that all current CAA title V requirements governing permit applications, permit content, permit issuance, renewal, reopenings and revisions will apply to air emissions from Phase II sources. In addition, the requirements of other CAA permitting programs, such as air construction permits, likewise will continue to apply, as appropriate. We also included provisions in the subpart EEE requirements that address the relationship between the standards and title V permits. Specifically, we stated in 40 CFR 63.1206(c)(1)(iv) and (v) that the operating requirements in the Notification of Compliance are applicable requirements for purposes of parts 70 and 71, and that these operating requirements will be incorporated into title V permits. We are proposing the same approach for the interface between the Phase II standards and title V permits.

2. What Other Permitting Requirements Are We Proposing in Today's Notice That Would Also Be Applicable to Phase II Sources?

In today's notice, we are proposing three changes to the general permitting approach for all sources subject to part 63, subpart EEE, including Phase II sources. First, we are proposing to allow sources to waive specific RCRA permit operating and emission limits using a streamlined permit modification procedure. This would apply for pretesting, performance testing, and other instances where there may be conflicts during the interim period between submittal of the DOC and final RCRA permit modification. Second, we are proposing that new units not be required to obtain a RCRA permit that includes emission limits or conditions, with certain exceptions (*e.g.*, more stringent risk-based limits). Third, we are proposing to codify the authority for permit writers to evaluate the need for and, where appropriate, require SSRAs. We are also proposing to codify the authority for permit writers to add conditions to RCRA permits that they determine, based on the results of an SSRA, are necessary to protect human health and the environment. We believe

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[227] Even though the RCRA air emission standards for combustors will no longer apply once compliance is demonstrated with MACT (except in certain cases), other RCRA air emission standards will continue to apply to other hazardous waste management units at the facility. For example, part 264, subpart CC, still applies to air emissions from tanks, surface impoundments, and containers.

[228] It is important to note that you only may request the removal of duplicative combustion limits and conditions from your RCRA permit. Any risk-based conditions that are more stringent than the MACT requirements would be retained.

[229] Section 270.72(b) imposes a limit on the extent of the changes, stating that they cannot amount to "reconstruction'' (defined in the regulation as "when the capital investment in the changes to the facility exceeds 50 percent of the capital cost of a comparable entirely new hazardous waste management facility''). Although we did not expect the individual costs to perform changes required to comply with the MACT standards to exceed this 50 percent limit, the limit is cumulative for all changes at an interim status facility. Thus, conceivably there could be situations where MACT-related changes would cause a source to exceed the limit. To ensure that the limit would not be a hindrance to MACT compliance, we added an exemption to paragraph (b) of that section for changes necessary to comply with standards under 40 CFR part 63, subpart EEE.

that each of the above proposals are appropriate for Phase II as well as Phase I sources and, therefore, are applying them to all hazardous waste combustors subject to part 63, subpart EEE. See the discussions provided in A.1 and A.2 of this section.

3. How Will the Permitting Approach Work for Phase II Sources?

In the preamble to the September 1999 rule, we discussed at length how to implement the new permitting approach, including aspects such as when and how to transition sources from RCRA permitting to title V. See 64 FR 52981. We have also provided a fact sheet on permit transition in our Hazardous Waste Combustion NESHAP Toolkit, which is available at the following Internet address: *http://www.epa.gov/epaoswer/hazwaste/combust/toolkit/index.htm.* The information provided in the above-mentioned preamble and the fact sheet is appropriate for Phase II as well as Phase I sources. Below is a summary of this information for sources that already have RCRA permits and for sources that are currently operating under RCRA Interim Status. The permitting approach for new sources is discussed earlier in A.1 of this section.

a. Implementing the New Permitting Approach for Phase II Sources that Already Have RCRA Permits. If you already have a RCRA permit, you must continue to comply with the conditions in your permit until either they expire or your permitting authority modifies your permit to remove them. You can request a permit modification, using line item A.8 provide in appendix I of § 270.42, to request that your permitting authority remove any duplicative conditions once you have conducted your comprehensive performance test and submitted a Notification of Compliance documenting compliance to your CAA regulatory agency. The appropriate CAA regulatory agency in most cases will be the state environmental agency.

When you submit your RCRA permit modification request you should identify the conditions in your RCRA permit that you believe should be removed. We recommend that you also attach a copy of your Notification of Compliance. This information will help the RCRA permit writer determine whether there are any risk-based conditions that need to remain in your RCRA permit. For example, any conditions imposed under RCRA omnibus authority, or similar state authority, based on the results of a site-specific risk assessment that are *more stringent* than the corresponding MACT standard or limitation documented in the Notification of Compliance would have to remain in the RCRA permit. You should also inform your RCRA permit writer if you intend to comply with any specific RCRA requirements in lieu of those provided in part 63, subpart EEE, such as the RCRA startup, shutdown, and malfunction requirements. Providing this information to the RCRA permit writer likely will expedite review of your permit modification request.

We expect that in some situations RCRA permit writers may not approve a request to remove conditions until they know that their counterparts in the Air program have reviewed the Notification of Compliance and verified that the facility has successfully demonstrated compliance with the MACT standards. This may happen, for example, with facilities that have historically generated a lot of interest or concern from the community or that have had previous problems in maintaining compliance with performance standards. If you have received confirmation that the regulatory agency has made a Finding of Compliance based on your Notification of Compliance, we recommend you include that with your RCRA permit modification request as well. Once people in the Air program responsible for reviewing the Notification of Compliance have completed their evaluation of the documentation and test results, we encourage them to inform their RCRA counterparts. This courtesy will help RCRA permit writers complete their review of the RCRA permit modification requests, thereby facilitating the permit transition.

b. Implementing the New Permitting Approach for Sources that Are Operating under RCRA Interim Status. If you are currently operating under RCRA interim status, you must continue to meet RCRA performance standards governing emissions of hazardous air pollutants in 40 CFR part 266 until you conduct your comprehensive performance test and submit your Notification of Compliance documenting compliance with the MACT standards to the regulatory agency. The RCRA combustion permitting procedures in 40 CFR part 270 also continue to apply until you demonstrate compliance.

There is not a "one size fits all'' answer to how facilities operating under RCRA interim status should make the transition. RCRA permit writers, in coordination with facility owners or operators, should map out the most appropriate route to follow in each case. In mapping out site-specific approaches to transition, both the regulators and the facility owners or operators should keep in mind the goal we mentioned earlier of minimizing the amount of time a facility might be subject to duplicative requirements under the two programs. Factors they should take into consideration include, but are not limited to the following. (1) The status of the facility in the RCRA permitting process at the time the final MACT rule is promulgated. For example—If a facility is on the verge of conducting a RCRA trial burn, it should proceed with the trial burn and continue through the RCRA permitting process. (2) The facility's anticipated schedule for demonstrating compliance with the MACT standards. For example—If the facility plans to come into compliance with the standards early, it may make sense to transition before completing the RCRA permitting process. (3) The priorities and schedule of the regulatory agency. For example—A state agency may have made certain commitments (*e.g.*, to the public or to its state legislature) regarding their RCRA or CAA programs that might impact its decisions regarding the transition. (4) The level of environmental concern at a given site. For example—To make sure that the facility is being operated in a manner protective of human health and the environment, the regulatory agency may decide to proceed with RCRA permitting, including the site-specific risk assessment, rather than delay the RCRA process to coordinate with testing under MACT.

If after evaluating all the relevant factors a decision is made to proceed with a RCRA permit in advance of a source's MACT compliance demonstration, we suggest including language to facilitate the eventual transition. Regulators can attach "sunset'' provisions to those conditions that will no longer apply once a source demonstrates compliance with the part 63 subpart EEE standards.

In making the transition from one program to the other, testing under one program should not be unnecessarily delayed in order to coordinate with testing required under the other. As proposed for Phase II, sources would be conducting periodic performance testing (every five years) anyway, just as the Phase I sources are required to do. In both our Hazardous Waste Minimization and Combustion Strategy and in the September 1999 Phase I rule, we emphasized the importance of bringing hazardous waste combustion units under enforceable controls that have been demonstrated to achieve compliance with performance standards. Stack testing is essentially the way to make this demonstration, whether it is performed under the RCRA or CAA regulatory schemes, and so should be performed as expeditiously as possible.

4. How Do We Propose Regulating Phase II Area Sources?

In today's Notice, we are not making a positive area source finding as we have with the Phase I area sources. However, we are using the "specific pollutants'' authority in section 112(c)(6) of the CAA to propose that area sources be subject to MACT standards only for certain hazardous air pollutants. Thus, area sources will be subject to title V permitting requirements for those pollutants specified per CAA section 112(c)(6).

Under 40 CFR 63.1(c)(2), area sources subject to MACT standards are also subject to title V permitting, unless the standards for the source category specifies that: (1) states will have the option to exclude area sources from title V permit requirements; or (2) states will have the option to defer permitting of area sources. We did not allow the states these options in the September 1999 rule for Phase I sources, and we are not proposing to offer them for Phase II sources either. Since the RCRA program does not make a distinction between regulating major and area sources and would no longer be able to address the pollutants covered by MACT (because the underlying RCRA standards in 40 CFR parts 264, 265, and 266 would no longer be applicable once the source demonstrates compliance with subpart EEE), we believe that area sources should not be exempt from the title V permitting requirements. It is important that there not be a gap in permitting coverage as we implement the deferral from regulation under RCRA to regulation under the CAA. In addition, section 502(a) of the CAA requires that any area source exemptions from the title V permitting requirements be predicated on a finding that compliance with the requirements is impracticable, infeasible, or unnecessarily burdensome. We do not believe that the title V permitting requirements will be impracticable, infeasible, or unnecessarily burdensome for Phase II area sources, because these sources are already complying with RCRA permitting requirements.

As explained above, we are using the "specific pollutants'' authority to propose that area sources be subject to MACT standards only for certain hazardous air pollutants: dioxin/furans, mercury, DRE and carbon monoxide/hydrocarbons. (See Part Two, Section II.C.) For particulate matter, chlorine and HAP metals other than mercury, we are proposing that area sources have the option of complying with the MACT standards for Phase II major sources or continuing to comply with the RCRA emission standards and requirements. Those Phase II area sources that choose to comply with the RCRA standards and requirements will be subject to title V permits for some of their emissions and RCRA permits for others. In summary, regardless of whether an area source elects to comply with all or only the pollutants pursuant to CAA section 112(c)(6), a title V permit will be required.

D. How Would this Proposal Affect the RCRA Site-Specific Risk Assessment Policy?

1. What Is the Site-Specific Risk Assessment Policy?

In the September 30, 1999 Phase I rule, we articulated a revised Site-Specific Risk Assessment (SSRA) policy recommendation for hazardous waste burning incinerators, cement kilns and light-weight aggregate kilns. Specifically, we recommended that for hazardous waste combustors subject to the Phase I MACT standards, permitting authorities should evaluate the need for an SSRA on a case-by-case basis. We further stated that while SSRAs are not anticipated to be necessary for every facility, they should be conducted where there is some reason to believe that operation in accordance with the MACT standards alone may not be protective of human health and the environment. If the permitting authority concludes that a risk assessment is necessary for a particular combustor, the permitting authority must provide the factual and technical basis for its decision in the facility's administrative record. Should the SSRA demonstrate that supplemental requirements are needed to protect human health and the environment, additional conditions and limitations should be included in the facility's RCRA permit pursuant to the omnibus authority. The basis and supporting information for those supplemental requirements also must be documented in the facility's administrative record. For hazardous waste combustors not subject to the Phase I standards, we continued to recommend that SSRAs be conducted as part of the RCRA permitting process. See 64 FR 52841.[230]

2. Are SSRAs Likely To Be Necessary After Sources Comply With the Phase I Replacement Standards and Phase II Standards?

As explained earlier, all Phase I replacement standards must be equivalent to or more stringent than the negotiated interim standards. Many of the replacement standards proposed in today's notice would be more stringent than the interim standards (*e.g.*, 64 µg/dscm as opposed to 120 µg/dscm for the existing source cement kiln mercury standard). And, with the exception of the mercury standard for both new and existing LWAKs and the total chlorine standard for new LWAKs, they are also equivalent to or more stringent than the 1999-promulgated standards, which EPA determined to be generally protective in a national risk assessment conducted for that rulemaking.[231, 232] For today's proposed action, we conducted a comparative risk analysis of the Phase I replacement standards to the 1999-promulgated Phase I standards. Specifically, we compared certain characteristics of the Phase I source universe as it exists today to the 1999 Phase I source universe to determine if there were any significant differences that might influence or impact the potential risk. We focused on the following four key characteristics: emission rates, stack gas characteristics, meteorological conditions, and exposed populations. Based on the results of our comparative analysis, we believe that the risk to human health and the environment from Phase I sources complying with the proposed replacement standards will be, for the most part, the same or less than the estimated risk from sources complying with the 1999-promulgated standards. See Part Four, Section IX, *How Does the Proposed Rule Meet the RCRA Protectiveness Mandate?*.

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[230] We provided further clarification of the appropriate use of the SSRA policy and technical guidance in an April 10, 2003 memorandum from Marianne Lamont Horinko, Assistant Administrator for OSWER, to the EPA Regional Administrators titled *Use of the Site-Specific Risk Assessment Policy and Guidance for Hazardous Waste Combustion Facilities.* This document is available in the docket (Docket # RCRA–2003–0016) established for today's proposed action.

[231] The 1999-promulgated total chlorine standard for new LWAKs was 41 ppmv. The proposed replacement standard is 150 ppmv. We do not view the total chlorine replacement standard as a concern because the 1999-promulgated total chlorine standard for existing sources was higher (230 ppmv) and found to be generally protective in the national risk assessment conducted for that rulemaking. With respect to risk from mercury for LWAKs, see "Inferential Risk Analysis in Support of Standards for Emissions of Hazardous Air Pollutants from Hazardous Waste Combustors,'' prepared under contract to EPA by Research Triangle Institute, Research Triangle Park, NC.

[232] See *Human Health and Ecological Risk Assessment Support to the Development of Technical Standards for Emissions from Combustion Units Burning Hazardous Wastes: Background Document,* July 1999.

Although the replacement standards are generally equivalent to or more stringent than both the interim and 1999-promulgated standards, we cannot assess to what extent this may change the frequency with which SSRAs are determined to be necessary. In the end, the MACT standards are technology-based and so, risk analysis notwithstanding, cannot assure that emissions from each affected source will be protective of human health and the environment. For example, a particular source could emit types and concentrations of non-dioxin PICs different from those we modeled, and so could continue to pose risk not accounted for in our analysis. Sources' emissions of criteria pollutants, which are non-HAPs and so are beyond the direct scope of MACT, also could possibly pose risk which could necessitate site specific risk assessment.[233] Another potential example involves emissions of nonmercury metal HAP by cement kilns and lightweight aggregate kilns. The semivolatile and low volatile metal thermal emission standards directly address emissions attributable to the hazardous waste, as opposed to a source's total HAP metal emissions. Thus, although these proposed limits reflect MACT, by normalizing the standards to thermal firing rate (for the appropriate reasons explained earlier), they do not create a HAP metal "emissions cap.'' HAP metal emission contributions from nonhazardous waste fuels and raw materials are not directly regulated by this type of emission standard, but are rather controlled appropriately with the particulate matter standard.[234]

In contrast, RCRA permits can address the total emissions from the combustion unit, assuming an appropriate nexus with hazardous waste combustion. Thus, for those combustors that must comply with a thermal emission standard and that feed materials other than hazardous waste, the permitting authority may decide that an SSRA is appropriate to determine if additional limits (*i.e.*, a total emissions cap) are necessary to ensure that all metal HAP emissions from the combustion unit remain at a level that is protective of human health and the environment.

With respect to Phase II sources, the standards we are proposing in today's notice are significantly more stringent than the existing technical standards required under RCRA (40 CFR part 266, subpart H). To evaluate the protectiveness of the proposed Phase II standards, we conducted the same comparative risk analysis for Phase II sources that we conducted for Phase I sources. Specifically, we evaluated the differences between the 1999 Phase I source universe and the existing Phase II source universe with respect to the four key source characteristics mentioned above to determine if there were any significant differences that might influence or impact the potential risk. As discussed in the background document, ("Draft Technical Support Document for HWC MACT Replacement Standards, Volume V: Emissions Estimates and Engineering Costs'') we estimated emissions for each facility based on site-specific stack gas concentrations and flow rates measured during trial burn or compliance tests. We then assumed that sources would design their systems to meet an emission level below the proposed standard. For today's proposed standards, the design level is generally the lower of: (1) 70% of the standard; or (2) the arithmetic average of the emissions data of the best performing sources.[235] We believe the comparative analysis lends support to our view that the standards for Phase II sources are generally protective. For a detailed discussion of the comparative risk analysis methodology and results, see the background document entitled "Inferential Risk Analysis in Support of Standards for Emissions of Hazardous Air Pollutants from Hazardous Waste Combustors,'' prepared under contract to EPA by Research Triangle Institute, Research Triangle Park, NC.

As with the Phase I sources, we cannot reliably predict to what extent SSRAs will continue to be necessary for Phase II sources once they have complied with the MACT standards. In view of the standards alone there are at least three possible scenarios for which SSRAs may continue to be needed. First, we are proposing thermal emission standards for liquid fuel-fired boilers. Thus, similar to cement kilns and LWAKs, permitting authorities may determine that an SSRA is necessary to ensure that all emissions from liquid fuel-fired boilers are protective of human health and the environment. Second, we are proposing that liquid fuel-fired boilers with wet APCD or no APCD and solid fuel-fired boilers comply with a CO or total hydrocarbon limit as a surrogate for the dioxin/furan emission standard. Permitting authorities may determine that an SSRA is necessary for these sources if there is some concern that the CO or total hydrocarbon limit alone may not be adequately protective. Third, we are not proposing standards for all HAPs emitted by Phase II area sources. Instead, consistent with CAA section 112(c)(6), we are proposing MACT standards only for dioxin/furans, mercury, carbon monoxide and hydrocarbons, and DRE. For the remaining metals, particulate matter and TCl, we are providing area sources with the option of complying with the MACT standards for major sources or continuing to comply with the existing RCRA technical standards. Sources that choose to comply with the RCRA standards may need to consider an SSRA, because the RCRA standards alone may not be sufficiently protective (*i.e.*, since they do not address the potential risk from indirect exposures to long-term deposition of metals onto soils and surface waters). To date, we have identified only three area sources in the Phase II universe. Thus, the number of sources that could decide to continue complying with the above-mentioned RCRA standards is expected to be very limited.

It is useful to note that there are other site-specific factors or circumstances beyond the standards themselves that can be important to the SSRA decision making process for an individual combustor. For example, a source's proximity to a water body or an endangered species habitat, repeated occurrences of contaminant advisories for nearby water bodies, the number of hazardous air pollutant emission sources within a facility and the surrounding community, whether or not the waste feed to the combustor is comprised of persistent, bioaccumulative or toxic contaminants, and sensitive receptors with potentially significantly different exposure pathways, such as Native Americans, will likely influence a permitting authority's decision of whether or not an SSRA is necessary. In addition, uncertainties inherent in our comparative risk analysis and the national risk assessment conducted in support of the 1999-promulgated

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[233] See 56 FR at 7145 (Feb. 21, 1991) explaining why there can be circumstances where a risk-based standard for particulate matter (a criteria pollutant) for hazardous waste combustion sources may be needed, and how such a standard could be integrated into the National Ambient Air Quality Standard implementation process.

[234] Particulate matter is an appropriate surrogate to control metal emissions in nonhazardous waste fuels and raw material in lieu of a numerical metal emission limit because a numerical metal emission standard may inappropriately control feedrate of HAP metals in the raw materials and fossil fuels (since such control would be neither replicable nor duplicable, and is not justified as a beyond-the-floor standard).

[235] If available test data in our data base indicate that the source was emitting below the design level, we assumed that the source would continue to emit at the levels measured in test.

standards also may influence a permitting authority's decision. For example, the 1999 national risk assessment contained some uncertainties regarding the fate and transport of mercury in the environment and the biological significance of mercury exposures in fish. Another example relates to nondioxin products of incomplete combustion. Due to insufficient emissions data and parameter values, the 1999 national risk assessment did not include an evaluation of risk posed by nondioxin products of incomplete combustion. See 64 FR 52840 and 52841 for additional discussion of uncertainties regarding the national risk assessment. Also, the comparative risk analysis conducted in support of today's action did not account for cumulative emissions at a source or background exposures from other sources.

3. What Changes Are EPA Proposing With Respect To the Site-Specific Risk Assessment Policy?

As stated earlier in this section, we recommended in the preamble to the 1999 rulemaking that permitting authorities evaluate the need for an SSRA on a case-by-case basis for hazardous waste combustors subject to the Phase I MACT standards. For hazardous waste combustors not subject to the Phase I standards, we continued to recommend that SSRAs be conducted as part of the RCRA permitting process if necessary to protect human health and the environment. We indicated that the RCRA omnibus provision authorized permit writers to require applicants to submit SSRA results where an SSRA was determined to be necessary. Today, we are proposing to codify the authority for permit writers to evaluate the need for and, where appropriate, require SSRAs. We are also proposing to codify the authority for permit writers to add conditions to RCRA permits that they determine, based on the results of an SSRA, are necessary to protect human health and the environment. In doing so, our intent is to change the regulatory mechanism that is the basis for SSRAs, while retaining the same SSRA policy from a substantive standpoint. Under this approach, permitting authorities continue to have the responsibility to ensure the protectiveness of RCRA permits. We are requesting comment on this proposal.

RCRA sections 3004(a) and (q) require that we promulgate standards for hazardous waste treatment, storage and disposal facilities and hazardous waste energy recovery facilities as may be necessary to protect human health and the environment. RCRA section 1006(b) directs us to integrate the provisions of RCRA with the appropriate provisions of the CAA and other federal statutes to the maximum extent practicable. Thus, to the extent that the RCRA emission standards and associated requirements promulgated under section 3004(a) or (q) are duplicative of the CAA MACT standards, section 1006(b) provides us with the authority to eliminate duplicative RCRA standards and associated requirements. For this reason, we have provided that most RCRA emission standards and associated requirements no longer apply to incinerators, cement kilns, and lightweight aggregate kilns once these sources demonstrate compliance with MACT requirements. As explained earlier, we are proposing to do the same in today's notice for solid fuel-fired boilers, liquid fuel-fired boilers and HCl production furnaces.

Although the Phase I replacement and Phase II standards provide a high level of protection to human health and the environment, thereby allowing us to nationally defer the RCRA emission requirements to MACT, additional controls may be necessary on an individual source basis to ensure that adequate protection is achieved in accordance with RCRA. We believe that this will continue to be the case even after the Phase I replacement and Phase II standards are promulgated as discussed earlier in this section. Up to this point in time, we have relied exclusively on RCRA section 3005(c)(3) and its associated regulations (*e.g.*, 40 CFR 270.10(k)) when conducting or requiring a risk assessment on a site-specific basis. Because risk assessments are likely to continue to be necessary at some facilities, we are proposing to explicitly codify the authority to require them on a case-by-case basis and add conditions to RCRA permits based on SSRA results under the authority of sections 3004(a) and (q) and 3005 of RCRA. We continue to believe that section 3005(c)(3) and its associated regulations provide the authority to require and perform SSRAs and to write permit conditions based on SSRA results. Indeed, as explained below, EPA will likely continue to include permit conditions based on the omnibus authority in some circumstances when conducting these activities, and state agencies in states with authorized programs will continue to rely on their own authorized equivalents, at least for some period of time. However, since we foresee that SSRAs will likely continue to be necessary at some hazardous waste combustion facilities, we are proposing to expressly codify these authorities for the convenience of both regulators and the regulated community.

We are not proposing that SSRAs automatically be conducted for hazardous waste combustion units, because we continue to believe that the decision of whether or not a risk assessment is necessary must be made based upon relevant site-specific factors associated with an individual combustion unit and that there are combustion units for which an SSRA will not be necessary. We further believe that it is the permitting authority, with information provided by hazardous waste combustion facilities, that is best equipped to make this decision.

4. How Would the New SSRA Regulatory Provisions Work?

The SSRA regulatory provisions are proposed under both base program authority (sections 3004(a) and 3005(b)) and HSWA authority (section 3004(q)). Thus, where EPA or a state regulator has determined that a risk assessment is necessary, the applicability of the new provisions will vary according to the nature of the combustion unit in question (whether it is regulated under 3004(q), or only 3004(a) and 3005(b)), and the authorization status of the state. Depending on the facts, the new authority would be applicable, or the omnibus provision would remain the principal authority for requiring site-specific risk assessments and imposing risk-based conditions where appropriate.

As explained in the state authorization section of this preamble (see Part Two, Section XIX.C), EPA does not consider these provisions to be either more or less stringent than the pre-existing federal program, since they simply make explicit an authority that has been and remains available under the omnibus authority and its implementing regulations. Thus, states with authorized equivalents to the federal omnibus authority will not be required to adopt these provisions, so long as they interpret their omnibus authority broadly enough to require risk assessments where necessary. Nonetheless, we encourage states to adopt these provisions to promote regulatory transparency.

We are proposing to add a paragraph to the general permit application requirements of 40 CFR 270.10 to specifically allow a permit writer to require that a permittee or an applicant submit an SSRA or the information necessary for the regulatory agency to conduct an SSRA, if one is determined to be necessary. The permit writer may decide that an SSRA is needed if there is some reason to believe that additional controls beyond those required pursuant to 40 CFR parts 63, 264 or 266 may be needed to ensure protection of human health and the environment under RCRA. We are also proposing to allow the permit writer to require that the applicant provide information, if needed, to make the decision of whether a risk assessment should be required. In addition, we are proposing to amend the applicability language of 40 CFR 270.19, 270.22, 270.62, and 270.66 to allow a permit writer that has determined that an SSRA is necessary for a specific combustion unit to continue to apply the relevant requirements of these sections on a case-by-case basis and as they relate to the performance of the SSRA after the source has demonstrated compliance with the MACT standards.

The basis for the decision to conduct the risk assessment must be included in the administrative record for the facility and made available to the public during the comment period for the draft permit. If the facility, or any other party, files comments on a draft permit decision objecting to the permitting authority's conclusions regarding the need for a risk assessment, the authority must respond fully to the comments. In addition, the risk assessment itself also must be included in the administrative record and made available to the public during the comment period for the permit. Any resulting permit conditions from the SSRA also must be documented and supported in the administrative record. We are proposing to add a paragraph to 40 CFR 270.32 to address the inclusion of conditions and limitations in RCRA permits as a result of the findings of an SSRA.

5. Why Is EPA Not Providing National Criteria for Determining When an SSRA Is or Is Not Necessary?

We are not proposing national criteria for determining when an SSRA is necessary. In the preamble to the April 1996 Phase I NPRM, we provided a list of guiding factors which we later updated and modified in the preamble to the September 1999 final rulemaking. See 61 FR 17372 and 64 FR 52842. We view these guiding factors as items that, because they may be relevant to the potential risk from a hazardous waste combustion unit, could be considered by a permitting authority when deciding if an SSRA is necessary. We did not, and do not, intend for them to be definitive criteria from which permitting authorities would make their decision. As we stated in 1999, we believed that the complexity of multi-pathway risk assessments precluded the conversion of these qualitative guiding factors into more definitive criteria. Since that time, we have reaffirmed our belief that the decision process regarding SSRAs does not lend itself to the application of required national criteria. Most combustors may be characterized using one or more of the qualitative guiding factors we provided in 1999, but not all. These factors were not intended to be an exclusive list of considerations, nor do we believe that this decision is necessarily susceptible to an exclusive list of factors. The decision whether to require a risk assessment is inherently site specific, and permitting authorities need to have the flexibility to evaluate a range of factors that can vary from facility to facility. In addition, it is useful to recognize that as risk assessment science continues to mature, the factors may change in terms of relative importance and it may not be prudent to obligate permitting authorities to an exclusive list that could not be easily adjusted to keep pace with scientific advancements.

In a study conducted by U.S. EPA Region 4, the guiding factors were used to rank 13 hazardous waste combustion facilities into high, medium and low risk potential groupings to ascertain if the factors could be used as a prioritization tool for determining whether or not an SSRA was necessary. The region found that all facilities evaluated exhibited a "high'' level of concern with respect to at least one or more site-specific characteristics relating to the guiding factors and that further analysis was required before the region could be assured that the source would operate in a manner that is adequately protective under RCRA. As a result, the region concluded that the guiding factors alone could not be used to make a protectiveness finding. The region's study, which is entitled *Technical Support Assistance of MACT Implementation Qualitative Risk Check* is available in the docket (Docket #RCRA–2003–0016) established for today's notice.

Moreover, simply determining whether a combustor fits a particular guiding factor does not address the complex interplay that may exist between the guiding factors. Nor, does it measure the level of relative importance of one factor over another. For example, is the proximity of potentially sensitive receptors more important than multiple on-site emission points? For all of these reasons, we believe that codification of a list of factors would not be appropriate here.

6. What Is the Cement Kiln Recycling Coalition's SSRA Rulemaking Petition?

On February 28, 2002, the Cement Kiln Recycling Coalition (CKRC) submitted a petition for rulemaking "Petition Under RCRA § 7004(a) For (1) Repeal of Regulations Issued Without Proper Legal Process and (2) Promulgation of Regulations If Necessary With Proper Legal Process'' to the Administrator containing two independent requests with respect to SSRAs. First, CKRC requested that we repeal the existing SSRA policy and technical guidance because it believes that the policy and guidance "are regulations issued without appropriate notice and comment rulemaking procedures.'' Second, CKRC requested that after we repeal the policy and guidance, "should EPA believe it can establish the need to require SSRAs in certain situations, CKRC urges EPA to undertake an appropriate notice and comment rulemaking process seeking to promulgate regulations establishing such requirements.''

As stated in the petition, "CKRC does not believe that these SSRA requirements are in any event necessary or appropriate.'' In addition, CKRC disagrees with our use of the RCRA omnibus provision as the authority to conduct SSRAs or to collect the information and data necessary to conduct SSRAs and further contends that the regulations associated with the omnibus provision are insufficient in detail. CKRC asserts that we have chosen to establish SSRA requirements through guidance documents. CKRC also raised the following three general concerns: (1) Whether an SSRA is needed for hazardous waste combustors that will be receiving a RCRA permit when the combustor is in full compliance with the RCRA boiler and industrial furnace regulations and/or with the MACT regulations; (2) How an SSRA should be conducted; and (3) What is the threshold level for a "yes'' or "no'' decision that additional risk-based permit conditions are necessary. In support of its petition, CKRC refers to *Appalachian Power Co.* v. *EPA,* 208 F.3d 1015 (D.C. Cir. 2000), *GE* v. *EPA,* 290 F.3d 377 (D.C. Cir. 2002), and *Ethyl Corporation* v. *EPA,* 306 F.3d 1144 (D.C. Cir. 2002). The petition is available in the docket established for today's proposed action.

CKRC filed the petition filed under RCRA section 7004(a), which provides that: "Any person may petition the Administrator for the promulgation, amendment, or repeal of any regulation under this Act. Within a reasonable time following receipt of such a petition, the

Administrator shall take action with respect to the petition and shall publish notice of such action in the **Federal Register**, together with the reasons therefor.''

Shortly after receiving the petition, we conducted a preliminary evaluation of CKRC's concerns as stated in the petition.[236] We determined that any decision regarding the petition should be made in coordination with our development of the proposed Replacement MACT standards for Phase I sources and the proposed new MACT standards for Phase II sources. Thus, we decided that today's notice was the most appropriate vehicle to announce and request comment on our tentative decision concerning the petition.

In the meantime, we believed that it was important to take certain measures to ensure that the SSRA policy and guidance were being used in the manner that we had intended. In an April 10, 2003 memorandum from Marianne Lamont Horinko, Assistant Administrator of the Office of Solid Waste and Emergency Response, to the U.S. EPA Regional Administrators, we took two of these measures. First, we requested that the regions review certain documents (*e.g.*, regional memoranda, policy and guidance documents, Memoranda of Agreement of Grant Workplans with the states) to determine if any contained misleading or incorrect information concerning the SSRA policy and technical guidance. If any were found to contain misleading or incorrect information, we requested that the region take immediate measures to clarify or correct the information. Second, we reiterated, in detail, the appropriate use of the SSRA policy and guidance for hazardous waste combustors, as well as the appropriate use of the RCRA omnibus authority as it relates to SSRAs. In a May 15, 2002, memoranda from Robert Springer, Director of the Office of Solid Waste, to the RCRA Senior Policy Advisors, we took the third measure to ensure proper application of the SSRA policy by our regional permit writers. In this memorandum, we instituted an EPA headquarters review process of future regional decisions concerning the need for an SSRA for hazardous waste combustion units seeking a RCRA permit determination. Specifically, we requested that the regions provide us with a written summary of the basis for any future decisions to conduct or not conduct an SSRA. It is our intention that the review process focus on whether or not permit writers have adequately supported their decisions. It is important to point out that because many of the decisions regarding SSRAs are now being made at the state level, we do not yet know how many regional SSRA decision summaries will be submitted for our review. Both the April 10, 2003, and May 15, 2003, memoranda are provided in the docket established for today's proposed action.

EPA is in the process of an additional effort to ensure proper use of the guidance: we are reviewing the guidance documents themselves, and, to the extent we find language that could be construed as limiting discretion, we intend to revise the documents to make clear that they are non-binding. CKRC indicated in its petition that, in its view, the documents contain language that could be construed as mandatory. While EPA does not necessarily agree, and believes that, in context, it is clear that the guidance in the documents is discretionary, EPA is nonetheless reviewing the documents to ensure that they are carefully drafted.

After consideration of the petition, we have made a tentative decision to partially grant and partially deny CKRC's requests. Specifically, we are proposing to deny CKRC's request that we repeal the SSRA policy and guidance and we are proposing to grant CKRC's request in part by promulgating an explicit authority to require SSRAs on a site-specific basis using notice and comment rulemaking procedures. We are requesting comment on our tentative decision.

With respect to CKRC's first request that we repeal the SSRA policy and guidance, and in response to their specific concern of whether an SSRA is necessary for combustors that are in full compliance with the RCRA and/or MACT regulations, we believe that SSRAs do serve a useful purpose and can be necessary even if a facility is in full compliance with the existing RCRA and/or MACT technical standards. RCRA requires that all hazardous waste permits be protective of human health and the environment. As discussed in the preamble to the 1999 Phase I rulemaking, the existing RCRA incinerator and Boiler and Industrial Furnace (BIF) regulations do not address the potential risk that may be posed from indirect exposures to combustor emissions. See 64 FR 52828, 52839–52842 (September 30, 1999). Further, the technical requirements associated with the RCRA standards have not been updated to reflect changes in technology or science for a decade or more and, thus, may not be sufficiently protective with respect to the potential risk from direct exposures either. For example, our knowledge regarding the formation, control and toxicity of dioxin/furans has vastly improved since the promulgation of the RCRA standards. Therefore, until such time that hazardous waste combustors comply with the MACT standards, SSRAs can serve a useful function in ensuring that RCRA combustor permits will be protective of human health and the environment.

Moreover, even once the MACT standards are fully implemented for incinerators and BIFs, we believe that there may continue to be instances in which the permitting authority determines that additional protections are necessary (*e.g.*, where site-specific conditions indicate that there may be a potential risk to a sensitive ecosystem or population), as was explained above in Section 2, *Are SSRAs Likely to be Necessary After Sources Comply with the Phase I Replacement Standards and Phase II Standards?* See also, the explanations at 64 FR 52840–52841. Because there may continue to be a need for SSRAs at some level, we agree with CKRC that it would be appropriate to explicitly codify the authority to require SSRAs and SSRA-based permit conditions, for the sake of regulatory clarity and transparency (although we continue to believe that the RCRA omnibus provision provides sufficient authority to conduct SSRAs). EPA requests comment on the variety of site-specific circumstances that might give rise to the need for an SSRA, and whether other mechanisms might exist to address those circumstances.

As stated earlier, CKRC raised three general concerns, the first of which we discussed in the preceding paragraphs. The second concern relates to the technical recommendations that EPA has offered for conducting an SSRA. CKRC disagrees with our use of guidance, instead arguing that EPA's recommendations should have been issued through the notice and comment rulemaking process.

We disagree that the Agency's technical recommendations either must or should be issued as a regulation. Risk assessment—especially multi-pathway, indirect exposure assessment—is a highly technical and evolving field. Any regulatory approach EPA might codify in this area is likely to become outdated, or at least artificially constraining, shortly after promulgation in ways that

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[236] EPA does not consider the request to repeal EPA's guidance documents to be a valid petition under this section, since the documents are guidance documents, not regulations. Nonetheless, because CKRC has also petitioned the Agency to issue regulations, and to be responsive to issues raised by the regulated community, EPA has decided to use the procedure established in 40 CFR 260.20 for section 7004 petitions to respond to both of CKRC's requests. EPA does not concede by relying on the section 7004(a) procedure that its guidance documents are regulations.

EPA cannot anticipate now. In EPA's view, this is an area that is uniquely fitted for a guidance approach, rather than regulation. In fact, across Agency programs, EPA has generally adopted a guidance approach to risk assessment for exactly this reason. See, *e.g.*, Guidelines for Reproductive Toxicity Risk Assessment, 61 FR 56274 (October 31, 1996). EPA's Superfund program has not promulgated regulations specifying risk assessment methods. Instead, the program uses site-specific approaches for determining risk, employing methods offered in EPA guidance as appropriate. The same is true for the RCRA corrective action program. Although we have attempted to provide our guidance recommendations in a form that responds to or encompasses many of the issues that can arise when conducting an SSRA, we recognize that the flexibility to apply other methodologies, assumptions, or recommendations has been important to both regulators and the regulated community in terms of developing an appropriate site-specific protocol.[237] For example, some of EPA's technical recommendations may not be appropriate for the combustion device in question, and risk assessors must have the flexibility to make adjustments for the specific conditions present at the source, and the state of risk assessment science at the time that the SSRA is being performed. As an obvious example, sources that are located in a dry, desert climate with no nearby permanent or temporary water bodies of concern should not be required to include a fisher exposure scenario in an SSRA. In addition, risk assessors should be free to use the most recent air modeling tools and toxicity values available rather than be limited to those that may be out-of-date because a regulation has not been revised following the development of the new tools or values. Guidance allows for this flexibility.

CKRC points out the EPA codified certain parameters for BIF risk assessments, to show that it is possible to do so. While EPA agrees it is possible, the codification in the BIF area is the exception, not the rule. It has been our experience in implementing the BIF regulations that codification of certain risk parameters has proven to be overly constraining because risk science is a continually changing field. For example, by codifying the toxicity values, risk managers were not able to utilize more recent values available through EPA's Integrated Risk Information System (IRIS) [238] and other resources. Also, shortly after we codified the air modeling guidelines in support of the risk parameters and procedures, the Air program revised their air modeling guidelines, rendering some of the BIF air modeling guidelines inconsistent and so, they were removed. Further, it is important to note that at the time of codification, BIF risk assessments were not intended to address indirect routes of exposure, thus making the parameters easier to implement. Today, however, risk assessments are more complex due to the necessary inclusion of multi-pathway and indirect exposure routes. Given the complexity of multi-pathway and indirect exposure assessments and the fact that risk science is continuously evolving, it would be difficult and again, overly constraining, to codify risk parameters today.

We also believe that a guidance approach is consistent with the fact that permit writers must make site-specific decisions whether to do risk assessments at all. We expect that permit writers will reach their decisions based on different factors and concerns—in some cases, factors and concerns that we may not have identified at this time. We think that it makes little sense to allow this kind of flexibility regarding whether to do a risk assessment and for what purposes, while prescribing how one must be conducted if one is required.

CKRC further contends that the guidance is overly conservative and constitutes "a confusing pattern of drafts over a number of years in a seemingly endless fashion'' that has resulted in their members incurring significant costs. Because of the variability in the many factors that influence the risk from hazardous waste combustors, the guidance contains some conservative recommendations and assumptions in order to address this wide range. However, based on input from users of the guidance, we have attempted to correct the recommendations and assumptions that we consider to be overly conservative and, as stated previously, because they are guidance recommendations and not requirements, the risk assessor may choose not to follow them. More recently, we have solicited public and peer review comments on the 1998 guidance,[239] and are in the process of revising it based on the comments received. This includes comments CKRC submitted related to the components of the guidance they contended were overly conservative.[240]

With respect to CKRC's assertion that the guidance is "a confusing pattern of drafts over a number of years'', we acknowledge that we have issued a number of guidance documents since 1990. However, we disagree that this has resulted in a confusing pattern of drafts. The development and release of the guidance documents correspond to three specific regulatory time periods in the area of hazardous waste combustion. In addition, the issuance of subsequent versions relates to the fact that the Agency has repeatedly solicited public and peer review comments on its technical guidance, and has built upon the experience of regulators and facilities in using earlier guidance.

In 1990, EPA developed its initial guidance document during the same time period as the RCRA BIF emission standards. In 1993, we released an addendum to the 1990 guidance in response to the draft Hazardous Waste Minimization and Combustion Strategy and our increasing concerns about the potential impacts from indirect routes of exposure, and solicited comments from the public and the Science Advisory Board. A revised document taking into account these comments was issued one year later.[241]

At the time that we were developing the Phase 1 MACT standards, we again updated our combustion risk assessment guidance by releasing a document specifically addressing human health risk in 1998 and one addressing ecological risk in 1999, again soliciting public input and peer review on these

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[237] Permitting authorities, in some cases, have developed their own guidance methodologies responsive to the specific needs associated with their facilities. For example, North Carolina, Texas, and New York have each developed their own risk assessment methodologies. We think this flexibility employed in the field supports our judgment that risk assessment methodologies should not be codified.

[238] IRIS is a collection of continuously updated chemical files which contain descriptive and quantitative information with respect to: oral reference doses and inhalation reference concentrations (RfDs and RfCs, respectively) for chronic noncarcinogenic health effects; and hazard identification, oral slope factors, and oral and inhalation unit risks for carcinogenic effects. For more information, see *http://www.epa.gov/iris/index.html.*

[239] USEPA. "Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities'' EPA–520–D–98–001A, B&C. External Peer Review Draft, 1998. (*http://www.epa.gov/epaoswer/hazwaste/combust/risk.htm*)

[240] We are not responding to the specific comments here, but will respond to them as part of the public process for developing the final guidance documents.

[241] USEPA. "Guidance for Performing Screening Level Risk Analyses at Combustion Facilities Burning Hazardous Wastes'' Draft, April 1994. USEPA. "Implementation of Exposure Assessment Guidance for RCRA Hazardous Waste Combustion Facilities'' Draft, 1994. (These documents are available as part of the "Exposure Assessment Guidance for RCRA Hazardous Waste Combustion Facilities'' EPA530–R–R–94–021. Copies may be ordered through the National Service Center for Environmental Publications' Web site at *http://www.epa.gov/ncepihom/*)

documents.[242] For purposes of clarity, both of these documents refer to all earlier guidance where appropriate and discuss briefly the progression of the guidance. Although the 1998 human health guidance and the 1999 ecological guidance provide our current thinking regarding SSRA methodology for hazardous waste combustors, we noted to our permit writers that we recommended that they should continue to use the 1994 guidance for those SSRAs that were in progress.

Although CKRC claims to find these guidance documents confusing, EPA's judgment is that most interested parties—both regulators and the regulated community—have found the guidance to be useful, and that the documents have substantially reduced the uncertainty and confusion that surrounded multi-pathway risk assessments a decade ago. As stated above, no one is obligated to follow this guidance, and regulators often depart from it; but EPA believes it has been extremely helpful on the whole, rather than confusing.

CKRC has alleged that SSRA's typically cost between $200,000 and $1,000,000 for an individual facility. We are aware that prior to the release of the 1998 guidance, combustion risk assessments were more costly than we understand them to be today. For an individual facility, we do not know to what extent these costs are attributed to the act of conducting a risk assessment, to recommendations provided in our guidance, to changes that the facility chose to make during the risk assessment, or the facility's desire to develop its own site-specific protocol. Not including the collection and analysis of emission risk data, we have been advised that the cost of an average SSRA today is approximately $84,000. (*See* document entitled *Hazardous Waste Combustion MACT—Replacement Standards: Proposed Rule. Preliminary Cost Assessment for Site Specific Risk Assessment,* November, 2003, as provided in the docket for today's action.) The emission risk data is projected to add on average between $57,000 (if the facility collects its emission risk data at the same time as its emission standards performance data) and $285,000 (if the facility must conduct a separate emission test solely for the purpose of collecting data for the SSRA). Therefore, including emission data collection, the average cost of an SSRA is between $141,000 and $370,000. This is considerably less than the cost range provided by CKRC of $200,000 to $1,000,000. Additionally, EPA's upper bound cost of $370,000 is significantly less than the upper bound cost of $1,300,000, as reported by CKRC in their petition (and the attached affidavit).[243] We believe that the cost of SSRAs has decreased over time, particularly since the release of the 1998 guidance. This may be in large part because the 1998 guidance is much more comprehensive than previous guidance documents and because private software companies have developed computer programs based on the guidance, which can further decrease costs associated with the risk calculations for each exposure scenario.

CKRC also expressed specific concern that it and its members have been denied an opportunity to comment on the combustion risk assessment guidance documents. We strongly disagree with this assertion. We have repeatedly sought public comment on the guidance documents. For the 1998 human health guidance we not only requested public comment, but also submitted the document for an external peer review and held a peer review meeting which was open to the public. Since the peer review meeting, we have been incorporating both the public and peer review comments into the human health guidance. While we have not yet completed this task and released a final document, any member of the public may at any time discuss any concerns that they have with our recommendations. In addition, regardless of whether a risk assessor uses the recommendations provided in our guidance or not, we have encouraged the permit writer and facility representatives to meet prior to any analysis to discuss the appropriate risk methodology and data input needs for an SSRA. Such a meeting allows both the permitting authority and the facility the opportunity to raise questions and objections concerning the appropriateness of different methodologies, assumptions, or default values and their application to the hazardous waste combustor. Facility representatives and any member of the public also may comment on the risk assessment methodology as part of the public comment process associated with the RCRA permit.

The third general concern raised by CKRC in its petition was that we had not provided a threshold level for a "yes" or "no" decision to trigger the need for additional risk-based permit conditions. EPA agrees that its guidance does not establish a bright-line threshold level for determining whether to impose additional permit conditions; such a binding requirement would only be appropriately established through rulemaking. However, EPA has provided recommendations about the overall targets for acceptable risk levels. See USEPA. *Implementation of Exposure Assessment Guidance for RCRA Hazardous Waste Combustion Facilities,* Draft, 1994. Moreover, we do not intend to codify our recommended target levels for some of the same reasons that we are not proposing to codify the risk assessment technical guidance. Our recommended target levels provide risk managers with a starting point from which to determine if a combustor's potential risk may or may not be acceptable. However, we believe that it is important, and indeed essential, that risk managers be afforded sufficient flexibility to apply different target levels as dictated by the circumstances surrounding the combustor. For example, a risk manager may wish to apply a more stringent carcinogenic target level for a combustor that is located in a densely populated area with a high concentration of industrial emission sources.

In summary, we have made a tentative decision to deny CKRC's request that we repeal the SSRA policy and guidance and to grant CKRC's request in part by proposing to codify the authority to require SSRAs. We are not proposing to codify the SSRA guidance or our recommended risk methodology for hazardous waste combustors. We are requesting comment on our tentative decision.

XVIII. What Alternatives to the Particulate Matter Standard Is EPA Proposing or Requesting Comment On?

As discussed in Part Two, Section IV.C, we are proposing particulate matter standards as surrogates to control metal HAP.[244] We are not proposing numerical metal HAP emission standards that would have accounted for all metal HAP because we generally do not have as much compliance test

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[242] We noted earlier that the 1998 guidance is currently being revised in consideration of public and peer review comments received. With respect to the 1999 guidance (USEPA. "Screening Level Ecological Risk Assessment Protocol for Hazardous Waste Combustion Facilities" EPA–530–D–99–001A, B&C. Peer Review Draft, 1999), we solicited public comment and plan to conduct a peer review. (*http://www.epa.gov/epaoswer/hazwaste/combust/ecorisk.htm*)

[243] The cost ranges for CKRC include both the cost of risk assessments and emission data collection. In its petition, CKRC provided a range of costs ($100,000 to $500,000 for risk assessments and $100,000 to $500,000 for emission data collection), but also provided an upper bound cost ($728,297 for a risk assessment and $588,790 for emission data collection, plus additional permit costs to equate to $1.3M).

[244] Particulate matter is not a listed HAP pursuant to CAA 112(b).

emissions information in our database for the nonenumerated metal HAP compared to the enumerated metal HAP,[245] and because we believe that a particulate matter standard, in lieu of emission standards that directly regulate all the metals in all feedstreams, simplifies compliance activities.

Nonetheless, we are today proposing an alternative to the particulate matter standard for incinerators, liquid fuel-fired boilers, and solid fuel-fired boilers that is conceptually similar to the alternative metal emission control requirements that were previously promulgated for incinerators. We are also requesting comment on another alternative to the particulate matter standard that would apply to all source categories that would be subject to particulate matter standards (*i.e.*, all source categories except hydrochloric acid production furnaces).

We discuss these two different alternatives below.

A. What Alternative to the Particulate Matter Standard Is EPA Proposing For Incinerators, Liquid Fuel-Fired Boilers, and Solid Fuel-Fired Boilers?

We promulgated an alternative to the particulate matter standard for incinerators feeding low levels of metals in the July 3, 2001, direct final rule. See 66 FR at 35093. Today we propose a simplified alternative to the particulate matter standard for incinerators, and we propose to expand the provision to also apply to liquid and solid fuel-fired boilers. Below, we first describe the alternative that was originally promulgated for incinerators, after which we describe the simplified approach and our rationale for proposing it.

The July 3, 2001, final rule allows incinerators to operate under alternative metal emission control requirements reflecting MACT in lieu of complying with the 0.015 gr/dscf particulate emission standard. Under the alternative, no particulate matter emission standard applies to incinerators under subpart EEE; however, the incinerator remains subject to the RCRA particulate matter standard of 0.08 gr/dscf pursuant to § 264.343(c). This is because Clean Air Act standards can supplant RCRA standards only when the CAA standard is sufficiently protective of human health and the environment to make the RCRA standard duplicative (within the meaning of RCRA section 1006 (b)(3)).[246] *See* Part Two, Section XVII.D.

This previously promulgated alternative to the particulate matter standard has three components. The first component is simply to meet metal emission limitations for semivolatile and low volatile metals. The emission limitations apply to both enumerated *and* non-enumerated metal HAP, excluding mercury. Enumerated semivolatile metals are those metals that are directly controlled with the numerical semivolatile emission standard, *i.e.*, cadmium and lead. Enumerated low volatile metals are those metals that are directly controlled with the numerical low volatile metals emission standard, *i.e.*, arsenic, beryllium and chromium. Non-enumerated metals are those remaining metal HAP: antimony, cobalt, manganese, nickel, and selenium that are not controlled directly with an emission standard, but are rather controlled through the surrogate particulate matter standard.[247] For purposes of these alternative requirements, the non-enumerated metals are classified as either a semivolatile or a low volatile metal, and included in the calculation of compliance with the corresponding emissions limit. The level of the standard is the same as that which applies to other incinerators, but the standard would apply to all metal HAP, not just those enumerated in the present low volatile metal and semivolatile metal standards.

The second component is a requirement for the incinerator to demonstrate that it is using reasonable hazardous waste metal feed control, *i.e.*, a defined metal feedrate that is better than the MACT-defining metal feed floor control level. The third component is a requirement for the incinerator to demonstrate that its air pollution control system achieves, at a minimum, a 90 percent system removal efficiency for semivolatile metals.

Today we propose a simplified version of the above described alternative in that we propose to require you to comply only with the first component described above, which is to achieve metal emission standards for semivolatile and low volatile metals. As discussed above, the level of the proposed standard is the same as that which applies to other sources, but the standard would apply to all metal HAP, not just those enumerated in the present semivolatile and low volatile metal standards. As with the previously promulgated alternative, no particulate matter emission standard would apply to these sources under subpart EEE; however, sources would remain subject to the RCRA particulate matter standard of 0.08 gr/dscf pursuant to §§ 264.343(c) or 266.105.

We propose to eliminate the requirements for you to demonstrate that: (1) You are using reasonable hazardous waste metal feed control, *i.e.*, a defined metal feed control that is better than the MACT-defining feed control level; and (2) your source is equipped with an air pollution control system that achieves at least a 90 percent system removal efficiency for semivolatile metals. We believe these two requirements are not necessary to ensure you are in fact controlling metals below MACT levels given that all sources electing to comply with this alternative must limit both the enumerated metals and non-enumerated metals to levels below the proposed levels that apply only to enumerated metals. Today's proposed approach, in effect, lowers the existing semivolatile and low volatile metal emissions limits because the contribution of nonenumerated metals must be accounted for when achieving the same numerical semivolatile and low volatile emission limits. We believe this is appropriate because this effectively lower emissions limit for enumerated metals compensates for the lower emission levels that would have been achieved if the source used a particulate matter control device capable of achieving the particulate matter standard. Put another way, we regard this emission limitation as an equivalent means of meeting the standard for HAP metals (except mercury) already established in the rule.

As discussed above, the approach we promulgated on July 3, 2001 required you, in practice, to feed low levels of metals on a continuous basis in order to qualify for the alternative. The rule required that the source's feed control level must be equivalent to or lower than 25% of the MACT-defining hazardous waste feed control level. We considered whether it would be appropriate to also apply such a

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[245] "Enumerated'' metals are those HAP metals that are directly controlled with an emission limit, *i.e.*, lead, cadmium, arsenic, beryllium, and chromium. The remaining nonmercury metal HAP are controlled using particulate matter as a surrogate.

[246] Sources electing to comply with these alternative requirements thus remain subject to the RCRA PM standard in their RCRA permit. The RCRA permit must include applicable operating limits that ensure compliance with the RCRA PM limit.

[247] Please note that the particulate matter standard is not redundant to the semivolatile and low volatile metal standards. Although controlling particulate matter also controls semivolatile and low volatile metals in combustion gas, these metals can also be controlled by feedrate control. Thus, sources can achieve the emission standard for semivolatile and low volatile metals primarily by feedrate control. In such cases, the particulate matter standard would be controlling nonenumerated metals primarily.

qualification requirement to today's proposed alternative. Unfortunately, the methodology used to calculate today's proposed emission standards does not base the standards on a specific MACT-defining feed control level. Thus, we do not have a MACT feed control level that we can readily use to define an appropriate low feed control level. We request comment on whether it is appropriate and/or necessary to establish a minimum feed control level, and if so, how it could be determined.

1. What Emission Limitation Must Incinerators Comply With Under This Alternative?

For existing incinerators, the emissions limits under this alternative would be: (1) A semivolatile metal emission limit of 59 µg/dscm for the combined emissions of lead, cadmium, and selenium; and (2) a low volatile metal emission limit of 84 µg/dscm for combined emissions of arsenic, beryllium, chromium, antimony, cobalt, manganese, and nickel (all emissions corrected to 7% oxygen).

For new sources, the emissions limits would be: (1) a semivolatile emission limit of 7 µg/dscm for combined emissions of lead, cadmium, and selenium; and (2) a low volatile emission limit of 9 µg/dscm for emissions of arsenic, beryllium, chromium, antimony, cobalt, manganese, and nickel (all emissions corrected to 7% oxygen).

2. What Emission Limitation Must Liquid Fuel-Fired Boilers Comply With Under This Alternative?

For existing liquid fuel-fired boilers, the emissions limits under this alternative would be: (1) A semivolatile metal emission limit of 1.1E–5 lb/MM BTU for the combined emissions of lead, cadmium, and selenium; and (2) a low volatile metal emission limit of 7.7E–5 lb/MM BTU for combined emissions of arsenic, beryllium, chromium, antimony, cobalt, manganese, and nickel (all emissions corrected to 7% oxygen).

For new sources, the emissions limits would be: (1) A semivolatile metal emission limit of 4.3E–6 lb/MM BTU for combined emissions of lead, cadmium, and selenium; and (2) a low volatile metal emission limit of 3.6E–5 lb/MM BTU for emissions of arsenic, beryllium, chromium, antimony, cobalt, manganese, and nickel (all emissions corrected to 7% oxygen).

3. What Emission Limitation Must Solid Fuel-Fired Boilers Comply With Under This Alternative?

For existing solid fuel-fired boilers, the emissions limits under this alternative would be: (1) A semivolatile metal emission limit of 170 µg/dscm for the combined emissions of lead, cadmium, and selenium; and (2) a low volatile metal emission limit of 210 µg/dscm for combined emissions of arsenic, beryllium, chromium, antimony, cobalt, manganese, and nickel (all emissions corrected to 7% oxygen).

For new sources, the emissions limits would be: (1) A semivolatile metal emission limit of 170 µg/dscm for combined emissions of lead, cadmium, and selenium; and (2) a low volatile metal emission limit of 190 µg/dscm for emissions of arsenic, beryllium, chromium, antimony, cobalt, manganese, and nickel (all emissions corrected to 7% oxygen).

4. Why Don't We Offer This Alternative to Lightweight Aggregate Kilns and Cement Kilns?

This alternative is intended to apply to sources that feed *de minimis* levels of metal HAP. We do not believe hazardous waste burning lightweight aggregate kilns and cement kilns feed these metals at *de minimis* levels primarily because raw materials and coal that is co-fired may contain these metal HAP, and because hazardous waste that is combusted by sources that receive off-site hazardous waste shipments (*i.e.*, commercial hazardous waste combustors) typically contain these metal HAP. Thus, we think that allowing this alternative would not be of practical significance because we do not believe these sources could meet the standard. As a result, we are not proposing this alternative for these source categories.

B. What Alternative to the Particulate Matter Standard Is EPA Requesting Comment On?

As previously discussed, we do not have sufficient metal HAP compliance data to calculate MACT floors that would account for all the nonmercury metal HAP in all feedstreams. We discuss below, however, an alternative approach to the particulate matter standard that could be implemented if sources monitor and collect nonmercury metal HAP feed concentration data prior to the compliance date. Such an approach, if promulgated, would result in site-specific metal HAP emission limits that would be dependent, in part, on each source's average feed concentration levels of metal HAP in their hazardous and nonhazardous waste feedstreams, and, for energy recovery units, each source's hazardous waste firing rate. We discuss this alternative below, and we request comment as to whether this approach is appropriate given the complexities associated with its implementation. Also see USEPA, "Draft Technical Support Document for HWC MACT Replacement Standards, Volume IV: Compliance With MACT Standards,'' March 2004, Chapter 23.9, for more discussion.

1. What Are the Components of the Total Metal Emissions Limitations?

This total metal emission limitation would regulate all nonmercury metal HAP with separate semivolatile HAP metal and low volatile HAP metal emission limits. Each semivolatile and low volatile metal limit would have separate MACT components that would control and limit enumerated and nonenumerated metal HAP emissions that are attributable to: (1) Hazardous waste feedstreams; (2) nonhazardous waste, non-fuel feedstreams (*e.g.*, cement kiln raw material); and (3) nonhazardous waste fuels (*e.g.*, coal). Some of these components may or may not apply depending on the source category. Each semivolatile and low volatile metal component is converted to a mass emission limitation, and each source's resultant total metal emissions would be limited to the summation of each of the applicable components. We describe these MACT components below.

a. Energy Recovery Units: Allowable Enumerated Semivolatile and Low Volatile Metal Emissions Attributable to the Hazardous Waste. This first component limits enumerated metal emissions attributable to hazardous waste feedstreams from energy recovery units, *i.e.*, liquid boilers, cement kilns, and lightweight aggregate kilns, and is equivalent to the enumerated semivolatile and low volatile metal mass emission rate that would be allowed by today's proposed standards. Each source's allowable mass emission rate limit for this component would be equivalent to its associated hazardous waste thermal feed rate (expressed as million Btu hazardous waste per hour) multiplied by the proposed semivolatile and low volatile metal thermal emission standard.

b. Solid Fuel-Fired Boilers and Incinerators: Allowable Enumerated Semivolatile and Low Volatile Metal Emissions Attributable to All Feedstreams. This second component applies only to solid fuel-fired boilers and incinerators, and limits enumerated metal mass emissions attributable to all feedstreams, *i.e.*, hazardous waste, nonhazardous waste, and nonhazardous waste fuels. This component limit is equivalent to the enumerated semivolatile and low volatile metal mass emission rate that would be allowed by today's proposed standards. Today's proposed standards for incinerators and solid-fuel-fired boilers limits total emissions from all feedstreams, and are expressed as stack gas concentration limits. Each source's allowable mass emission rate limit for this component would be equivalent to its gas flowrate multiplied by the proposed standard.

c. All Source Categories: Allowable Nonenumerated Semivolatile and Low Volatile Metal Emissions Attributable to the Hazardous Waste. This third component limits nonenumerated semivolatile and low volatile metal emissions attributable to hazardous waste feedstreams, and is applicable to all source categories. We currently do not have sufficient data to calculate a MACT emission limitation for nonenumerated metals in the hazardous waste. As a result, sources complying with this alternative would be required to collect three years of nonenumerated semivolatile and low volatile metal hazardous waste feed control concentrations.[248] Incinerators and solid fuel-fired boilers would be required to collect hazardous waste maximum theoretical emissions concentrations, and energy recovery units would be required to collect three years of hazardous waste thermal feed concentration data for these metal groups.[249] Each incinerator and solid fuel-fired boiler's allowable semivolatile and low volatile metal mass emission rate for this component would be equivalent to its associated three year average hazardous waste maximum theoretical emissions concentrations for each metal group multiplied by: (1) One minus the MACT system removal efficiency; and (2) its associated volumetric gas flow rate. Each energy recovery unit's allowable mass emission rate for this component would be equivalent to its associated three year average hazardous waste thermal feed concentration for each metal group multiplied by: (1) One minus the MACT system removal efficiency; and (2) its associated hazardous waste thermal feedrate (expressed as million Btu hazardous waste per hour). The MACT system removal efficiency that would be applied separately for semivolatile metals and low volatile metals would be determined as described in Part Two, Section VI.G.5 for each source category.

d. Energy Recovery Units: Enumerated and Nonenumerated Metal HAP Emissions Attributable to Nonhazardous Waste Fuels. The fourth component limits enumerated and nonenumerated semivolatile and low volatile metal mass emissions attributable to nonhazardous waste fuels (*e.g.*, coal) and is applicable to energy recovery units, *i.e.*, cement kilns, lightweight aggregate kilns, and liquid fuel-fired boilers. Energy recovery units complying with this alternative would be required to collect three years of enumerated and nonenumerated semivolatile and low volatile metal nonhazardous waste fuel thermal feed concentration levels.[250] Each source's allowable mass emission rate for this component would be equivalent to its associated three year average metal nonhazardous waste fuel thermal feed concentration for each metal group[251] multiplied by: (1) One minus the MACT system removal efficiency for the specified metal group; and (2) its associated nonhazardous waste thermal feedrate.[252] As discussed above, the MACT system removal efficiency that would be applied separately for semivolatile metals and low volatile metals would be determined as described in Part Two, Section VI.G.5 for each source category.

e. Incinerators and Solid Fuel-Fired Boilers: Nonenumerated Metal HAP Emissions Attributable to Nonhazardous Waste Fuels. The fifth component limits nonenumerated semivolatile and low volatile metal mass emissions attributable to nonhazardous waste fuels (*e.g.*, coal, fuel oil) and is applicable to incinerators and solid fuel-fired boilers. Sources complying with this alternative would be required to collect three years of nonenumerated semivolatile and low volatile metal nonhazardous waste fuel thermal feed concentrations. Each source's allowable mass emission rate for this component would be equivalent to its associated three year average metal nonhazardous waste fuel thermal feed concentration for each metal group[253] multiplied by: (1) One minus the MACT system removal efficiency for the specified metal group; and (2) its associated nonhazardous waste fuel thermal feedrate (expressed as million btu per hour). As discussed above, the MACT system removal efficiency that would be applied separately for semivolatile metals and low volatile metals would be determined as described in Part Two, Section VI.G.5 for each source category.

f. Incinerators and Solid Fuel-Fired Boilers: Nonenumerated Metal HAP Emissions Attributable to Nonfuel Nonhazardous Waste. The sixth component limits nonenumerated metal HAP emissions attributable to nonfuel nonhazardous waste feedstreams from incinerators and solid fuel-fired boilers. Sources complying with this alternative would be required to collect three years of nonenumerated semivolatile and low volatile metal nonfuel nonhazardous waste feedstream concentration data, expressed as mass of metal fed in its nonfuel nonhazardous waste feedstream per total thermal input into the combustor. Each source's allowable mass emission rate for this component would be equivalent to its associated three year average metal nonfuel nonhazardous waste thermal feed concentration for each metal group[254] multiplied by: (1) One minus the MACT system removal efficiency for the specified metal group; and (2) its associated total thermal feedrate (expressed as million Btus per hour). As discussed above, the MACT system removal efficiency that would be applied separately for semivolatile metals and low volatile metals would be determined as described in Part Two, Section VI.G.5 for each source category.

g. Cement Kilns and Lightweight Aggregate Kilns: Enumerated and Nonenumerated Metal HAP Emissions Attributable to Raw Materials. The

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[248] We request comment on how such an approach would work for new sources, given that new sources may not have historical feed concentration data at the time they begin operations.

[249] Each source would be required to calculate its associated three year average nonenumerated metal hazardous waste concentrations for both semivolatile metals (selenium) and low volatile metals (antimony, cobalt, manganese, and nickel) expressed in either hazardous waste thermal concentrations, *i.e.*, pounds per million Btus (for energy recovery units) or maximum theoretical emissions concentrations, *i.e.*, pounds per dry standard cubic feet (for incinerators and solid fuel-fired boilers).

[250] Sources would not be required to collect three years of data if the nonhazardous waste fuels such as natural gas do not contain metal HAP.

[251] Each source would be required to calculate its associated three year average metal concentrations in their coal for both semivolatile metals (lead, cadmium, and selenium) and low volatile metals (arsenic, beryllium, chromium, antimony, cobalt, manganese, and nickel) expressed in pounds per million Btu of coal.

[252] This would be equivalent to a kiln's coal feedrate expressed in million Btus per hour.

[253] Each source would be required to calculate its associated three year average nonenumerated metal concentrations in their nonhazardous waste fuel for both semivolatile metals (selenium) and low volatile metals (antimony, cobalt, manganese, and nickel) expressed in pounds per million Btu.

[254] Each source would be required to calculate its associated three year average nonenumerated metal thermal feed concentrations in their nonfuel nonhazardous waste feedstreams for both semivolatile metals (selenium) and low volatile metals (antimony, cobalt, manganese, and nickel) expressed in pounds per million Btu.

seventh component limits enumerated and nonenumerated metal HAP emissions attributable to raw material from cement kilns and lightweight aggregate kilns. Cement kilns and lightweight aggregate kilns complying with this alternative would be required to collect three years of enumerated and nonenumerated semivolatile and low volatile metal raw material feed concentration data, expressed as mass of metal fed in raw material per total thermal input into the kiln.[255] Each cement kiln and lightweight aggregate kiln's allowable mass emission rate for this component would be equivalent to its associated three year average metal raw material thermal feed concentration for each metal group[256] multiplied by: (1) one minus the MACT system removal efficiency for the specified metal group; and (2) its associated total thermal feedrate. As discussed above, the MACT system removal efficiency that would be applied separately for semivolatile metals and low volatile metals would be determined as described in Part Two, Section VI.G.5 for each source category.

2. Would Sources Still Be Required To Comply With a Particulate Matter Standard if They Comply With This Alternative?

As previously discussed in Part Two, Section VI.F, we conclude that today's proposed floor levels can be no higher than the interim standards because all sources, not just the best performing sources, are achieving the interim standards. It is not clear whether this alternative total metal emission limitation is less stringent than the current interim particulate matter standard for incinerators, cement kilns, and lightweight aggregate kilns.[257] As a result, incinerators, cement kilns, and lightweight aggregate kilns complying with this alternative would also be required to comply with the interim standard for particulate matter. Liquid and solid fuel-fired boilers complying with this alternative would remain subject to the RCRA particulate matter standard of 0.08 gr/dscf pursuant to § 264.343(c).[258]

3. How Would Sources Demonstrate Compliance With This Alternative?

Sources complying with this alternative would be required to calculate its site-specific semivolatile and low volatile metal mass emission rate limitation as described above. Each source's emission limitation would not only be a function of its average three years of metal concentration data collected, but also would be a function of either its gas flowrate (for incinerators and solid fuel fired boilers), hazardous waste thermal firing rate (for cement kilns, lightweight aggregate kilns, and liquid fuel-fired boilers), and total thermal input rate (for all sources). As a result each source's mass emission limitation would vary over time as the dependent variables change (*e.g.*, a cement kiln's allowable mass emission limitation would increase if its hazardous waste thermal firing rate increases).

Sources would demonstrate compliance with these site-specific metal emission rate limitations during its comprehensive performance test and would establish operating parameter limits on its air pollution control device to ensure that the source achieves the metal system removal efficiency that was demonstrated during the test during normal day-to-day operations. Sources would then establish total metal feedrate limits that would assure compliance with this site-specific metal emission limitation. Given that these metal emission limitations may vary over time, we request comment as to whether these emission limitations (and associated feedrate operating limits) should be instantaneous limits based on each source's current operating levels (*e.g.*, hazardous waste thermal input rate for energy recovery units, or gas flowrate for incinerators), or rather 12 hour rolling average limits that would be updated each minute.

XIX. What Are the Proposed RCRA State Authorization and CAA Delegation Requirements?

A. What Is the Authority for This Rule?

Today's rule amends the promulgated standards located at 40 CFR part 63, subpart EEE. It amends the standards for the Phase I source categories—incinerators, cement kilns, and lightweight aggregate kilns that burn hazardous waste, and it also amends subpart EEE to establish MACT standards for the Phase II source categories—boilers and hydrochloric acid production furnaces that burn hazardous waste. Additionally, this rule amends several RCRA regulations located in 40 CFR part 270 to reflect changes in applicability, addition of a new permit modification procedure and additions related site-specific risk assessments and permitting.

1. How Is This Rule Delegated Under the CAA?

Consistent with the September 1999 rule, we recommend that state, local, and tribal (S/L/T) air pollution control agencies apply for delegation of this subpart (and all NESHAP) under section 112(l) of the CAA, if they have not done so already, so that they can exercise delegable authorities for the final Phase I Replacement standards and Phase II standards. Delegable authorities are the discretionary activities, such as approving changes to the reporting schedule, that are part of each NESHAP. EPA retains some of those authorities, but allows most to be implemented by those S/L/T agencies who accept straight delegation of the NESHAP; in this case, subpart EEE. The delegable authorities, those that can and cannot be delegated, are described in section 63.1214 of this subpart. (For more information on delegation of part 63 provisions, see 65 FR 55810–55846.) All major sources of air pollutants, such as all sources subject to this subpart, must have a title V operating permit which would contain all applicable requirements, including those for this subpart. (For more information, please see 40 CFR part 70.) While S/L/T agencies can implement and enforce MACT standards through their approved title V programs, approval of title V programs alone do not allow S/L/T authorities to be the primary enforcement authority and they cannot exercise delegable provisions' authorities. An approved title V program means that S/L/T agencies commit to incorporating all MACT standards into title V permits as permit conditions and to enforcing all the terms and conditions of the permit.[259] Having an approved title V program, for

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[255] Total thermal input to kiln would include both hazardous and nonhazardous fuel thermal input.

[256] Each source would be required to calculate its associated three year average metal thermal feed concentrations in their raw material for both semivolatile metals (lead, cadmium, and selenium) and low volatile metals (arsenic, beryllium, chromium, antimony, cobalt, manganese, and nickel) expressed in pounds per million Btus.

[257] There is not a direct correlation between particulate matter emissions and metal emissions given that metal emission levels are both a function of feed control and particulate matter control.

[258] As previously discussed, this is because Clean Air Act standards can supplant RCRA standards only when the CAA standard is sufficiently protective of human health and the environment to make the RCRA standard duplicative (within the meaning of RCRA section 1006 (b) (3)).

[259] Accordingly, S/L/T agencies are required to reopen existing title V permits that have 3 or more years remaining in the permit term to include the promulgated standards. If there are less than 3 years remaining, S/L/T agencies may wait until renewal to incorporate the standards. Provided that a source is not required to reopen its title V permit, it must still fully comply with the promulgated standards (40 CFR 70.7(f)(1)(i)).

instance, does not automatically allow S/L/T agencies to approve test plans, requests for (minor and intermediate) changes to monitoring, performance test waivers, document notifications, or other Category I Authorities (*see* 40 CFR 63.91(g)(1)(i)). For those S/L/T agencies who have been previously delegated authority for the MACT standards under 40 CFR part 63 subpart EEE, we encourage you to request approval of the revisions to emission standards and various other compliance requirements of today's proposal when promulgated.

B. Are There Any Changes to the CAA Delegation Requirements for Phase I Sources?

With regard to CAA delegation requirements for Phase I sources, we intend to clarify which provisions in 40 CFR part 63 subpart EEE are delegable and those that are not in today's Notice of proposed rulemaking. We recently published a final rule, *Clarifications to Existing National Emissions Standards for Hazardous Air Pollutants Delegations' Provisions* on June 23, 2003 (see 68 FR 37334), that clarifies and streamlines delegable provisions for each existing NESHAP. Prior to finalization of this rule, many permitting authorities and sources alike were left to interpret which Category I authorities were delegable according to provisions specific to one NESHAP versus another. In light of this final rule, which outlines the non-delegable provisions for subpart EEE, some confusion remains today as to which actions can be taken by a delegated S/L/T agency. Therefore, we intend to clarify specific actions in subpart EEE that can or cannot be taken by permitting agencies who have received delegation under 112(l) of the CAA for subpart EEE.

Sections 63.91(g)(1)(i) and (g)(2)(i) list authorities that are generally delegable to S/L/T agencies and those that are not, respectively. These apply to all NESHAP. Similar information contained in § 63.1214 explains that some of the discretionary authorities, such as approval of alternative reporting schedules, under subpart EEE, can be implemented and enforced by a delegated authority. It also lists the authorities that are retained by EPA and are not delegable to S/L/T agencies even if they have received delegation for subpart EEE. These non-delegable authorities are: (1) Approval of alternatives to requirements in §§ 63.1200, 63.1203 through 63.1205, and 63.1206(a); (2) approval of major alternatives to test methods under § 63.7(e)(2)(ii) and (f); (3) approval of major alternatives to monitoring under § 63.8(f) and; (4) approval of major alternatives to recordkeeping and reporting under § 63.10(f). It is important to note that if the alternatives mentioned in items (2) through (4) are determined to be minor or intermediate according to the definitions in § 63.90(a), then they are considered delegable and can be approved by a S/L/T agency who has been granted authority for subpart EEE.[260] To aid in the determination of whether a request is major, intermediate, or minor, we recommend that you consult the September 14, 2000 final rule, *Hazardous Air Pollutants: Amendments to the Approval of State Programs and Delegation of Federal Authorities* (65 FR 55810). The preamble to this rule provides examples, as well as the regulatory definitions as they exist today in 40 CFR 63.90(a). Additionally, you may consult a guidance document entitled, *How to Review and Issue Clean Air Act Applicability Determinations and Alternative Monitoring* (EPA 305-B–99–004, February 1999).

While § 63.1214(c) and § 63.90(a) provide which authorities are not delegable for subpart EEE sources and define degrees of changes, they may not be clear in certain applications. We will address specific sections in subpart EEE, through the following preamble discussion and through regulatory amendments, where we believe there is a need for clarity based upon our experiences with the implementation of the Phase I standards thus far. Also, there are some alternatives in subpart EEE that were inadvertently left out of § 63.1214(c) which we are adding through this Notice of proposed rulemaking.

Beginning with test methods, major alternatives are not delegable. (See 40 CFR 63.90(a) for definitions of major, intermediate, and minor changes to test methods.) We noted in § 63.1214(c)(2) that major alternatives to the test methods as addressed in the general provisions at § 63.7(e)(2)(ii) and (f) were not delegable, however, we did not specifically include test methods relevant to subpart EEE. Section 63.1208(b) specifies the test methods sources must use to determine compliance with emission standards in subpart EEE. This section is delegable in its entirety to S/L/T agencies who have been delegated authority for subpart EEE, as long as the request is not a major change. Additionally, the CEMS required in § 63.1209(a)(1), although a monitoring requirement, is considered to be a test method since it serves as the benchmark measurement method for demonstrating compliance with emission standards. The authority to approve changes to the CEMS-related requirements is also delegable to S/L/T agencies as long as the request is not a major change. To summarize, if a source proposes a major change to a test method specified in §§ 63.1208(b) and 63.1209(a)(1), it must send the request to the appropriate EPA Region and EPA's Office of Air Quality Planning and Standards,[261] since major changes to test methods are not delegable. We are adding §§ 63.1208(b) and 63.1209(a)(1), to the authorities in § 63.1214(c)(2) that are not delegable for major changes.

Consistent with the major alternatives to test methods, major alternatives to monitoring are not delegable. (See 40 CFR 63.90(a) for definitions of major, intermediate, and minor changes to test methods.) We noted in § 63.1214(c)(2) that major alternatives to monitoring as addressed in the general provisions in § 63.8(f) were not delegable, but we did not specifically address the relevant monitoring requirements in subpart EEE. Section 63.1209 specifies the monitoring requirements sources must use to determine compliance with emission standards in EEE. Depending upon the pollutant to be monitored, either a CEMS or COMS is required.

Before discussing whether changes to monitoring in subpart EEE are delegable, it is important first to review how requests for changes to monitoring are handled under the general provisions of § 63.8(f). In general, requests for alternative monitoring follow the same approach, with respect to delegation authority, as requests for alternative test methods discussed above; requests that are defined as major should be sent to the appropriate EPA Region and requests that are intermediate or minor should be sent to the delegated S/L/T agency. A request to use other monitoring in lieu of a CEMS is always considered a major change. However, if a source proposes to use a CEMS in lieu of an operating parameter, the request may be considered an intermediate change, so long as the CEMS to be used is regarded as a "proven technology'' and could be submitted to a S/L/T agency for approval. The rationale for this is that the use of a CEMS, rather than monitoring via an operating parameter, provides a better measure of compliance

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[260] EPA Regions may choose whether they will or will not delegate authority to S/L/T agencies to approve minor and intermediate changes.

[261] Send requests to: Conniesue B. Oldham, Ph.D., Group Leader, Source Measurement Technology Group (D205–02), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC 27711.

and thus, we want to encourage the use of CEMS when possible. While we want to encourage the use of CEMS, we recognize that S/L/T agencies may not always have the technical resources to review these applications, particularly when there are no federally promulgated performance specifications for the CEMS. In such cases, we expect that the S/L/T agency will rely on EPA Regions for approval.

In subpart EEE, § 63.1209, there are two alternative approaches to monitoring that sources may use. One is located at § 63.1209(a)(5), *Petitions to use CEMS for other standards,* and the other is at § 63.1209(g)(1), *Alternative monitoring requirements other than continuous emissions monitoring systems.* Section 63.1209(a)(5) allows sources to request to use CEMS to monitor particulate matter, mercury, semivolatile metals, low volatile metals, and/or hydrochloric acid/chlorine gas in lieu of compliance with operating parameter limits. In these cases, a source would be monitoring the pollutant of concern and comparing the emissions measurements directly against an emission limitation rather than comparing the measurements to an operating parameter. We consider a request under § 63.1209(a)(5) to be a major change to monitoring and consequently, it is not delegable. We classify § 63.1209(a)(5) to be a major change (rather than an intermediate change which can be delegable) mainly because we have not yet promulgated Performance Specifications for the CEMS that may be used. In other words, it could be argued that these CEMS do not yet qualify as fully "proven technology''. We understand that it could be argued either way, but for the reasons discussed in the previous paragraph and as an added measure of consistency, requests to use CEMS in lieu of operating parameters should be submitted to the EPA Region for approval. Therefore, we are adding § 63.1209(a)(5) to the authorities in § 63.1214(c)(2) that are not delegable for major changes.

The other alternative monitoring provision, § 63.1209(g)(1), allows sources to use alternative monitoring methods, with the exception of the standards that must be monitored with a CEMS, and to request a waiver of an operating parameter limit. Section 63.1209(g)(1) applies to requests for alternative parameter monitoring that involve the use of a different detector (*i.e.*, thermocouple, pressure transducer, or flow meter), a different monitoring location, a different method as recommended by the manufacturer, or a different averaging period that is more stringent than the applicable standard. For example, sources equipped with wet scrubbers are required to establish a minimum pressure drop limit to assure adequate contact between the gas and liquid. A source may petition to have this monitoring requirement waived if the manufacturer does not recommend pressure drop as a critical control parameter that affects the unit's operating efficiency. Depending upon the type of wet scrubber, an appropriate minimum limit may be specified for steam injection rate, disk spin rate, or a maximum temperature limit on liquid and flue gas, rather than pressure drop. Also, sources could request more stringent averaging periods in order to "mirror'' the averaging periods required under RCRA. This may facilitate an easier transition from RCRA to MACT during the time period sources may need to comply with both sets of requirements. Since we do not consider these changes to be major, requests under § 63.1209(g)(1) should be sent to the delegated S/L/T agency for approval. Accordingly, we are amending the language in § 63.1209(g)(1) to specify that a source may submit an application to the Administrator or a State with an approved Title V program. Also, we are revising the title under § 63.1209(g)(1) so that it is more specific regarding its intended use.

Lastly, major alternatives to recordkeeping and reporting also are not delegable. (See 40 CFR 63.90(a) for definitions of major, intermediate, and minor changes to test methods.) We noted in § 63.1214(c)(2) that major alternatives to the general provisions of § 63.10(f) were not delegable, but we did not specifically address any relevant recordkeeping and reporting requirements in subpart EEE. Section 63.1211 specifies the recordkeeping and reporting requirements sources must comply with in subpart EEE. This section is delegable in its entirety to S/L/T agencies who have been delegated authority to implement and enforce subpart EEE, as long as the request is not a major change. It is worthwhile to note that paragraph (e), *Data compression,* may be incorrectly interpreted as a major change itself to the recordkeeping and reporting requirements, because it appears as though there are no criteria to define fluctuation or data compression limits. However, this is not the case. In the preamble to the September 1999 final rule (see 64 FR 52961 and 52962), we provided guidance for preparing a request to use data compression techniques and recommended fluctuation and data compression limits. This guidance was not affected by the court's vacatur of portions of this rule, so it remains in effect. Consequently, this allows permitting authorities to be consistent in their evaluation of requests. We view paragraph (e) to be a minor change itself and so a written request to use data compression techniques can be submitted to a delegated S/L/T agency. We are adding § 63.1211(a)—(d) to the authorities in § 63.1214(c)(2) that are not delegable for major changes.

In addition to the clarifications and amendments addressed above, there are two important delegation issues we would like to emphasize. The first is simply to remind sources and permitting authorities alike that, if a provision in this subpart specifies that you may petition or request that the "Administrator or State with an approved Title V program * * *,'' then a state that has not been delegated for that requirement, but has an approved Title V program, does have the authority to approve or disapprove the request. For instance, § 63.6(i)(1) and § 63.1213(a) both specify that the "Administrator (or a State with an approved permit program)'' can grant a compliance extension request. The second is that EPA Regions can decide whether or not to delegate the authority to approve intermediate changes to state and local agencies. In some cases, a state may have received delegation to approve only minor changes. Where there is uncertainty, we recommend that sources try to determine if a request is major, intermediate, or minor based on the definitions in 40 CFR 63.90(a), and then consult with their S/L/T agency and/or EPA Region to determine where to submit the request. Or, sources may submit requests to the S/L/T agency or EPA Region who will then determine where it should go for approval.

C. What Are the Proposed CAA Delegation Requirements for Phase II Sources?

With respect to CAA delegation requirements for Phase II sources, they are the same as those for Phase I sources. Since both Phase I and Phase II MACT standards are located in the same subpart, EEE, the same delegation provisions apply to both. Generally speaking, authority to approve alternatives to standards or major changes to test methods, monitoring, and recordkeeping and reporting are not delegated to S/L/T agencies. Authority to approve intermediate and minor changes to test methods, monitoring, and recordkeeping and reporting are delegated to S/L/T agencies who have been delegated authority to implement subpart EEE. All other subpart EEE implementation requirements may be handled by the delegated S/L/T agency. For specific information, please refer to the previous section, A.1. *What are the clarifications and changes to CAA delegable authorities for this rule?*

How Would States Become Authorized under RCRA for this Rule? Under section 3006 of RCRA, EPA may authorize qualified states to administer their own hazardous waste programs in lieu of the federal program within the state. Following authorization, EPA retains enforcement authority under sections 3008, 3013, and 7003 of RCRA, although authorized states have primary enforcement responsibility. The standards and requirements for state authorization are found at 40 CFR part 271.

Prior to enactment of the Hazardous and Solid Waste Amendments of 1984 (HSWA), a State with final RCRA authorization administered its hazardous waste program entirely in lieu of EPA administering the federal program in that state. The federal requirements no longer applied in the authorized state, and EPA could not issue permits for any facilities in that state, since only the state was authorized to issue RCRA permits. When new, more stringent federal requirements were promulgated, the state was obligated to enact equivalent authorities within specified time frames. However, the new federal requirements did not take effect in an authorized state until the state adopted the federal requirements as state law.

In contrast, under RCRA section 3006(g) (42 U.S.C. 6926(g)), which was added by HSWA, new requirements and prohibitions imposed under HSWA authority take effect in authorized states at the same time that they take effect in unauthorized states. EPA is directed by the statute to implement these requirements and prohibitions in authorized states, including the issuance of permits, until the state is granted authorization to do so. While states must still adopt HSWA related provisions as state law to retain final authorization, EPA implements the HSWA provisions in authorized states until the states do so.

Authorized states are required to modify their programs only when EPA enacts federal requirements that are more stringent or broader in scope than existing federal requirements. RCRA section 3009 allows the states to impose standards more stringent than those in the federal program (see also 40 CFR 271.1). Therefore, authorized states may, but are not required to, adopt federal regulations, both HSWA and non-HSWA, that are considered less stringent than previous federal regulations.

The amendments to the RCRA regulations proposed today in sections 40 CFR 270.10, 270.22, 270.32, 270.42, 270.66, and 270.235 are considered to be either less stringent or equivalent to the existing Federal program. Thus, states are not required to modify their programs to adopt and seek authorization for these provisions, although we strongly encourage them to do so to facilitate the transition from the RCRA program to the CAA program and to promote national consistency. Additionally, EPA will not implement those provisions promulgated under HSWA authority that are not more stringent than the previous federal regulations in States that have been authorized for those previous federal provisions.

The amendments in sections 40 CFR 270.22 and 270.66 in today's notice are proposed under the HSWA amendments to RCRA. Further, today's proposed amendment in 40 CFR 270.235 to apply this provision to solid and liquid fuel-fired boilers and HCL production furnaces, is proposed under HSWA statutory authority. The amendments to the RCRA regulations proposed today in sections 40 CFR 270.10 and 270.32 are proposed under both non-HSWA and HSWA authority, depending on the type of unit to which these amendments are applied (under HSWA authority if applied to BIFs or non-HSWA authority if applied to incinerators). Refer to Part Two, Section XVII.D.4 for a more detailed discussion of the implementing authorities for proposed regulations in 40 CFR 270.10 and 270.32. The following RCRA sections, enacted as part of HSWA, apply to today's rule: 3004(o), 3004(q), and 3005(c)(3). As a part of HSWA, these RCRA provisions are federally enforceable in an authorized State until the necessary changes to a State's authorization are approved by us. See RCRA section 3006, 42 U.S.C. 6926. The Agency is adding these requirements to Table 1 in 271.1(j), which identifies rulemakings that are promulgated pursuant to HSWA.

Part Three: Proposed Revisions to Compliance Requirements

In this section, we discuss proposed revisions to compliance requirements that may affect all hazardous waste combustors. We also request comment on whether we should make revisions to other compliance requirements, and explain why we conclude not to make revisions to other compliance requirements that we proposed (or requested comment on) previously.

I. Why Is EPA Proposing To Allow Phase I Sources To Conduct the Initial Performance Test To Comply With the Replacement Rules 12 Months After the Compliance Date?

We propose to allow owners and operators of incinerators, cement kilns, and lightweight aggregate kilns to commence the initial comprehensive performance test to comply with the replacement standards proposed at §§ 63.1219, 63.1220, and 63.1221 within 12 months of the compliance date rather than within six months of the compliance date. See proposed § 63.1207(c)(3). Owners and operators of solid fuel-fired boilers, liquid fuel-fired boilers, and hydrochloric acid production furnaces, however, must commence the initial comprehensive performance test within six months of the compliance date.

During development of the joint motion by petitioners to the United States Court of Appeals for the District of Columbia Circuit that resulted in the Agency promulgating the Interim Standards Rule on February 13, 2002,[262] stakeholders representing owners and operators of incinerators, cement kilns, and lightweight aggregate kilns requested that we propose to allow them 12 months after the compliance date to commence the initial comprehensive performance test. These stakeholders request a 12 month window rather than the six month window currently required under § 63.1207(c) to give them longer to amortize the cost of the comprehensive performance test demonstrating compliance with the Interim Standards before having to retest to demonstrate compliance with the replacement standards proposed today.[263] We believe this request has merit and so are proposing to allow them to commence the initial comprehensive performance test within 12 months after the compliance date.[264]

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[262] See discussion in Part One, Section I.B.1.

[263] These stakeholders assumed, correctly, that today's proposed replacement emission standards would be substantially more stringent than the current (September 1999 Final Rule) standards.

[264] Please note that this does not affect the compliance date. You must be in compliance with the replacement standards on the compliance date, and certify in the Documentation of Compliance that you have established operating parameter limits that you believe will ensure compliance with the standards. You must record the Documentation of Compliance in the operating record by the compliance date.

II. Why Is EPA Requesting Comment on Requirements Promulgated as Interim Standards or as Final Amendments?

As discussed in Part One, Section I.B., EPA promulgated interim standards (called the Interim Standards Rule) on February 13, 2002 that amended compliance and implementation provisions of the September 1999 Final Rule. The amended provisions were specified in a joint motion by petitioners to the United States Court of Appeals for the District of Columbia Circuit (the Court). Although petitioners agreed that the amendments should be promulgated (see 67 FR at 6794), petitioners requested that EPA reopen certain amended provisions for public comment.

Also as discussed in Part One, Section I.B, EPA promulgated amendments (called Final Amendments) to the September 1999 Final Rule on February 14, 2002 that revised certain implementation and compliance requirements. These amendments were also specified in the joint motion to the Court, and petitioners requested that EPA reopen specific amended provisions for public comment.

We discuss these provisions in this section, and reopen them for public comment. (We note, however, that we are *not* reopening for comment any RCRA rules, and are not soliciting comment on any aspect of those rules, or otherwise reconsidering or reexaming any such rules. Any references to RCRA rules in the discussion which follows is solely as an aid to readers.) Although we are not proposing additional revisions to these provisions, we may determine after review of public comments on the issues we raise that revisions are appropriate. If so, we would promulgate those amendments in the Replacement Rule.

Although these provisions currently apply only to incinerators, cement kilns, and lightweight aggregate kilns, we are proposing today to apply them to boilers and hydrochloric acid production furnaces as well. (*See* Part Two, Sections XIII–XV.) Accordingly, any amendments to these requirements that we may promulgate would also apply to boilers and hydrochloric acid production furnaces.

A. Interim Standards Amendments to the Startup, Shutdown, and Malfunction Plan Requirements

The September 1999 Final Rule required compliance with the emission standards and operating requirements at all times that hazardous waste is in the combustion system, including during startup, shutdown, and malfunctions. Industry stakeholders noted that requiring compliance with emission standards and operating requirements during startup, shutdown, and malfunctions is inconsistent with the General Provisions of subpart A, part 63, that apply to MACT sources (unless alternative requirements are prescribed for a source category). Stakeholders stated that it is inappropriate to penalize a source for exceeding emission standards and operating requirements during malfunctions because some exceedances are unavoidable and sources are already required to take corrective measures prescribed in the startup, shutdown, and malfunction plan (SSMP) to minimize emissions.

In response to industry stakeholder concerns, the Interim Standards Rule amended the SSMP requirements to: (1) Exempt sources from the Subpart EEE emission standards and operating requirements during startup, shutdown, and malfunctions; (2) continue to subject sources to RCRA requirements during malfunctions, unless they comply with alternative MACT requirements including expanding the SSMP to minimize the frequency and severity of malfunctions, and submit the plan to the delegated CAA authority for review and approval [265]; (3) continue to subject sources that burn hazardous waste during startup and shutdown to RCRA requirements for startup and shutdown, unless they comply with alternative MACT requirements, and require sources to include waste feed restrictions and operating conditions and limits in the startup, shutdown, and malfunction plan; (4) require sources to include in the SSMP a requirement to comply with the automatic hazardous waste feed cutoff system during startup, shutdown, and malfunctions; and (5) make conforming revisions to the emergency safety vent opening requirements. *See* 67 FR at 6798–6802.

In response to Sierra Club's request during development of the joint motion to the Court, we specifically request comment on the following issues. Notwithstanding the rationale for revising the September 1999 Final Rule to exempt sources from the subpart EEE emission standards and operating requirements during malfunctions, would it be appropriate to require compliance with those standards and operating requirements during malfunctions to ensure that owners and operators have an incentive to minimize the frequency and duration of malfunctions that result in exceedances of the standards or operating requirements. Given that most excess emissions would occur during startup, shutdown, and malfunctions, should the SSMP be submitted for review by the delegated regulatory authority and made available for public review under all options for controlling emissions during startup, shutdown, and malfunctions? Providing a mechanism for public review may help ensure that the SSMP is complete, proactive, and provides appropriate corrective measures.[266] And finally, should the final rule clarify the definitions of startup, shutdown, and malfunctions to preclude, for example, an owner or operator incorrectly classifying an exceedance of an operating limit while hazardous waste remains in the combustion chamber as a malfunction when, in fact, the exceedance occurred because of a not infrequent event that could have been prevented by proper operation and maintenance of equipment?

B. Interim Standards Amendments to the Compliance Requirements for Ionizing Wet Scrubbers

The September 1999 Final Rule required sources to establish a limit on minimum total power to an ionizing wet scrubber. The Interim Standards Rule deleted that requirement to conform with the requirements for electrostatic precipitators given that an ionizing wet scrubber is essentially an ESP integrated with a packed bed scrubber. *See* 67 FR at 6802–03.[267] In lieu of establishing a limit on the minimum total power requirement to an ionizing wet scrubber, sources and delegated CAA authorities will use the alternative monitoring provisions of § 63.1209(g) to identify appropriate controls for an ionizing wet scrubber on a site-specific basis. This is

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[265] These requirements are needed to minimize emissions of HAP during startup, shutdown, and malfunctions and, thus, help meet our RCRA mandate to ensure that emissions from hazardous waste combustors do not pose a hazard to human health and the environment. Sources may elect either to remain under RCRA control during these events or to comply under MACT with requirements to develop and implement a comprehensive and proactive startup, shutdown, and malfunction plan that is reviewed and approved by the delegated regulatory authority.

[266] We also request comment on whether the startup, shutdown, and malfunction plan should be expanded beyond the scope required under § 63.6(e)(3) (requiring appropriate corrective measures in reaction to a malfunction) to address specific, proactive measures that the owner and operator have considered and are taking to minimize the frequency and severity of malfunctions.

[267] EPA voluntarily vacated operating parameter limits for electrostatic precipitators (and fabric filters) on May 14, 2001. *See* 66 FR at 24272. Until new operating parameter limits are promulgated, sources and delegated CAA authorities will use § 63.1209(g) to establish operating parameter limits for electrostatic precipitators (and fabric filters) on a site-specific basis.

the same approach that is used for electrostatic precipitators.

Please note that we are requesting comment today on compliance requirements for electrostatic precipitators and fabric filters. In that discussion (*see* Section III.I below), we explain that we are proposing to apply the same compliance requirements to both electrostatic precipitators and ionizing wet scrubbers.

C. Why Is EPA Requesting Comment on the Fugitive Emission Requirements?

The September 1999 Final Rule required sources to control combustion system leaks by either: (1) Keeping the combustion zone sealed; (2) maintaining the maximum combustion zone pressure lower than ambient pressure using an instantaneous monitor; or (3) using an alternative means to provide control of system leaks equivalent to maintaining the maximum combustion zone pressure lower than ambient. After publication of the September 1999 Final Rule, stakeholders expressed concern that the option to maintain combustion zone pressure lower than ambient pressure (option 2 above) could result in overly prescriptive requirements. Stakeholders believed that this regulatory language could be interpreted to require sources to monitor and record combustion zone pressure at a frequency of every 50 milliseconds. Stakeholders also requested that we clarify that combustion system leaks refers to fugitive emissions resulting from the combustion of hazardous waste, and not fugitive emissions that originate from nonhazardous process streams.

In response to these concerns, we proposed amendments to the combustion system leak provisions on July 3, 2001. *See* 66 FR at 35132. We promulgated several revisions in the Final Amendments Rule after considering stakeholder comments. *See* 67 FR at 6973.

The amended provisions that we are reopening for public comment today are discussed below. First, we amended the definition of an instantaneous pressure monitor to better clarify that the intent of the combustion system leak requirements is to prevent fugitive emissions from the combustion of hazardous waste rather than from nonhazardous feedstreams. The revised definition also clarifies that instantaneous pressure monitors must detect and record pressure at a frequency adequate to detect combustion system leak events, as determined on a site-specific basis. *See* § 63.1201(a) and § 63.1209(p). Second, we added a provision that requires sources to specify the method used to control combustion system leaks in the performance test workplan and Notification of Compliance. *See* § 63.1206(c)(5)(ii). Finally, in response to numerous comments, we added a provision that will allow sources, upon prior written approval of the Administrator, to use other techniques that can be demonstrated to prevent fugitive emissions without the use of instantaneous pressure limits. *See* § 63.1206(c)(5)(i)(D).

The provision allowing sources, upon prior written approval, to use other techniques that are demonstrated to prevent fugitive emissions without the use of instantaneous pressure limits was the most controversial. Specifically, some stakeholders believe this revised regulatory language is inappropriate because it suggests sources can sustain a positive pressure event and still prevent fugitive emissions. We believe that all positive pressure events do not necessarily result in fugitive emissions. As discussed in detail in the Final Amendments Rule, there are state-of-the-art rotary kiln seal designs (such as shrouded and pressurized seals) which are capable of handling positive pressures without fugitive releases. However, we believe these kilns are highly unusual, and that other conventional rotary kilns used in the hazardous waste combustion industry may not have seals which are designed for such positive pressure operation. In fact, we believe that, for most rotary kilns in use today, positive pressure events can result in fugitive releases. The level of such fugitive releases will be dependent on factors including the magnitude and duration of the pressure excursion and the design and operation of the kiln.

Furthermore, one commenter recommends that sources should be allowed to petition the regulatory official to use an alternative approach, *i.e.*, an approach that does not require instantaneous pressure limits, only if they meet specific combustor design criteria. For example, it may be appropriate to apply this provision only to sources that we know are designed in manner that would not necessitate use of instantaneous pressure limits to prevent fugitive emissions (*e.g.*, kilns with multiple graphite seals with pressurized chambers between the seals to prevent out-leakage, or overlapping spring plate seals to form an air seal). We request comment on whether this specificity is necessary, or whether it is more appropriate to determine this on a site-specific basis (as is currently required). We also request comment on whether all the previously discussed combustion system leak regulatory revisions are appropriate.

D. Why Is EPA Requesting Comment on Bag Leak Detector Sensitivity?

The September 1999 Final Rule required sources equipped with fabric filters to install a bag leak detection system where the detector has the capability to detect PM emissions at concentrations of 1.0 milligrams per actual cubic meter, or less. In response to industry stakeholder concerns that a detector need not be able to detect levels as low as 1.0 mg/acfm to detect subtle changes in baseline, normal emissions of PM, we proposed in the July 3, 2001, proposed rule (66 FR at 35134–35) to allow sources to use detectors with less sensitivity provided that the detector could detect subtle increases in normal emissions (*e.g.*, caused by pinhole leaks in the bags). The stakeholders noted that sources equipped with well designed and operated fabric filters can have normal, baseline emissions well above 1.0 mg/acfm and be in compliance with the particulate matter emission standards. Stakeholders recommended that we revise the bag leak detection requirements to explicitly allow detectors with lower sensitivity in lieu of source's having to petition the delegated regulatory authority under the alternative monitoring provisions of § 63.1209(g)(1) to receive case-by-case approval. All commenters on the proposed amendment supported the revision, and we finalized the amendment in the February 14, 2002, Final Amendments. See 67 FR at 6981.

In response to a petitioner's request during development of the joint motion to the Court, however, we specifically request additional comment on whether allowing detectors that have a level of detection that is higher than 1.0 mg/acfm will enable the detector to detect subtle increases in normal emissions. The petitioner is concerned that a detector with a level of detection higher than 1.0 mg/acfm may not have the same sensitivity as a detector that can detect PM at 1.0 mg/acfm. Thus, petitioner is concerned that the less sensitive detector may not be able to detect subtle increases in PM emissions due to bag degredation as readily as a detector that can detect at 1.0 mg/acfm. We specifically request comment on this issue.

We reopen this issue for comment without prejudice to the existing regulations which allow for less sensitive bag leak detectors. You may use less sensitive bag leak detectors until the compliance date for any change we may make in the final rule.

E. Final Amendments Waiving Operating Parameter Limits During Testing Without an Approved Test Plan

The September 1999 Final Rule waived operating parameter limits during subsequent performance testing under an approved performance test plan. In response to stakeholder concerns, we addressed two issues in the Final Amendments: (1) Applicability of operating parameter limits, established in the Documentation of Compliance, during an initial performance test conducted without an approved test plan; and (2) applicability of operating parameter limits, established in the Notification of Compliance, during subsequent performance tests conducted without an approved test plan. See 67 FR at 6978.

Regarding the initial performance test, we explained that a source can revise the operating parameter limits specified in the Documentation of Compliance at any time based on supporting information. This information would also be included in the performance test plan to support deviating from the operating limits established in the previous Documentation of Compliance. Given that sources operate after the compliance date until the Notification of Compliance is submitted under operating limits established in the Documentation of Compliance, and that the technical support for the operating limits established in the Documentation of Compliance is the same as would be included in the test plan, it is appropriate to allow initial performance testing and associated pretesting without an approved test plan.

Regarding subsequent performance testing, we amended the rule to waive the operating parameter limits during performance testing and associated pretesting even when testing without an approved test plan. We reasoned that stack emissions data obtained during the testing would document whether the source maintained compliance with the emission standards. (Please note that during testing, including pretesting, stack emissions must be documented for any emissions standard for which the source waives an operating parameter limit.) Absent approval of the test plan, documentation of potential violation of an emission standard is nonetheless an ample incentive to operate within the emission standards.

In response to a petitioner's request during development of the joint motion to the Court, however, we request comment on whether documentation of stack emissions during subsequent performance testing and associated pretesting is adequate to ensure compliance with the emission standards absent an approved test plan.

III. Why Is EPA Requesting Comment on Issues and Amendments That Were Previously Proposed?

In a July 3, 2001, proposed rule, EPA proposed several revisions to implementation and compliance requirements, and discussed other implementation and compliance issues. See 66 FR 35126. We promulgated several of those amendments in the February 14, 2002, Final Amendments Rule, and we stated in that rule that we would address the remaining proposed amendments and other issues in a future rulemaking. See 67 FR at 6970–71. We discuss below those remaining proposed amendments and issues.

Although these issues and proposed amendments originally pertained only to incinerators, cement kilns, and lightweight aggregate kilns, any amendments that we may promulgate subsequent to this notice would also apply to boilers and hydrochloric acid production furnaces.

A. Definition of Research, Development, and Demonstration Source.

In response to industry stakeholder concerns, EPA requested comment in the July 3, 2001, proposed rule on approaches to preclude inappropriate use of the exemption for research, development, and demonstration sources. See 66 FR at 35128. We indicated we were considering two approaches: (1) Clearly distinguishing between research and development sources, and limiting the exemption for demonstration sources to one year or less; or (2) requiring documentation of how a source's demonstration of an innovative or experimental hazardous waste treatment technology or process is different from the waste management services provided by a commercial hazardous waste combustor.

Two stakeholders provided comments, and both recommended that EPA not revise the definition of research, development, and demonstration source. One commenter suggested that EPA should be able to determine if a source is inappropriately claiming the exemption for research, development, and demonstration source without amending the regulation. The other commenter suggested that, rather than amend the regulation, EPA should reiterate that RCRA regulations continue to apply to exempt research, development, and demonstration sources.[268]

We concur with the commenters and are not proposing to amend the definition of research, development, and demonstration source.

B. Identification of an Organics Residence Time That Is Independent of, and Shorter Than, the Hazardous Waste Residence Time

In response to industry stakeholder recommendations, EPA requested comment in the July 3, 2001, proposed rule on whether it is practicable to calculate a hazardous waste organics residence time that defines when organic constituents in solid materials have been destroyed. See 66 FR at 35128–30. Under stakeholders' recommendation, after the hazardous waste organics residence time expires, sources could comply with standards the Agency has promulgated under sections 112 or 129 of the Clean Air Act to control organic emissions for source categories that do not burn hazardous waste in lieu of the hazardous waste combustor standards and associated compliance requirements under subpart EEE, part 63, for dioxin/furan, destruction and removal efficiency, and carbon monoxide or hydrocarbon emissions.[269]

In the July 3, 2001, proposed rule, we raised several concerns regarding the approach recommended by stakeholders to calculate an organics residence time, and specifically requested comment on how these concerns could be addressed. See 66 FR at 35130. Although several stakeholders provided comment on the discussion we presented in the July 3, 2001, proposed rule, commenters did not address the concerns we raised. Rather, commenters generally note that calculation of an organics residence time for solid waste streams would be difficult to characterize generically. Accordingly, commenters suggest that the rule be amended to specifically allow calculation of an organics residence time on a site-specific basis.

We are reluctant to encourage site-specific petitions to calculate an

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[268] Hazardous waste research, development, and demonstration sources remain subject to RCRA permit requirements under § 270.65, which direct the Administrator to establish permit terms and conditions that will assure protection of human health and the environment.

[269] Stakeholders also wanted the hazardous waste residence time (for organics) to expire as soon as possible to avoid violations associated with exceedances of an organics emission standard or associated operating requirement during malfunctions when hazardous waste remained in the combustion chamber. The rule has been amended, however, to state that an exceedance of an emission standard or operating requirement during a malfuncation is not a violation provided that the source has developed an appropriate startup, shutdown, and malfuncation plan, and follows the corrective measures provided by the plan. See 67 FR at 6798–6801.

organics residence time, however, given that the concerns we raised in the July 3, 2001, proposal have not been addressed.[270] Moreover, we believe that stakeholders' primary motive for identifying an organics residence time has been eliminated by the February 13, 2002, amendment to the rule stating that an exceedance of an emission standard or operating requirement during a malfunction when hazardous waste remains in the combustion chamber is not a violation provided that the source follows the corrective measures provided by an appropriate startup, shutdown, and malfunction plan.

For these reasons, we are not proposing an organics residence time or explicitly encouraging sources to petition the delegated CAA authority on a site-specific basis to identify an organics residence time.

C. Why Is EPA Not Proposing To Extend APCD Controls After the Residence Time Has Expired When Sources Operate Under Alternative Section 112 or 129 Standards?

In the July 3, 2001, proposed rule, we proposed to extend applicability of operating requirements for dry particulate matter emission control devices before you could switch modes of operation and become subject to Section 112 or 129 standards for sources that do not burn hazardous waste. *See* 66 FR at 35130–32. We proposed to require you to maintain compliance with applicable emission standards for semivolatile metals, low volatile metals, and particulate matter, including the operating parameter limits for dry control systems, after the hazardous waste residence time has expired until the control device undergoes a complete cleaning cycle. We were concerned that dry particulate matter control devices such as electrostatic precipitators and baghouses retain collected particulate matter contaminated with waste-derived metals; and dioxin/furan when activated carbon injection is used. In such cases, we were concerned that waste-derived metals and dioxin/furan may be emitted at levels exceeding the hazardous waste combustor emission standards if you were to switch modes of operation and comply with potentially less stringent alternative MACT standards for sources that do not burn hazardous waste (*e.g.*, subpart LLL for cement kilns, section 129 standards the Agency is developing for commercial and industrial solid waste incinerators, and MACT standards the Agency is developing for boilers).[271]

Commenters raised several concerns about the practicability of maintaining compliance with the semivolatile metals, low volatile metals, and particulate matter standards after the hazardous waste residence time has expired until the particulate matter device undergoes a complete cleaning cycle. Commenters explained that it is difficult to determine when a cleaning cycle has been completed for multi-field electrostatic precipitators and multi-compartment fabric filters because fabric filter cleaning is typically a continuous process, and electrostatic precipitator plate cleaning frequency varies significantly depending on the plate position within the electrostatic precipitator. Commenters also stated that the proposed requirement would encourage more frequent cleaning of electrostatic precipitators and fabric filters than normal, which could increase emissions of HAP and adversely affect bag life.

After review of comments and further consideration, we conclude that it is not necessary to revise the standards to extend applicability of the operating requirements for dry particulate matter control devices before you could switch modes of operation and become subject to MACT standards for sources that do not burn hazardous waste. We now believe that it is highly unlikely that entrained particulate matter contaminated with hazardous waste derived metals would be released from the electrostatic precipitator or fabric filter at rates higher than when feeding hazardous waste when the source begins operating under the alternative MACT (or section 129) standards for sources that do not burn hazardous waste. In addition, incinerators, cement kilns, and solid-fuel-fired boilers would be subject to alternative standards and operating limits for particulate matter. Although lightweight aggregate kilns would not be subject to alternative standards for particulate matter,[272] lightweight aggregate kilns that burn hazardous waste are equipped with fabric filters where their performance is not highly sensitive to operating conditions. And, although liquid fuel-fired boilers would not be subject to alternative Section 129 standards for particulate matter,[273] over 80% of liquid fuel-fired boilers that burn hazardous waste are not equipped with a control device, and only about one third of those with a control device are equipped with an electrostatic precipitator or fabric filter. Thus, the absence of particulate matter controls under the alternative section 129 standards is not a significant concern.

For these reasons, we are not proposing to extend applicability of the operating requirements for dry particulate matter control devices before you could switch modes of operation and become subject to MACT standards for sources that do not burn hazardous waste.

D. Why Is EPA Proposing To Allow Use of Method 23 as an Alternative to Method 0023A for Dioxin/Furan?

The September 1999 Final Rule requires use of Method 0023A for stack sampling of dioxin/furan emissions. In response to industry stakeholder requests, we proposed in the July 3, 2001, proposed rule to allow you to petition the delegated regulatory authority to use Method 23 found in 40 CFR part 60, appendix A, instead of Method 0023A. *See* 66 FR at 35137. We are revising the proposal today to allow you to use Method 23 in lieu of Method 0023A after justifying use of Method 23 as part of your performance test plan that must be reviewed and approved by the delegated regulatory authority. See proposed § 63.1208(b)(1)(i)(B). This approach would achieve the same objectives as a petition, but would be simpler to implement because it would not require a separate petition/document.

In the July 3, 2001, proposed rule, we explain that Method 0023A is an improved version of Method 23 in that it can improve the quality assurance of the method. By analyzing the sampling train front half catch (filter and probe rinse) separately from the back half catch (sorbent and rinses), Method 0023A provides quality assurance of recovery of dioxin/furan contained in solid phase particulate and collected on the filter and probe. Under Method 23, poor recovery of dioxin/furan contained in solid phase particulate may go unnoticed because the front half catch and back half catch are combined before analysis. This may be of particular

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[270] We questioned whether available information on low oxygen destruction would adequately model destruction under the pyrolytic conditions that occur within solid matrices and whether it is practicable to perform valid engineering calculations for multiple waste streams that are not homogeneous and that contain multiple organic constituents of concern.

[271] Please note that you are subject to the standards under subpart EEE at all times, including after the hazardous waste residence time has expired, unless you have established an alternative mode of operation under § 63.1209(q)(1).

[272] The Agency determined that lightweight aggregate kilns that do not burn hazardous waste are not a significant source of HAP emissions and, thus, that MACT standards are not necessary for that source category.

[273] The Agency did not propose PM standards for existing liquid fuel-fired industrial, commercial, and institutional boilers and process heaters. *See* 68 FR 1660.

importance for sources that use activated carbon injection or sources that have carbonaceous material in particulate matter.

Although Method 0023A can improve quality assurance, it is slightly more expensive than Method 23 and, in many situations, quality assurance may not be improved. For example, Method 0023A may not be warranted in the future if Method 0023A analyses document that dioxin/furan are not detected, are detected at low levels in the front half of Method 0023A, or are detected at levels well below the emission standard, and the design and operation of the combustor has not changed in a manner that could increase dioxin/furan emissions.

Environmental stakeholders comment that use of Method 23 would allow sources to emit dioxin/furan in excess of the standards without being detected. We disagree. Owners and operators seeking to use Method 0023A would be required to document using data or information that Method 23 would provide front half recoveries comparable to Method 0023A.

Industry stakeholders comment that we should simply revise the rule to allow use of either method, rather than requiring a petitioning process to use Method 23. As discussed above (and in the July 3, 2001, proposal), we believe that there are situations where the quality assurance and added cost of Method 0023A may be warranted, and, so, are not proposing to allow use of Method 23 without justification and prior approval. We agree, however, that the formal petitioning process that we proposed is not necessary. Rather, we propose today to require you to justify use of Method 23 as part of the performance test plan that you submit to the delegated regulatory authority for review and approval. See proposed § 63.1207(f)(1)(xxv).

In the interim, you may request to use Method 23 in lieu of Method 0023A under § 63.7(e)(2)(i) which allows use of a test method with minor changes in methodology. You should submit your request and the supporting justification to the delegated regulatory authority.

E. Why Is EPA Not Proposing the "Matching the Profile" Alternative Approach To Establish Operating Parameter Limits?

In response to stakeholder concerns about the stringency of calculating most operating parameter limits as the average of the test run averages of the comprehensive performance test, EPA requested comment in the July 3, 2001, proposed rule on an alternative approach to establish operating parameter limits. See 66 FR at 35138–39.

The alternative approach, called "matching the profile", was intended to allow sources to identify limits for operating parameters that would allow the operating parameters to have the same average variability as experienced during the comprehensive performance test. The parameter could exceed the average achieved during the performance test for a period of time, provided that it was equivalently lower than the average for the same duration of time.

Commenters generally note that the matching the profile approach has a significant disadvantage in that multiple limits would be established for each parameter. Accordingly, commenters recommend that we not include this approach in the regulation, but rather continue to offer it as guidance. Moreover, commenters note that sources can request approval of alternative monitoring approaches under § 63.1209(g)(1), and they are concerned that codification of only one approach, and particularly an approach with potentially limited utility, could lead the delegated CAA authority to conclude incorrectly that other approaches may not be appropriate.

We believe that this matter is best dealt with on a site-specific basis, but note that by specifying one approach in the rule, we do not mean to preclude use of a different approach pursuant to § 63.1209(g)(1). Sources thus may request approval of the profiling approach, or another approach, to establish operating limits on a site-specific basis under § 63.1209(g)(1).

F. Why Is EPA Not Proposing To Allow Extrapolation of OPLs?

In response to industry stakeholder concerns, we requested comment in the July 3, 2001, proposed rule on whether the rule should allow extrapolation of an operating parameter limit to a higher limit using a site-specific, empirically-derived relationship between the parameter and emissions of the pollutant in question.[274] *See* 66 FR at 35139–40. We also requested comment on whether the rule should allow use of established engineering principles that define the relationship between operating parameter and emissions to extrapolate operating limits and emissions in lieu of a site-specific, empirically-derived relationship.

Industry stakeholders are concerned that the rule inappropriately penalizes sources that achieve comprehensive performance test emission levels well below the standard by requiring them to establish operating limits based on performance test operations at those low emission levels. They note that operating under conditions to artificially increase emissions during testing (*e.g.*, by detuning emission control equipment) may not be feasible or desirable from a worker/public health and cost perspective.

Although stakeholders acknowledge that they may request such extrapolation as an alternative monitoring approach under § 63.1209(g)(1), they note that explicitly defining an extrapolation approach in the rule may better facilitate their efforts to obtain approval from the delegated regulatory authority.

Several industry stakeholders agreed with the principle of extrapolation as we discussed it in the July 3, 2001, notice, but disagreed with the requirements for, and limits on, extrapolation that we recommended. Several other stakeholders oppose the use of extrapolation generally because of concern that it is difficult to define completely and accurately the relationship between an operating parameter and emissions.

Given the extent of the issues associated with explicitly providing for extrapolation of operating parameter limits, particularly on a categorical rather than a site-specific level, and given that you already have the ability to request approval of extrapolation procedures under § 63.1209(g)(1), we are not proposing to revise the rule to explicitly allow extrapolation. We believe that extrapolation must be justified by a site-specific analysis.

G. Why Is EPA Proposing To Delete the Limit on Minimum Combustion Chamber Temperature for Dioxin/Furan for Cement Kilns?

In response to stakeholder concerns that it is technically impracticable for cement kilns to establish a minimum combustion chamber temperature based on the average of the test run averages for each run of the comprehensive performance test, EPA requested comment in the July 3, 2001, proposed rule on whether the rule should continue to require cement kilns to establish and comply with a minimum combustion chamber temperature limit. See 66 FR at 35140.

We received a total of five comments to the July 3, 2001, proposed rule. Three commenters opposed deleting the requirement for cement kilns to establish and comply with a minimum combustion chamber temperature.

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[274] Please note that the rule already allows extrapolation of mercury feedrates (§ 63.1209(l)(1)(i)) and semivolatile and low volatile metal feedrates (§ 63.1209(n)(2)(ii)).

Currently, cement kilns are required to establish a minimum combustion chamber temperature as an operating parameter limit to ensure compliance with the destruction and removal efficiency and dioxin/furan standards. See §§ 63.1209(j)(1) and (k)(2). These commenters generally cited the need for monitoring combustion chamber temperature by noting that combustion chamber temperature is a principal factor in ensuring combustion efficiency and destruction of toxic organic compounds.

Two commenters support deleting the minimum combustion chamber temperature requirements. Commenters state that a cement kiln inherently controls the kiln temperature to produce clinker because the required material temperatures must exceed approximately 2,500°F with combustion gas temperatures higher still. These commenters note that a cement kiln operates well above minimum temperatures required to destroy the organic compounds in the hazardous waste, and, therefore, a minimum combustion chamber temperature limit is not necessary to control organic hazardous air pollutant emissions.

Commenters also state that combustion chamber temperatures cannot be maintained at low enough levels for the duration of the comprehensive performance test to establish workable operating limits that would allow them to burn hazardous waste fuels economically without frequent waste feed cutoffs because of potential exceedances of the limit. Commenters indicate that combustion chamber temperature levels are fairly constant within a narrow range and note that there is a very narrow range of temperatures and feed composition in which a cement kiln must operate in order to produce quality clinker and a marketable product. Moreover, commenters state that cement kiln operators must take extreme actions, including potentially equipment-damaging steps, to lower kiln temperatures to establish an economically viable minimum combustion chamber limit. Finally, commenters indicate that these problems are compounded by the requirement in the MACT rule to establish the hourly rolling limit based on the average of the test run averages (§§ 63.1209(j)(1)(ii) and (k)(2)(ii)).

We are not proposing to delete the requirement for cement kilns to establish and comply with a minimum combustion chamber temperature to help ensure compliance with the destruction and removal efficiency standard. Even though we remain reluctant to delete this requirement, commenters may, if they choose, provide additional comments on whether the rule should continue to require cement kilns to establish a minimum combustion chamber temperature limit as specified in § 63.1209(j)(1).

We are, however, proposing to delete the requirement to establish a minimum combustion chamber temperature limit for dioxin/furan under § 63.1209(k)(2). As mentioned above, sources are currently required to establish a minimum combustion chamber temperature as an operating parameter limit for both the destruction and removal efficiency and dioxin/furan standards. This proposed amendment would not affect the requirement for cement kilns to establish a minimum combustion chamber temperature under § 63.1209(j)(1) during the destruction and removal efficiency demonstration. Currently, the destruction and removal efficiency demonstration need be made only once during the operational life of a source provided that the design, operation, and maintenance features do not change in a manner that could reasonably be expected to affect the ability to meet the destruction and removal efficiency standard. See § 63.1206(b)(7). If a facility wishes to operate under new operating parameter limits that could be expected to affect the ability to meet the destruction and removal efficiency standard, then the source will need to conduct another destruction and removal efficiency test. In addition, if a source feeds hazardous waste at locations other than the flame zone, the destruction and removal efficiency demonstration must be verified during each comprehensive performance test and new operating parameter limits must be established.

Sources that fire hazardous waste only at the flame zone (*i.e.*, the kiln end where clinker product is normally discharged) are required to make only one destruction and removal efficiency demonstration test during the operational life of the kiln. During this destruction and removal efficiency demonstration test, the source would set a minimum combustion chamber temperature limit under § 63.1209(j)(1) that would be the limit for the operational life of the kiln. However, as the rule is currently written, such sources would need to establish a minimum combustion chamber temperature limit during subsequent comprehensive performance tests for the dioxin/furan test under § 63.1209(k)(2). The source would be required to comply with the more stringent (higher) of two minimum combustion chamber temperature limits, which could lead to a situation where the controlling minimum combustion chamber temperature limit is based on the dioxin/furan test rather than the destruction and removal efficiency demonstration.

We believe that this may be an inappropriate outcome given that the operating limit for minimum combustion chamber temperature is a more important parameter to ensure compliance with the destruction and removal efficiency standard than to ensure compliance with the dioxin/furan standard. Our data indicate that limiting the gas temperature at the inlet to the particulate matter control device, an operating parameter limit established during each comprehensive performance test (§ 63.1209(k)(1)), is a critical dioxin/furan control parameter. We are, therefore, inviting comment on deleting the requirement to establish a minimum combustion chamber temperature limit when complying with the dioxin/furans standard. This proposed amendment does not affect the other operating parameter limits under § 63.1209(k) that must be established for dioxin/furan such as establishing a limit on the gas temperature at the inlet to the particulate matter control device.

For cement kilns that fire hazardous wastes at locations other than the flame zone, the current requirements would effectively remain the same. Given that a source conducts the destruction and removal efficiency demonstration and dioxin/furan test simultaneously and that a source is also required to establish a minimum combustion chamber temperature limit when demonstrating compliance with and establishing operating parameter limits for the destruction and removal efficiency standard, the minimum combustion chamber temperature limits is effectively retained.

H. Why Is EPA Requesting Additional Comment on Whether To Add a Maximum pH Limit for Wet Scrubbers To Control Mercury Emissions?

We requested comment in the July 3, 2001, proposed rule as to whether it is appropriate to establish a limit on maximum pH to control mercury. See 66 FR at 35142–43. We are requesting additional comment today on this issue given the results of a recent study indicating that increasing the pH of scrubber liquid can increase mercury emissions.

1. What Were the Major Comments on the Discussion in the July 3, 2001, Proposed Rule?

One commenter supports placing limits on the maximum pH of wet scrubber liquids for mercury control, but did not provide any additional rationale on the technical validity of the limit. Other commenters oppose the imposition of a maximum pH limit. One commenter wants to see stronger evidence that pH has an impact, and suggests a reproposal is needed. Another suggests that EPA conduct source testing to confirm that pH has an impact. Others suggest that if EPA continues to believe that wet scrubber operating parameter limits are important for mercury control, then the wet scrubber mercury operating parameter limits should be determined on a case-by-case basis because the relationship between mercury control and wet scrubber pH is not well established and there are numerous other factors that affect mercury control in wet scrubbers, especially for facilities that burn waste with various chemical compositions.

2. What Is the Rationale for Considering a Maximum pH Limit To Control Mercury?

The use of a low pH liquid scrubber solution has been suggested to be beneficial for mercury control because it helps prevent the re-release of captured mercury. Ionic mercury (Hg^{+2}) is highly soluble in wet scrubber liquid; as opposed to Hg^o, which has a very low solubility in a typical water/alkali scrubber solution. Once absorbed, Hg^{+2} can be reduced to Hg^o by compounds in the liquid scrubber solution such as SO_2 and HSO_3. Hg^o may then be revolatilized back into the stack gas. This is supported by numerous observations of Hg^o at the wet scrubber outlet which are higher than Hg^o at the scrubber inlet[275, 276, 277]. These studies suggest that the low scrubber liquid pH prevents captured mercury from revolatilizing from the scrubber liquid by: (1) limiting the capture of reducing agents; and (2) favoring the formation of stable mercury-chlorine compounds such as $HgCl_2$ due to available Cl^-. In contrast, other studies postulate that a high scrubber liquid pH might actually be beneficial for the control of mercury, particularly elemental Hg[278]. Basic, high pH solutions have the increased ability to absorb chlorine gas. Dissolved chlorine gas is suggested to enhance the scrubber's ability to oxidize and capture Hg^o (specifically, dissolved chlorine gas dissociates in basic solutions to produce OCl^- ions which oxidize Hg^o to soluble Hg^{+2}). In contrast, the presence of hydrogen chloride or sulfur as SO_2 or $H2SO_3$ in the scrubber solution reduces the liquid scrubber pH, reduces OCl^-, and reduces the Hg^o oxidative potential of the scrubber liquid.

Although limited test data from full-scale coal fired boiler evaluations indicate an inconsistent impact of scrubber liquid pH on mercury control,[279] a recent study[280] confirms that ionic mercury (*e.g.*, $HgCl_2$) that is initially captured in the scrubber can be reduced in the liquid to elemental Hg (*i.e.*, H^o) and then revolatilized to the stack gas. The study concludes that the reduction of ionic mercury in the liquid is likely due to dissolved sulfur compounds and that decreasing the pH of the liquid will decrease the reduction process and subsequently decrease mercury emissions. This new work is additional evidence that a maximum pH limit might be appropriate, especially if sulfur is present in feeds.

Other recent work indicates that there are numerous factors that influence the control of mercury in wet scrubbers. Mercury speciation in the flue gas is vitally important to the ability to control mercury in wet scrubbers. In hazardous waste combustor flue gases, mercury tends to be predominately in two forms: (1) elemental (Hg^o); and (2) ionic (Hg^{+2}, typically as $HgCl_2$). Speciation depends on numerous factors including the presence of chlorine or sulfur, both of which are reactive with mercury. For example, increased levels of chlorine may increase the amount of $HgCl_2$ and reduce the amount of Hg^o. This might suggest that a *minimum* chlorine feedrate limit is needed to ensure Hg scrubber efficiency is maintained, which is counter to the maximum chlorine feedrate limit used to control emissions of total chlorine and semivolatile and low volatile metals. Speciation is also affected by the flue gas temperature cooling profile, which can impact mercury reaction kinetics. For example, rapid cooling may limit the equilibrium formation of $HgCl_2$ (*i.e.*, super equilibrium levels of Hg^o can survive from rapid cooling). This might suggest that a *maximum* flue gas cooling limit is needed, which is counter to that for controlling dioxin/furan.

Control of mercury in wet scrubbers is also affected by the scrubber liquid chemical composition. As discussed above, scrubber liquid composition has a dramatic impact on the control of mercury. Specifically, the presence of reducing compounds such as SO_2 and HSO_3 can lead to increased mercury emission by reducing soluble $HgCl_2$ to insoluble Hg^o which can be desorbed while oxidative compounds such as chlorine gas and special oxidation additives such as $NaClO_2$, acidified $KMnO_3$, Na_2S, and TMT (tri-mercapto-triazine) would generally help control mercury emissions by inhibiting reduction of $HgCl_2$ to Hg^o and/or enhancing the capture of Hg^o.

Finally, control of mercury in wet scrubbers is affected by the scrubber liquid to gas ratio.

Given the recent study discussed above indicating that increasing the pH of scrubber liquid can increase mercury emissions, we request additional comment on whether it would be appropriate to establish a limit on the maximum pH of scrubber liquid to ensure compliance with the mercury emission standard. We also request comment on issues relative to establishing and complying with both a maximum limit on pH to control mercury emissions and a minimum limit on pH to control total chlorine. For example, you would establish the maximum and minimum pH limits under separate performance tests. You would establish the minimum pH limit during a performance test to demonstrate compliance with the total chlorine standard while you would establish the maximum pH limit during a performance test to demonstrate compliance with the mercury standard. In addition, we request comment on the anticipated range of pH levels between the maximum and minimum limits and whether the range could potentially be small enough to inhibit operations substantially. For example, if the pH

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[275] B. Siret and S. Eagleson, "A New Wet Scrubbing Technology for Control of Elemental (Metallic) and Ionic Mercury Emissions,'' Proceedings of 1997 Conference on Incineration and Thermal Treatment Technology, pp. 821–824, 1997.

[276] G. T. Amrhein, G. Kudlac, D. Madden, "Full-Scale Testing of Mercury Control for Wet FGD Systems,'' Presented at the 27th International Technical Conference on Coal Utilization and Fuel Systems, Clearwater, Fl, March 4–7, 2002.

[277] C.S. Krivanek, "Mercury Control Technologies for MWCs: The Unanswered Questions,'' 1993 Air and Waste Management Sponsored Municipal Solid Waste Combustor Specialty Conference, 1993.

[278] W. Linak, J. Ryan, B. Ghorishi, and J. Wendt, "Issues Related to Solution Chemistry in Mercury Sampling Impingers,'' Journal or Air and Waste Management Association, Vol. 51, pp. 688–698, May 2001.

[279] For example, McDermott Technology (McDermott Technology, Internet Web page at *http://www.mtiresearch.com* on "Mercury Emission Results,'' date unknown) report no impact, while DeVito and Rosenhoover (M. DeVito and W. Rosenhoover, CONSOL Coal Inc., "Flue Gas Hg Measurements from Coal-fired Boilers Equipped with Wet Scrubbers,'' date unknown) observe that mercury control efficiency appears to increase with increasing pH.

[280] J. Chang and S. Ghorishi, "Simulation and Evaluation of Elemental Mercury Concentration Increase in Flue Gas Across a Wet Scrubber,'' Environmental Science and Technology, Vol 37, No. 24, 2003, pp. 5763–5766.

required to achieve your desired scrubber control efficiency for total chlorine (*i.e.*, the minimum pH limit) is just below the pH level required to achieve your desired control efficiency for mercury (*i.e.*, the maximum pH limit), you may have limited operating flexibility.

Finally, we note that, in the interim until we determine whether to promulgate a maximum pH limit to control mercury emissions, site-specific or other information may lead the delegated regulatory authority to conclude under § 63.1209(g)(2) that a limit on the maximum pH of wet scrubber liquid may be warranted to ensure compliance with the mercury emission standard.

I. How Is EPA Proposing to Ensure Performance of Electrostatic Precipitators, Ionizing Wet Scrubbers, and Fabric Filters?

If your combustor is equipped with a fabric filter, you would be required to use the bag leak detection system under § 63.1206(c)(7)(ii) to ensure performance of the fabric filter is maintained in lieu of operating parameter limits.[281] In addition, we propose to revise the bag leak requirements under § 63.1206(c)(7)(ii) to require you to operate and maintain the fabric filter such that the bag leak detection system alarm does not sound more than 5 percent of the operating time during a 6-month period.

If your combustor is equipped with an electrostatic precipitator or ionizing wet scrubber, we propose to give you the option of: (1) Using a particulate matter continuous emissions detector for process monitoring to signal when you must take corrective measures to address maintenance or other factors causing relative or absolute mass particulate matter loadings to be higher than the levels achieved during the performance test; or (2) establishing site-specific operating parameter limits. If you choose to use a continuous emissions detector, you must not exceed the alarm set-point you establish based on the performance test more than 5 percent of the operating time during a 6-month period. If you choose to establish site-specific operating parameter limits, you must link each limit to the automatic waste feed cutoff system.

1. What Is the Background of this Issue?

The current regulations require you to establish site-specific operating parameter limits to ensure performance of electrostatic precipitators, ionizing wet scrubbers, and fabric filters. *See* § 63.1209(m)(1)(iv).[282] Regulatory officials review and approve those operating parameter limits and may require additional or alternative limits under § 63.1209(g)(2).

In the July 3, 2001 proposed rule, we requested comment on how to establish prescriptive requirements to ensure performance of these control devices. *See* 66 FR at 35143–45. We requested comment on four approaches to ensure performance of electrostatic precipitators: (1) Requiring an increasing kVA pattern across the electrostatic precipitator; (2) limiting kVA on only the back ⅓ of fields; (3) use of a CMS that measures relative particulate matter loadings; and (4) use of predictive emission monitoring systems. These approaches would also be applicable to ionizing wet scrubbers. We also requested comment on whether and how cell pressure drop should be used to ensure performance of fabric filters.

We received comments in favor of and opposing most of these approaches.[283] Some stakeholders also recommend other approaches. One commenter favors use of specific power as an operating parameter for electrostatic precipitator performance. Specific power is the secondary power/gas flow rate. Another commenter suggests continuing with establishing site-specific operating parameter limits.

2. What Is the Rationale for Proposing to Revise the Compliance Requirements for Fabric Filters?

After reviewing comments and further investigation, we conclude that controls in addition to a bag leak detection system are not needed to ensure performance of fabric filters. Use of pressure drop to ensure performance is problematic for reasons we discussed in the July 3, 2001 proposed rule. Moreover, the bag leak detection system provides a direct measure of small (and greater) increases in particulate matter loading that enable you to take immediate corrective measures.

We conclude, however, that the bag leak detection system requirements under § 63.1206(c)(7)(ii) are not prescriptive enough to ensure proper operation and maintenance of the fabric filter. Current provisions require you to take immediate corrective measures when the bag leak detection system alarm sounds, indicating that particulate loadings exceed the set-point. There is no limit on the duration of time, however, that the bag house may be operating under these conditions. To ensure that you take both corrective and proactive measures to minimize the frequency and duration of bag leak detection system alarms, you must operate and maintain the fabric filter to ensure that the bag leak detection system alarm does not sound more than 5 percent of the operating time during a 6-month period.[284] We note that the Agency also proposed this requirement for boilers and process heaters that do not burn hazardous waste. *See* 68 FR at 1708 (January 13, 2003). If you exceed the alarm set-point more than 5 percent of the time during a 6-month period, you would be required to notify the delegated regulatory authority within 5 days. In the notification, you must describe the causes of the excessive exceedances and the revisions to the design, operation, or maintenance of the combustor or baghouse you are taking to minimize exceedances. This notification would alert the regulatory authority of the excessive exceedances so that they may review and confirm the corrective measures you are undertaking. *See* proposed § 63.1206(c)(7)(ii)(C).

We also conclude that the current exemption from the bag leak detection system requirements for cement kilns should be eliminated. We did not require bag leak detection systems for cement kilns in the September 1999 Final Rule because cement kilns are subject to an opacity standard and must monitor opacity with a continuous monitor. As a practical matter, however, the opacity levels achieved during the comprehensive performance test will be lower, often substantially lower, than the opacity standard. Thus, absent effective operating parameter limits on the fabric filter based on performance test operations, we cannot ensure that performance is maintained at the level achieved during the performance test (and that you remain in compliance with the particulate matter and other

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[281] As discussed below in the text, we propose to revise the current rules to delete the exemption for cement kilns from the bag leak detection system requirements.

[282] Please note that § 63.1209(m)(1)(iv) inadvertently indicates that the requirement to establish site-specific operating limits applies to control devices other than ionizing wet scrubbers, baghouses, and electrostatic precipitators. We should have revised that paragraph to require site-specific operating parameter limits for those control devices when we revised paragraph (m)(1) to delete the operating parameter limits for those devices. The delegated regulatory authority can use § 63.1209(g)(2) to require you to establish site-specific operating parameter limits for those control devices prior to the effective date of the final rule based on today's proposed rule.

[283] USEPA, "Response to Comments on July 2001 Proposed Rule,'' March 2004.

[284] Periods of time when the combustor is operating but the bag leak detection system is malfunctioning must be considered exceedances of the set-point.

standards[285]). Consequently, we propose to require that cement kilns comply with the bag leak detection requirements (as proposed to be revised) under § 63.1206(c)(7)(ii).[286] We note that, although triboelectric detectors are generally used as bag leak detectors given their ability to detect very low loadings of particulate matter, cement kilns may use the transmissometers they currently use for opacity monitoring provided that the transmissometer is sensitive enough to detect subtle increases in particulate matter loading over normal (not performance test) loadings.

Finally, we request comment on whether it is practicable to establish the alarm set-point for the back leak detection system based on the detector response achieved during the performance test rather than as recommended in the Agency's guidance document.[287] The guidance document recommends that you establish the alarm set-point at a level that is twice the detector response achieved during bag cleaning. Although establishing the set-point at this level would avoid frequent exceedances due to normal bag cleaning, we are concerned that it may not be low enough to detect gradual degradation in fabric filter performance that, for example, can be caused by pinholes in the bags. Moreover, establishing the set-point at a detector response that is twice the response achieved during bag cleaning may not be low enough to require you to take corrective measures if particulate matter loadings increase above the levels achieved during the performance test, and thus at loadings that may indicate an exceedance of the particulate matter emission standard. To avoid alarms caused by bag cleaning cycles, the alarm set-point would be established as the average detector response of the test run averages during the particulate matter performance test, and would be established as a 6-hour rolling average updated each hour with a one-hour block average. This is the time that could be required to conduct three runs of a particulate matter performance test. The one-hour block average would be the average of the detector responses over each 15-minute block.

3. What Is the Rationale for Proposing to Revise the Compliance Requirements for Electrostatic Precipitators and Ionizing Wet Scrubbers?

We propose a two-tiered approach to ensure performance of electrostatic precipitators and ionizing wet scrubbers: (1) Use of a particulate matter continuous emissions detector for process monitoring to signal when you must take corrective measures to address maintenance or other factors causing relative or absolute mass particulate matter loadings to be higher than the levels achieved during the performance test; or (2) use of site-specific operating parameter limits. You could choose to comply with either tier.

a. How Would Tier I Work? Under Tier I, you would use a particulate matter continuous emissions detector for process monitoring to signal when you must take corrective measures to address maintenance or other factors causing relative or absolute mass particulate matter loadings to be higher than the levels achieved during the performance test. You would establish an alarm set-point as the average detector response achieved during the particulate matter emissions performance test. The limit would be applied as a 6-hour rolling average updated each hour with a one-hour block average to correspond to the time it could take to conduct three runs of a performance test. The one-hour block average would be the average of the detector responses over each 15-minute block.

If you exceed the alarm set-point, you must immediately take the corrective measures you specify in your operation and maintenance plan to bring the response below the set-point. To ensure that you take both corrective and proactive measures to minimize the frequency and duration of exceedances, you would be required to operate and maintain the electrostatic precipitator and ionizing wet scrubber to ensure that the alarm set-point is not exceeded more than 5 percent of the operating time during a 6-month period.[288] This is consistent with the proposed requirement to limit the period of time that a fabric filter may be operating under conditions of poor performance. If you exceed the alarm set-point more than 5 percent of the time during a 6-month period, you would be required to notify the delegated regulatory. This notification would alert the regulatory authority of the excessive exceedances so that they may take corrective measures, such as requiring you to revise the operation and maintenance plan.

You may use any detector as a particulate matter continuous monitor provided that the detector response correlates with relative or absolute particulate matter mass emissions and that it can detect small changes in particulate matter loadings.[289] You would include in the performance test plan a description of the particulate matter detector you select and information documenting that the detector response correlates with relative or absolute particulate matter loadings and that the detector can detect small changes in particulate matter loadings above the levels anticipated during the comprehensive performance test. For example, if you anticipate to achieve a particulate matter emission level of 0.010 gr/dscf during the comprehensive performance test, your detector should be able to distinguish between particulate matter loadings of 0.010 gr/dscf and 0.011 gr/dscf.

b. How Would Tier II Work? Under Tier II, you would comply with site-specific operating parameter limits you establish under § 63.1209(m)(1)(iv). As currently required, the operating limits would be linked to the automatic waste feed cutoff system. Exceedance of an operating limit would be a violation and is evidence of failure to ensure compliance with the particulate matter, semivolatile metal, and low volatile metal emission standards.

IV. Other Proposed Compliance Revisions

A. What Is the Proposed Clarification to the Public Notice Requirement for Approved Test Plans?

We are proposing in today's notice to add clarifying language to the section 1207(e)(2) public notification requirement for approved performance test and CMS performance evaluation test plans. The Agency believes that adequate public involvement is an essential element to the continuing and successful management of hazardous waste. Providing opportunities for timely and adequate public notice is necessary to fully inform nearby communities of a source's plans to initiate important waste management

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[285] Because controlling particulate matter also controls semivolatile and low volatile metals (and dioxin/furan if you use activated carbon injection), exceeding the particulate matter loadings achieved during the performance test is also evidence of failure to ensure compliance with the emission standards for those pollutants.

[286] Because the proposed bag leak detection requirements are more stringent than the opacity standard, exempting cement kilns from the New Source Performance Standards for particulate matter and opacity under § 60.60 continues to be appropriate. *See* §§ 63.1204(h) and 63.1220(h).

[287] USEPA, "Fabric Filter Bag Leak Detection Guidance," September 1997.

[288] Periods of time when the combustor is operating but the bag leak detection system is malfunctioning must be considered exceedances of the set-point.

[289] Please note that, for the purpose of process monitoring proposed here, you need not correlate the particulate matter detector to particulate matter emission concentrations.

activities. In 1995, we expanded the RCRA public participation requirements for hazardous waste combustion sources to require that the State Director issue a public notice prior to a source conducting a RCRA trial burn emission test. *See* 60 FR 63417, 40 CFR 270.62(b)(6) and 40 CFR 270.66(d)(3). The purpose of this notification requirement was to inform the public of an upcoming trial burn should an individual be interested in reviewing the results of the test. When we promulgated the Phase I hazardous waste combustion NESHAP in 1999, we included a similar requirement in subpart EEE for the same general purpose. Section 1207(e)(2) of subpart EEE requires that sources issue a public notice announcing the approval of site-specific performance test plans and CMS performance evaluation test plans and provide the location where the plans will be made available to the public for review. We neglected, however, to include direction regarding how and when sources should notify the public, what the notification should contain, or where and for how long the test plans should be made available. As a result, we are proposing to add clarifying language to the section 1207(e)(2) public notification requirement. We are using the RCRA trial burn notification requirements as a foundation for the proposed clarifications.

1. How Should Sources Notify the Public?

The source must make a reasonable effort to provide adequate notification of the approval of their site-specific performance test and CMS performance evaluation test plans. Because this notification is intended for informational purposes only, we are proposing that sources use their facility/public mailing list. We expect that by the time a source receives approval of its subpart EEE test plans, a facility/public mailing list already would have been developed in response to the source's RCRA and CAA permitting activities. As such, we are proposing that sources use the facility/public mailing list developed under 40 CFR 70.7(h)(1), 71.11(d)(3)(i)(E) and 124.10(c)(1)(ix), for purposes of this notification. Sources may voluntarily choose to use other mechanisms in addition to a distribution to the facility/public mailing list, if previous experience has shown that such additional mechanisms are necessary to reach all interested segments of the community. For example, sources may consider using press releases, advertisements, visible signs, and outreach to local community, professional, and interest groups in addition to the required distribution to the facility/public mailing list.

2. When Should Sources Notify the Public of Approved Test Plans?

The existing regulations require that sources issue a public notice after the Administrator has approved the site-specific performance test and CMS performance evaluation test plans. It is important to remember that the purpose of this notification is similar to that required under RCRA for trial burn tests. *See* 60 FR 63417, 40 CFR 270.62(b)(6) and 40 CFR 270.66(d)(3). The notification is intended to provide information to the public regarding the upcoming performance test. It is not intended to solicit comment on the performance test plan. We considered proposing that the notification occur within 30 days of the source's receipt of test plan approval. However, we chose not to proceed with this option because we were concerned that the notification would not be as meaningful to the public if too much time elapses between the test plan approval notification and the actual initiation of the performance test. In order to provide the public with adequate notice of the upcoming test and a reasonable period of time to review the approved plans prior to the test, we are proposing that the source issue its notice after test plan approval, but no later than 60 days prior to conducting the test. We believe that this also will allow the source sufficient time to prepare its public notice and corresponds to the 40 CFR 63.1207(e)(1)(i)(B) requirement for a source to notify the Administrator of its intention to initiate the test.

3. What Should the Notification Include?

Similar to the public involvement requirements for RCRA trial burn tests, we are proposing that the notification contain the following information:

(1) The name and telephone number of the source's contact person;

(2) The name and telephone number of the regulatory agency's contact person;

(3) The location where the approved performance test and CMS performance evaluation test plans and any necessary supporting documentation can be reviewed and copied;

(4) The time period for which the test plans will be available for public review, and;

(5) An expected time period for commencement and completion of the performance test and CMS performance evaluation test.

4. Where Should the Plans Be Made Available and for How Long?

The site-specific performance test and CMS performance evaluation test plans must be made available at an unrestricted location which is accessible to the public during reasonable hours and provides a means for the public to obtain copies of the plans if needed. To provide for adequate time for the public to review the test plans, we are proposing that the plans be made available for a total of 60 days, beginning on the date that the source issues its public notice.

B. What Is the Proposed Clarification to the Public Notice Requirement for the Petition To Waive a Performance Test?

Sources that petition the Administrator for an extension of time to conduct a performance test (in other words, obtain a performance test waiver), are required under section 1207(e)(3)(iv) to notify the public of their petition. Although the regulatory language does provide some direction regarding how the source may notify the public (*e.g.*, using a public mailing list), it does not provide any direction regarding when this notice must be issued or what it must contain. As a result, we are proposing in today's notice to add clarifying language to the Section 1207(e)(3)(iv) public notice requirement.

1. When Should Sources Notify the Public of a Petition To Waive a Performance Test?

We are proposing that a source notify the public of a petition to waive a performance test at the same time that the source submits its petition to the Administrator. Although not explicitly stated in section 1207(e)(3)(iv), this was our original intent. In the July 3, 2001, preamble to the subpart EEE proposed technical amendments, we provided a time line of the waiver petitioning process for an initial Comprehensive Performance Test.[290] In that time line, we indicated that the submittal of the petition and the public notification should occur at the same time.

2. What Should the Notification Include?

The notification of a petition to waive a performance test is an informational notification. As such, we are proposing that it include the same level of information as that provided by a source for the notification of an approved test plan:

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[290] It should be noted that the petition for waiver of a performance test applies to both the initial test and all subsequent tests. *See* 40 CFR 1207(e)(3).

(1) The name and telephone number of the source's contact person;

(2) The name and telephone number of the regulatory agency's contact person;

(3) The date the source submitted its site-specific performance test plan and CMS performance evaluation test plans; and

(4) The length of time requested for the waiver.

Part Four: Impacts of the Proposed Rule

I. What Are the Air Impacts?

Table 1 of this preamble shows the emissions reductions achieved by the proposed rule for all existing hazardous waste combustor sources. For Phase I sources—incinerators, cement kilns, and lightweight aggregate kilns—the emission reductions represent the difference in emissions between sources controlled to the proposed standards and estimated emissions when complying with the interim MACT standards promulgated on February 13, 2002. For Phase II sources—industrial/commercial/institutional boilers and process heaters and hydrochloric acid production facilities—the reductions represent the difference in emissions between the proposed standards and the current baseline of control provided by 40 CFR part 266, subpart H.

Nationwide baseline HAP emissions from hazardous waste combustors are estimated to be approximately 13,000 tons per year at the current level of control. Today's proposed standards would reduce emissions of hazardous air pollutants and particulate matter by approximately 3,300 tons per year.

Nationwide emissions of dioxin/furans from all hazardous waste combustors will be reduced by 4.7 grams TEQ per year. Emissions of HAP metals from all hazardous waste combustors will be reduced by 23 tons per year, including one ton per year of mercury. We estimate that particulate matter itself, a surrogate for HAP metals will be reduced by over 1,700 tons per year. Finally, emissions of hydrogen chloride and chlorine gas from all hazardous waste combustors will reduced by nearly 1,500 tons and over 100 tons per year, respectfully.[291] A discussion of the emission estimates methodology and results is presented in "Draft Technical Support Document for HWC MACT Replacement Standards, Volume V: Emission Estimates and Engineering Costs'' (Chapter 3) in the docket for today's proposal.

TABLE 1.—NATIONWIDE ANNUAL EMISSIONS REDUCTIONS OF HAPS AND OTHER POLLUTANTS

Pollutant	Estimated emission reductions (tons per year) [1]
Dioxin/furans	0.3
Mercury	0.93
Cadmium	0.50
Lead	3.30
Arsenic	1.27
Beryllium	0.31
Chromium	8.97
Antimony	1.18
Cobalt	0.42
Nickel	1.57
Selenium	0.28
Manganese	4.50
Hydrogen Chloride	1470
Chlorine Gas	107
Particulate Matter	1727

[1] Dioxin/furan emissions reductions and reductions expressed as grams TEQ.

II. What Are the Water and Solid Waste Impacts?

We estimate that water usage would increase by 4.8 billion gallons per year if the proposed MACT standards were adopted. In addition to the increased water usage, an additional 4.6 billion gallons per year of wastewater would be produced. We estimate the additional solid waste that would need to be treated as a result of the proposed standards to be 10,400 tons per year. The costs associated with these hazardous waste treatment/disposal and water requirements are accounted for in the national annualized compliance cost estimates. A discussion of the methodology used to estimate impacts is presented in "Draft Technical Support Document for HWC MACT Replacement Standards, Volume V: Emission Estimates and Engineering Costs' (Chapters 4 and 5) that is available in the docket.

III. What Are the Energy Impacts?

We estimate an increase of approximately 133 million kilowatt hours (kWh) in national annual energy usage as a result of the proposed standards. The increase results from the electricity required to operate air pollution control devices installed to meet the proposed standards, such as baghouses and wet scrubbers.

IV. What Are the Control Costs?

Control costs, as presented in this section, refer only to engineering, operation, and maintenance costs associated with unit/system upgrades necessary to meet the proposed replacement standards. These costs do not incorporate any market-based adjustments. All costs presented in this section are annualized estimates in 2002 dollars.

We estimate there are a total of 276 sources[292] that may be subject to requirements of the proposed rule. Liquid and solid fuel boilers represent approximately 43 percent of this total, followed by on-site incinerators at 33 percent, and cement and lightweight aggregate kilns at 12 percent. Commercial incinerators and hydrochloric acid production furnaces make up the remaining 12 percent of the total.

Total national engineering costs for the proposed standards are estimated to range from $57.7 million to $77.9 million per year. The low end of this range reflects total upgrade costs excluding controls to meet the total chlorine standard.[293] All Phase II sources combined represent about 66 percent or 80 percent of this total, depending upon section 112(d)(4) scenario. The average cost per source is expected to be highest for lightweight aggregate kilns and solid fuel boilers, ranging from $329,000 to $400,000 and $217,000 to $283,000, respectively. Average liquid fuel boiler costs range from $378,000 to $419,000 per system. Hydrochloric acid production furnaces were found to have average system costs of about $200,000 under both section 112(d)(4) scenarios. On-site incinerators and commercial incinerators were found to generally have the lowest average cost ranges. Average annualized engineering costs for on-site incinerators are estimated to range from $16,300 to $139,000 per source, while average annual per source engineering costs for commercial incinerators are estimated to range from $67,000 to $247,000. For all Phase I sources (140 sources; commercial incinerators, on-site incinerators, cement kilns, and

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[291] We are, however, proposing to establish alternative risk-based standards, pursuant to CAA section 112(d)(4), which could be elected by the source in lieu of the MACT emission standards for total chlorine. The emission limits would be based on national exposure standards that ensure protection of public health with an ample margin of safety. See Part Two, Section XIII for additional details.If we were to adopt alternative risk-based standards, then the national annual emissions reductions for total chlorine are overstated.

[292] For purposes of this discussion, a source is defined as the air pollution control system associated with the hazardous waste combustion unit(s). A source may contain one or more combustion units, and a facility may operate one or more sources.

[293] We are proposing using section 112(d)(4) of the Clean Air Act to establish risk-based standards for total chlorine for hazardous waste combustors (except for hydrochloric acid production furnaces). The low-end of this cost range assumes all facilities emit total chlorine levels below risk-based levels of concern. Under this scenario, no total chlorine controls are assumed to necessary.

lightweight aggregate kilns), average annualized engineering costs are estimated to range from $76,000 to $184,000 per source. The combined Phase II sources (136 sources; solid and liquid fuel-fired boilers and hydrochloric acid production furnaces) had average annualized engineering costs ranging from $341,000 to $380,000 per source. Across all sectors covered by today's proposal (Phase I and Phase II sources), average annualized costs were found to range from $209,000 to $282,000 per source.

Engineering compliance (control) costs have also been assessed on a per ton of waste burned basis. Captive energy recovery sources (includes solid and liquid fuel-fired boilers, and hydrochloric acid production furnaces), burning a total of 1,001,500 tons of hazardous waste per year, are projected to experience the highest average incremental costs, ranging from $46 to $52 per ton. Commercial energy recovery sources (cement kilns and LWAKs), burning approximately 1,093,800 tons per year, may see incremental control costs ranging from $7.50 to $8.50 per ton. Captive (on-site) and commercial incinerators burn an estimated 1,010,600 tons and 452,200 tons per year, respectively. These sources are estimated to experience average incremental engineering costs ranging from $1.50 to $12.70 per ton for captive and $2.20 to $8.20 per ton for commercial sources.

The aggregate control costs presented in this section do not reflect the anticipated real world cost burden on the economy. Any market disruption, such as the implementation of hazardous waste MACT or risk-based standards will cause a short-tem disequilibrium in the hazardous waste burning market. Following the implementation of the replacement standards, market adjustments will occur in a natural economic process designed to reach a new market equilibrium. Actual cost impacts to society are more accurately measured by taking into account market adjustments. These costs are commonly termed Social Costs, and are generally less than total engineering costs due to cost efficiencies implemented during the market adjustment process. Social Costs theoretically represent the total real world costs of all goods and services society must give up in order to gain the added protection to human health and the environment. Social Costs are presented in Part VIII of this Section.

V. Can We Achieve the Goals of the Proposed Rule in a Less Costly Manner?

Section 1(b)(3) of Executive Order 12866 instructs Executive Branch Agencies to consider and assess available alternatives to direct regulation prior to making a determination for regulation. This regulatory determination assessment should be considered, "to the extent permitted by law, and where applicable.'' The ultimate purpose of the regulatory determination assessment is to ensure that the most efficient tool, regulation, or other type of action is applied in meeting the targeted objective(s). Requirements for MACT standards under the Clean Air Act, as mandated by Congress, have compelled us to select today's regulatory approach. Furthermore, we are under legal obligation to meet the targeted objectives of today's proposal through a regulatory action. As a result, alternatives to direct regulatory action were not evaluated.

In addition to the statutory and legal mandates necessitating today's proposed rulemaking, we believe that federal regulation is the most efficient approach for helping to correct market failures leading to the negative environmental externalities resulting from the combustion of hazardous waste. The complex nature of the pollutants, waste feeds, waste generators, and the diverse nature of the combustion market would limit the effectiveness of a non-regulatory approach such as taxes, fees, or an educational-outreach program.

The hazardous waste combustion industry operates in a dynamic market. Several combustion facilities and systems have closed or consolidated over the past several years and this trend is likely to continue. These closures and consolidations may lead to reduced air pollution, in the aggregate, from hazardous waste facilities. However, the ongoing demand for hazardous waste combustion services will ultimately result in a steady equilibrium as the market adjusts over the long-term. We therefore expect that air pollution problems from these facilities, and the corresponding threats to human health and ecological receptors, will continue if a regulatory action was not implemented.

We believe that the market has generally failed to correct the air pollution problems resulting from the combustion of hazardous wastes for several reasons. First, there exists no natural market incentive for hazardous waste combustion facilities to incur additional costs implementing control measures. This occurs because the individuals and entities who bear the negative human health and ecological impacts associated with these actions have no direct control over waste burning decisions. This environmental externality occurs because the private industry costs of combustion do not fully reflect the human health and environmental costs of hazardous waste combustion. Second, the parties injured by the combusted pollutants are not likely to have the resources or technological expertise to seek compensation from the damaging entity (combustion source) through legal or other means.[294] Finally, emissions from hazardous waste combustion facilities directly affect a "public good,'' the air. Improved air quality benefits human health and the environment. The absence of government intervention, therefore, will perpetuate a market that fails to fully internalize key negative externalities, resulting in a sub-optimal quantity and quality of public goods, such as air.

We have assessed several regulatory options designed to mitigate the unacceptable levels of risk to human health and the environment resulting from the combustion of hazardous waste in the targeted units. We believe, based on available data, that our preferred regulatory approach,[295] as presented in today's proposed rule, is the most cost-efficient method for reducing the level of several hazardous air pollutants. These include: dioxin and furan, mercury, semivolatile and low volatile metals, and total chlorine emissions (*i.e.*, hydrogen chloride and chlorine). Carbon monoxide, hydrocarbons, and particulate matter will also be reduced.

We evaluated seven alternative methodologies in the development of today's proposed approach. These were: system removal efficiency plus feed control, straight emission-based, modified emission-based, exclusive technology approach, simultaneous achievability, using the CAA section 112(d)(4) to establish risk-based standards for total chlorine, and beyond-the-floor. Numerous different combinations of these methodologies were assessed. Selection of the Agency preferred approach was based, in part on methodological clarity, implementation simplicity, cost and economic impacts, stakeholder input, and necessary protectiveness to human health and the environment.

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[294] Some economists consider this a failure of full and proper enforcement of property rights.

[295] Including our proposal to apply section 112(d)(4) to establish risk-based standards for total chlorine for all sources, except hydrochloric acid production furnaces.

VI. What Are the Economic Impacts?

Various market adjustments (*i.e.*, economic impacts) are expected in response to the changes in hazardous waste combustion costs anticipated as a result of the replacement standards, as proposed. Economic impacts may be measured through several factors. This section presents estimated economic impacts relative to market exits, waste reallocations, and employment impacts. Economic impacts presented in this section are distinct from social costs, which correspond only to the estimated monetary value of market disturbances.

A. Market Exit Estimates

The hazardous waste combustion industry operates in a dynamic market, with systems entering and exiting the market on a routine basis. Our analysis defines "market exit'' as ceasing to burn hazardous waste. We have projected post-rule hazardous waste combustion system market exits based on economic feasibility only. Market exit estimates are derived from a breakeven analysis designed to determine system viability. This analysis is subject to several assumptions, including: engineering cost data on the baseline costs of waste burning, cost estimates for pollution control devices, prices for combustion services, and assumptions about the waste quantities burned at these facilities. It is important to note that, for most sectors, exiting the hazardous waste combustion market is not equivalent to closing a plant. (Actual plant closure would only be expected in the case of an exit from the hazardous waste combustion market of a commercial incinerator closing all its systems.)

Under the Agency's proposed approach, we estimate there may be anywhere from 51 to 58 systems (sources) that stop burning hazardous waste. This represents anywhere from 18 percent to 21 percent of the total number of systems affected by the rule. The range is based on the inclusion or exclusion of total chlorine controls.[296] At the high-end of this range, onsite incinerators represent about 55 percent of the total number of market exits. Liquid and solid fuel boilers (includes process heaters) account for 41 percent, and commercial incinerators account for the remaining. No cement kilns, lightweight aggregate kilns, or hydrochloric acid production furnaces are projected to exit the market as a result of the rule. Market exits are estimated to change only slightly under the alternative regulatory options.

B. Quantity of Waste Reallocated

Some combustion systems (sources) may no longer be able to cover their hazardous waste burning costs as a result of rule requirements, as proposed. These sources are expected to divert or reroute their wastes to alternative burners.[297] For multiple system facilities, this diversion may include on-site (non-commercial) waste consolidation among fewer systems at the same facility. A certain portion of this waste may also be reallocated to waste management alternatives (*e.g.*, solvent reclamation). Combustion, however, is likely to remain the lowest cost option. Thus, we expect that the vast majority of reallocated waste will continue to be managed at combustion facilities.

Our economic model indicates that, in response to today's rule, approximately 87,500 to 120,900 tons of hazardous waste may be reallocated, representing up to 3.4 percent of the total 1999 estimated quantity of hazardous waste burned at all sources. This estimate includes on-site consolidations and off-site diversions. Off-site diversions alone represent no more than 1.5 percent of the total waste burned. About 56 percent to 65 percent of the total reallocated waste quantity is expected to be consolidated among fewer systems at the same non-commercial facility. Commercial incinerators and commercial energy recovery (cement kilns and lightweight aggregate kilns) facilities are projected to receive all hazardous waste that is rerouted off-site. Onsite incinerators and boilers are the primary source of all off-site diverted waste. Based on the high estimate for total waste reallocated (120,900 tons), commercial incinerators and cement kilns are projected to receive 37 percent and 7 percent, respectively. The remainder, as mentioned above, is projected to be consolidated on-site. Currently, there is more than adequate capacity to accommodate all off-site waste diversions.

C. Employment Impacts

Today's rule is likely to cause employment shifts across all of the hazardous waste combustion sectors. These shifts may occur as specific combustion facilities find it no longer economically feasible to keep all of their systems running, or to stay in the hazardous waste market at all. When this occurs, workers at these locations may lose their jobs or experience forced relocations. At the same time, the rule may result in employment gains, as new purchases of pollution control equipment stimulate additional hiring in the pollution control manufacturing sector, and as additional staff are required at selected combustion facilities to accommodate reallocated waste and/or various compliance activities.

1. Employment Impacts—Dislocations (losses)

Primary employment dislocations (losses) in the combustion industry are likely to occur when combustion systems consolidate the waste they are burning into fewer systems or when a facility exits the hazardous waste combustion market altogether. Operation and maintenance labor hours are expected to be reduced for each *system* that stops burning hazardous waste. For each *facility* that completely exits the market, employment losses will likely also include supervisory and administrative labor.

Total incremental employment dislocations potentially resulting from the proposed replacement standards are estimated to range from 308 to 387 full-time-equivalent (FTE) jobs. Depending upon the scenario, on-site incinerators and boilers are responsible for anywhere from about 85 to 100 percent all potential job dislocations. Their significant share of the losses is a function of both the large number of systems affected, and the number of expected exits within these sectors.

2. Employment Impacts—Gains

In addition to employment dislocations, today's rule is also expected to result in job gains. These gains are projected to occur to both the air pollution control industry and to combustion firms as they hire personnel to accommodate reallocated waste and/or comply with the various requirements of the rule. Hazardous waste combustion sources are projected to need additional operation and maintenance personnel for the new pollution control equipment and other compliance activities, such as new reporting and record keeping requirements.

The total annual employment gains associated with the proposed standards are estimated to range from 407 to 525 FTEs. Job gains to the air pollution

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[296] Even though we are proposing to allow sources (except hydrochloric acid production furnaces) to invoke section 112(d)(4) in lieu of MACT chlorine control requirements, we have not attempted to estimate the following: (1) The total number of sources that may elect to implement this provision, and, (2) what level of control may be necessary following a section 112(d)(4) risk-based determination, since this would vary on a site-by-site basis.

[297] This analysis includes the cost of waste transport to alternative combustion sources, burning fees, and purchase of alternative fuels (if appropriate).

control industry[298] represent about 31 percent of this total. Among all combustors, boilers are projected to experience the greatest number of job gains, followed by cement and lightweight aggregate kilns. Job gains in these sectors alone represent about 55 percent to 61 percent of total projected gains, depending upon regulatory scenario.

While it may appear that this analysis suggests overall net job creation, such a conclusion would be inappropriate. Because the gains and losses occur in different sectors of the economy, they should not be added together. Doing so would mask important distributional effects of the rule. In addition, the employment gain estimates reflect within sector impacts only and therefore do not account for potential job displacement across sectors. This may occur if investment funds are diverted from other areas of the larger economy.

VII. What Are the Benefits of Reductions in Particulate Matter Emissions?

For the 1999 rule, we estimated the avoided incidence of mortality and morbidity associated with reductions in particulate matter (PM) emissions.[299] Estimates of cases of mortality and morbidity avoided were made for children and the elderly, as well as the general population, using concentration-response functions derived from human epidemiological studies. Morbidity effects included respiratory and cardiovascular illnesses requiring hospitalization, as well as other illnesses not requiring hospitalization, such as acute and chronic bronchitis and acute upper and lower respiratory symptoms. Decreases in particulate matter-related minor restricted activity days (MRADs) and work loss days (WLDs) were also estimated. Rates of avoided incidence, work days lost, and days of restricted activity were estimated for each of 16 sectors surrounding a facility using the concentration-response functions and sector-specific estimates of the corresponding population and model-derived ambient air concentration, either annual mean PM_{10} or $PM_{2.5}$ concentrations or distributions of daily PM_{10} or $PM_{2.5}$ concentrations, depending on the concentration-response function. The sectors were defined by 4 concentric rings out to a distance of 20 kilometers (about 12 miles), each of which was divided into 4 quadrants. The sector-specific rates were weighted by facility-specific sampling weights and then summed to give the total incidence rates for a given source category.[300]

Since performing the risk assessment for the 1999 *Assessment,* the Agency has updated its benefits methodology to reflect recent advances in air quality modeling and human health benefits modeling. To estimate PM exposure for the 1999 risk assessment, the Agency used the Industrial Source Complex Model-Short Term Version 3 (ISCST3). More recent EPA benefits analyses have used more advanced air-quality models. For example, the Agency's assessment of the industrial boilers and process heaters NESHAP used the Climatological Regional Dispersion Model (CRDM), which uses a national source-receptor matrix to estimate exposure associated with PM emissions.[301] Similarly, the Agency's analysis of the proposed Inter-state Air Quality Rule used the Regional Modeling System for Aerosols and Deposition (REMSAD), which also accounts for the long-range transport of particles.[302] In contrast, ISCST3 modeled exposure within a 20-kilometer radius of each emissions source for the 1999 risk assessment.[303] To the extent that PM is transported further than 20 km from each emissions source, the 1999 risk assessment may underestimate PM exposure. In addition, to estimate exposure in the 1999 risk assessment, EPA used block-group-level data from the 1990 Census. More recent studies use data from the 2000 Census.

More recent EPA benefits analyses also apply a different concentration-response function for PM mortality than that used for the 1999 risk assessment. In 1999, EPA used the concentration-response function published by Pope, *et al.* in 1995.[304] Since that time, health scientists have refined estimates of the concentration-response relationship, and EPA has updated its methodology for estimating benefits to reflect these more recent estimates. In the regulatory impact analysis of the non-hazardous boiler MACT standards, EPA used the Krewski, *et al.* re-analysis of the 1995 Pope study to estimate avoided premature mortality.[305] Since the relative risk estimated in the Krewski study (1.18) is nearly the same as that presented in Pope *et al.* (1.17), the Agency assumes that updating the 1999 risk assessment to reflect the results of the 2000 Krewski study would have minimal impact on the estimated benefits associated with the proposed HWC MACT replacement standards.

For the current proposal, we took the avoided incidence estimates from the September 1999 final rule and adjusted them to reflect the particulate matter emission reductions projected to occur under the proposed standards and the reduction in the numbers of facilities burning hazardous wastes since the analysis for the final rule was completed. For cement kilns, lightweight aggregate kilns, and incinerators, the estimates were made by adjusting the respective estimates at the source category level by the ratio of emission reductions (for today's proposed rule vs. the 1999 final rule) and the ratio of the number of facilities affected by the rules (facilities currently burning hazardous wastes vs. facilities burning hazardous wastes in the analysis for the September 1999 final rule).[306] For liquid and solid fuel-fired boilers and hydrochloric acid production furnaces, we extrapolated the avoided incidence from the incinerator source category using a similar approach except that the ratios of the exposed populations were used (corresponding to the concentration-

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[298] Manufacturers and distributers of air pollution control devices are expected to increase sales as a result of this action.

[299] See "Human Health and Ecological Risk Assessment Support to the Development of Technical Standards for Emissions from Combustion Units Burning Hazardous Wastes: Background Document,'' July 1999.

[300] It should be noted that the avoided incidence estimates were based entirely on the incremental decrease in ambient air concentrations associated with emission controls on the hazardous waste sources subject to the 1999 rule. Background levels of particulate matter were assumed to be sufficiently high to exceed any possible threshold of effect but ambient background levels of particulate matter were not otherwise considered in the analysis.

[301] U.S. EPA, *Regulatory Impact Analysis of The Final Industrial Boilers and Process Heaters NESHAP: Final Report,* February 2004.

[302] U.S. EPA, *Benefits of the Proposed Inter-State Air Quality Rule,* January 2004.

[303] Research Triangle Institute, *Human Health and Ecological Risk Assessment Support to The Development of Technical Standards for Emissions from Combustion Units Burning Hazardous Wastes: Background Document,* prepared for U.S. EPA, Office of Solid Waste, July 1999.

[304] Pope, C.A., III, M.J. Thun, M.M. Namboodiri, D.W. Dockery, J.S. Evans, F.E. Speizer, and C.W. Heath, Jr. 1995. Particulate air pollution as a predictor of mortality in a prospective study of U.S. adults. American Journal of Respiratory and Critical Care Medicine151:669–674, as cited in Research Triangle Institute, *op. cit.*

[305] Krewski D, Burnett RT, Goldbert MS, Hoover K, Siemiatycki J, Jerrett M, Abrahamowicz M, White WH. 2000. Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality. Special Report to the Health Effects Institute, Cambridge, MA, July 2000.

[306] To account for the increase in population since the 1990 census was taken, for the Phase I sources we also adjusted the avoided incidence estimates by the ratio of the population at the national level (corresponding to the concentration-response function) for the year 2000 census vs. the 1990 census. For Phase II source, we used the year 2000 census to develop source category-specific population estimates for use in the extrapolations.

response functions from the 1999 analysis), instead of the number of facilities. We estimated the exposed populations for hazardous waste-burning boilers and hydrochloric acid production furnaces using the same GIS methods as the September 1999 final rule (*i.e.*, a 16 sector overlay). Nonetheless, the extrapolated estimates are subject to some uncertainty. The estimates of avoided incidence of mortality and morbidity are shown in Table 2. The estimates of days of restricted activity and days of work lost are shown in Table 3.

TABLE 2.—PM-RELATED AVOIDED INCIDENCE OF MORTALITY AND MORBIDITY

Source category	Hospital admissions			Respiratory		Illnesses	
	Mortality	Respiratory illness	Cardiovascular	Chronic bronchitis	Acute bronchitis	Lower respiratory	Upper respiratory
Cement Kilns	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Lightweight Aggregate Kilns	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incinerators	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Solid Fuel Boilers	0.0	0.0	0.0	0.1	0.1	0.7	0.1
HCl Production Furnaces	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liquid Fuel Boilers	0.3	0.9	0.4	5.5	4.2	37.2	4.3
Total	0.3	0.9	0.4	5.6	4.3	38.0	4.4

TABLE 3.—PM-RELATED RESTRICTED ACTIVITY AND WORK LOSS DAYS

Source category	Minor restricted	Restricted activity days	Work loss days
Cement Kilns	3.1	1.0	0.4
Lightweight Aggregate Kilns	0.0	0.0	0.0
Incinerators	0.0	0.0	0.0
Solid Fuel-Fired Boilers	59.0	19.4	7.1
HCl Production Furnaces	0.0	0.0	0.0
Liquid Fuel-Fired Boilers	3692.2	1215.9	443.2
Total	3754.4	1236.4	450.7

We also conducted an analysis of key factors that influence the PM-related health benefits by statistically comparing attributes of the sources subject to today's proposed rule versus the sources subject to the 1999 rule. The greater the similarities between the sources covered by today's proposal and the sources subject to the 1999 rule, the more confidence we have in the extrapolated incidence estimates. The more the dissimilarities, the greater is the uncertainty in the estimates. The comparative analysis is discussed in a separate background document for today's rule.[307]

VIII. What are the Social Costs and Benefits of the Proposed Rule?

The value of any regulatory action is traditionally measured by the net change in social welfare that it generates. Our economic assessment for today's rule evaluates compliance costs, social costs, benefits, economic impacts, selected other impacts (*e.g.*, children's health, unfunded mandates), and small entity impacts. To conduct this analysis, we examined the current combustion market and practices, developed and implemented a methodology for examining compliance and social costs, applied an economic model to analyze industry economic impacts (results discussed above), examined benefits, and followed appropriate guidelines and procedures for examining equity considerations, children's health, and other impacts. The data we used in this analysis were the most recently available at the time of the analysis. Because our data were limited, the findings from these analyses are more accurately viewed as national estimates.

A. Combustion Market Overview

The hazardous waste industry consists of three key segments: hazardous waste generators, fuel blenders/intermediaries, and hazardous waste burners. Hazardous waste is combusted at four main types of facilities: commercial incinerators, on-site incinerators, waste burning kilns (cement kilns and lightweight aggregate kilns), and industrial boilers. Commercial incinerators are generally larger in size and designed to manage virtually all types of solids, as well as liquid wastes. On-site incinerators are more often designed as liquid-injection systems that handle liquids and pumpable solids. Waste burning kilns and boilers generally burn hazardous wastes to generate heat and power for their manufacturing processes.

As discussed above, we have identified a total of 276 sources (systems) permitted to burn hazardous waste in the United States. Liquid fuel-fired boilers account for 107 sources, followed by on-site incinerators at 92 sources. Cement kilns, hydrochloric acid production furnaces, and commercial incinerators account for 26, 17, and 15 sources, respectively. Solid fuel-fired boilers and lightweight aggregate kilns make up the remaining, at 12 and seven systems, respectively. These 276 sources are operated by a total of 150 different facilities. On-site incinerators account for 69 facilities, or 46 percent of this total, followed by all boiler facilities at 45 percent (67 facilities). There are 14 cement kilns, 10 commercial incineration facilities and three lightweight aggregate kilns. A single facility may have one or more combustion systems. Facilities with multiple systems may have the same or different types. Thus, the numbers presented above will not sum to 150 facilities.

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[307] See "Inferential Risk Analysis in Support of Standards for Emissions of Hazardous Air Pollutants from Hazardous Waste Combustors," prepared under contract to EPA by Research Triangle Institute, Research Triangle Park, NC.

The number of sources per facility in the combustion universe ranges from one to 12. On average, boilers, hydrochloric acid production furnaces, and lightweight aggregate kilns, with an average of 2.0 sources per facility, contain more waste burning combustion systems per facility than do incinerators and cement kilns, with an average of 1.4 sources per facility. On-site incinerators, with 1.3 sources per facility, have the lowest average among all types of combustion devices in the universe.

Combustion systems operating at chemical and allied product facilities represent 72 percent (199 sources) of the total number of hazardous waste burning systems. Stone, clay, and glass production accounts for 12 percent (34 sources), followed by electric, gas, and sanitation services at 8 percent (22 sources).

The EPA Biennial Reporting System (BRS) reports a total demand for all combusted hazardous waste, across all facilities, at 3.56 million tons (U.S. ton) in 1999. Commercial energy recovery (cement kilns and lightweight aggregate kilns) burned about 31 percent of this total, followed by on-site incinerators at just over 28 percent, captive energy recovery (all boilers) at 28 percent, and commercial incineration at nearly 13 percent. About 62 percent of all waste burned in 1999 was organic liquids. This is followed by inorganic liquids (15 percent), sludges (13 percent), and solids (9 percent). Hazardous gases represent about 0.1 percent of the total annual quantity burned. In terms of waste source, the industrial organic chemicals sector generates approximately a third of all hazardous waste burned, followed by pesticides and agricultural chemicals, business services, organic fibers, medicinal chemicals, pharmaceuticals, plastics materials and resins, petroleum, and miscellaneous.

Companies that generate large quantities of uniform hazardous wastes generally find it more economical and efficient to combust these wastes on-site using their own noncommercial systems. Commercial incineration facilities manage a wide range of waste streams generated in small to medium quantities by diverse industries. Cement kilns, lightweight aggregate kilns, and boilers derive heat and energy by combining clean burning (solvents and organics) high-Btu liquid hazardous wastes[308] with conventional fuels.

Regulatory requirements, liability concerns, and economics influence the demand for combustion services. Regulatory forces influence the demand for combustion by mandating certain hazardous waste treatment standards (land disposal restriction requirements, etc.). Liability concerns of waste generators affect combustion demand because combustion, by destroying organic wastes, greatly reduces the risk of future environmental problems. Finally, if alternative waste management options are more expensive, hazardous waste generators will likely choose to send their wastes to combustion facilities in order to increase their overall profitability.

Throughout much of the 1980s, hazardous waste combustors enjoyed a strong competitive position and generally maintained a high level of profitability. During this period, EPA regulations requiring combustion greatly expanded the waste tonnage for this market. In addition, federal permitting requirements, as well as powerful local opposition to siting of new incinerators, constrained the entry of new combustion systems. As a result, combustion prices rose steadily, ultimately reaching record levels in 1987. The high profits of the late 1980s induced many firms to enter the market, in spite of the difficulties and delays anticipated in the permitting and siting process. Hazardous waste markets have changed significantly since the late 1980s. In the early 1990s, substantial overcapacity resulted in fierce competition, declining prices, poor financial performance, numerous project cancellations, system consolidations, and facility closures. Since the mid 1990s, several additional combustion facilities have closed, while many of those that have remained open have consolidated, or further consolidated their operations. Available excess capacity is currently estimated at about 20 percent of the total 1999 quantity combusted.

B. Baseline Specification

Proper and consistent baseline specification is vital to the accurate assessment of incremental costs, benefits, and other economic impacts associated with today's proposed rule. The baseline essentially describes the world absent the proposed rule. The incremental impacts of today's rule are evaluated by predicting post MACT compliance responses with respect to the baseline. The baseline, as applied in this analysis, is the point at which today's rule is promulgated. Thus, incremental cost and economic impacts are projected beyond the standards established in the February 13, 2002, Interim Standards Final Rule.

C. Analytical Methodology and Findings—Social Cost Analysis

Total social costs include the value of resources used to comply with the standards by the private sector, the value of resources used to administer the regulation by the government, and the value of output lost due to shifts of resources away from the current market equilibrium. To evaluate these shifts in resources and changes in output requires predicting changes in behavior by all affected parties in response to the regulation, including responses of directly-affected entities, as well as indirectly-affected private parties.

For this analysis, social costs are grouped into two categories: economic welfare (changes in consumer and producer surplus), and government administrative costs. The economic welfare analysis conducted for today's rule uses a simplified partial equilibrium approach to estimate social costs. In this analysis, changes in economic welfare are measured by summing the changes in consumer and producer surplus. This simplified approach bounds potential economic welfare losses associated with the rule by considering two scenarios: compliance costs assuming no market adjustments, and market adjusted compliance costs. The private sector compliance costs of $57.7 million to $77.9 million per year, as presented in Section IV, assume no market adjustments. These costs may be considered to represent the high-end of total social costs. Our best estimate of social costs assume rational market adjustments. Under this scenario, increased compliance costs are examined in the context of likely incentives combustion facilities would have to continue burning hazardous wastes, and the competitive balance in different combustion sectors.

For all sectors to meet the proposed replacement standards, total annualized market-adjusted costs are estimated to range from $41 to $50 million. The low end of this range assumes no chlorine control costs.[309] The Phase II sources represent about 83 percent of the high-end total. Our economic model indicates that two sectors as a whole, commercial incinerators and cement kilns, would experience net gains following all market adjustments. This occurs due to marginally higher prices,

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[308] Many cement kilns are also able to burn a certain level of solid waste.

[309] We are proposing using section 112(d)(4) of the Clean Air Act to establish risk-based standards for total chlorine for hazardous waste combustors (except for hydrochloric acid production furnaces). The low-end of this cost range assumes all facilities emit total chlorine levels below risk-based levels of concern. Under this scenario, no total chlorine controls are assumed to be necessary.

increased waste receipts, and relatively low upgrade costs. Total annual government costs are approximately one-half million dollars for the proposed approach.

D. Analytical Methodology and Findings—Benefits Assessment

This section discusses the monetized and non-monetized benefits to human health and the environment potentially associated with today's rule. Monetized human health benefits are derived from reductions in PM and dioxin/furan exposure and are based on a Value of Statistical Life (VSL) estimate of $5.5 million.[10] Monetized environmental benefits are estimated from visibility improvements expected in response to reduced air pollution. Non-monetized benefits are associated with human health, ecological, and waste minimization factors.

1. Monetized Benefits

Particulate Matter—We developed monetized estimates of human health benefits associated with reduced emissions of particulate matter (PM). We also estimated the value of improved visibility associated with reduced PM emissions.

Results from our risk assessment extrapolation procedure, as discussed under Section VII above, are used to evaluate incremental human health benefits potentially associated with particulate matter emission reductions at hazardous waste combustion facilities. This analysis used avoided cost factors from the July 1999 *Assessment* document, combined with the updated estimates of avoided adverse health effects related only to particulate matter emissions.

Under the Agency preferred approach, reduced PM emissions are estimated to result in monetized human health benefits of approximately $4.18 million per year. This is an undiscounted figure. Avoided PM morbidity cases account for $2.34 million of this total and include: respiratory illness, cardiovascular disease, chronic bronchitis, work loss days, and minor restricted activity. Chronic bronchitis accounts for approximately 90 percent of the total morbidity cases. All morbidity cases are assumed to be avoided within the first year following reduced PM emissions and are not discounted under any scenario.

Avoided premature deaths (mortality) account for the remaining $1.84 million per year. Assuming a discount rate of three and seven percent, PM mortality benefits would be $1.70 million and $1.54 million, respectively. Our discounted analysis of PM mortality benefits assumes that 25 percent of premature mortalities occur during the first year, 25 percent occur during the second year, and 16.7 percent occur in each of the three subsequent years after exposure. This methodology is consistent with the Agency's analysis of the proposed Clear Skies Act of 2003. Total monetized PM benefits, therefore, are estimated to range from $4.24 million/year to $4.52 million per year. These findings appear to indicate that particulate matter reductions from the interim baseline to the replacement standards are small relative to the reductions achieved in going to the interim standards. This assessment does not consider corresponding health benefits associated with the reduction of metals carried by the PM.

Dioxin/furan—Dioxin/furan emissions are projected to be reduced by a total of 4.68 grams per year under the Agency Preferred Approach. Of this total, 0.42 grams/year are derived in going from the interim standards baseline to the floor levels. The remaining 4.26 grams/year are derived by going from the floor to beyond-the-floor (BTF) standards. In the July 23, 1999 *Addendum* to the *Assessment,* cancer risk reductions linked to consumption of dioxin-contaminated agricultural products accounted for the vast majority of the 0.36 cancer cases per year that were expected to be avoided due to the 1999 standards. Cancer risk reductions associated with the replacement standards are expected to be less than 0.36 cases per year, but greater than zero.

Assuming that the proportional relationship between dioxin/furans emissions and premature cancer deaths is constant, we estimate that approximately 0.058 premature cancer deaths will be avoided on an annual basis under the Agency Preferred Approach because of reduced dioxin/furans emissions. This estimate reflects a cancer risk slope factor of 1.56×10^5 [mg/kg/day]$^{-1}$. This cancer slope factor is derived from the Agency's 1985 health assessment document for polychlorinated dibenzo-p-dioxins[311] and represents an upper bound 95th percentile confidence limit of the excess cancer risk from a lifetime exposure.

For the past 12 years the Agency has been conducting a reassessment of the human health risks associated with dioxin and dioxin-like compounds. This reassessment[312] will soon be under review at the National Academy of Sciences (NAS), as specified by Congress in the Conference Report accompanying EPA's fiscal year 2003 appropriation (Title IV of Division K of the Conference Report for the Consolidated Appropriations Resolution of 2003). Evidence compiled from this draft reassessment indicates that the carcinogenic effects of dioxin/furans may be six times as great as believed in 1985, reflecting an upper bound cancer risk slope factor of 1×106 [mg/kg/day]$^{-1}$ for some individuals. Agency scientists' more likely (central tendency) estimates (derived from the ED$_{01}$ rather than the LED$_{01}$) result in slope factors and risk estimates that are within 2–3 times of the upper bound estimates (*i.e.*, between 3×10^5 [mg/kg/day]$^{-1}$ and 5×10^5 [mg/kg/day]$^{-1}$) based on the available epidemiological and animal cancer data. Risks could be as low as zero for some individuals. Use of the alternative upper bound cancer risk slope factor would result in up to 0.35 premature cancer deaths avoided in response to the proposed replacement standards for dioxin/furans. The assessment of upper bound cancer risk using this alternative slope factor should not be considered Agency policy. The proposed standards for dioxin in today's rule were not based on this draft reassessment.

Total non-discounted human health benefits associated with projected dioxin reductions are estimated at $0.32 million/year. Total benefits are estimated to range from $0.12 million/year to $0.17 million/year at a 3 percent discount rate, and $0.03 million/year to $0.08 million/year at a 7 percent rate. The two figures under each discount scenario reflect an assumed latency period of 21 or 34 years.

Visibility Benefits—In addition to the human health benefits discussed above, we also assessed visibility improvements. Particulate matter emissions are a primary cause of reduced visibility. Changes in the level of ambient particulate matter caused by the reduction in emissions associated with the Agency preferred approach are expected to increase the level of visibility in some parts of the United States. We derived upper and lower bound benefits estimates associated with particulate matter emissions

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[310] Office of Management and Budget. *Circular A–4.* September 17, 2003.

[311] USEPA, 1985. Health Assessment Document for Polychlorinated Dibenzo-p-Dioxins. EPA/600/8–84/014F. Final Report. Office of Health and Environmental Assessment. Washington, DC. September, 1985.

[312] U.S.EPA, *Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds,* September 2000. Note: Toxicity risk factors presented in this document should not be considered EPA's official estimate of dioxin toxicity, but rather reflect EPA's ongoing effort to reevaluate dioxin toxicity.

reductions using two different methodologies, each comparing reductions to those associated with the Clean Air Act. The first approach assumes a linear relationship between particulate matter reductions and visibility improvements. Under this approach, the Agency preferred replacement standards may result in a visibility benefit of approximately $5.78 million per year. Our second approach is to assume a linear relationship between health benefits and visibility benefits associated with reduction in particulate matter emissions. Under this approach, the proposed replacement standards could result in a visibility benefit of approximately $0.11 million/year. This method represents our lower bound estimate of visibility benefits.

2. Non-Monetized Benefits

We examined, but did not monetize human health benefits potentially associated with reduced exposure to lead, mercury, and total chlorine. Non monetized ecological benefits potentially associated with reductions in dioxin/furan, selected metals, total chlorine, and particulate matter were also examined. Finally, waste minimization is examined as a non-monetized benefit.

Lead—The proposed replacement standards are expected to reduce lead emissions by approximately five tons per year. In comparison, the 1999 standards were expected to reduce lead emissions by 89 tons per year, and were expected to reduce cumulative lead exposures for two children age 0–5 to less than 10 µg/dL. The lead benefits associated with the proposed replacement standards are therefore expected to be modest, reducing the cumulative lead exposures for less than two children age 0–5, less than 10 µg/dL annually. The proposed replacement standards will also result in reduced lead levels for children of sub-populations with especially high levels of exposure. Children of subsistence fishermen, commercial beef farmers, and commercial dairy farmers who face the greatest levels of cumulative lead exposure will also experience comparable reductions in overall exposure as a result of the MACT standards.

Mercury—Mercury emitted from hazardous waste burning incinerators, kilns, boilers, and other natural and man-made sources is carried by winds through the air and eventually is deposited to water and land. Recent estimates (which are highly uncertain) of annual total global mercury emissions from all sources (natural and anthropogenic) are about 5,000 to 5,500 tons per year (tpy). Of this total, about 1,000 tpy are estimated to be natural emissions and about 2,000 tpy are estimated to be contributions through the natural global cycle of re-emissions of mercury associated with past anthropogenic activity. Current anthropogenic emissions account for the remaining 2,000 tpy. Point sources such as fuel combustion; waste incineration; industrial processes; and metal ore roasting, refining, and processing are the largest point source categories on a world-wide basis. Given the global estimates noted above, U.S. anthropogenic mercury emissions are estimated to account for roughly 3 percent of the global total, and U.S. hazardous waste burning incinerators, kilns, and boilers are estimated to account for about 0.0045 percent of total global emissions.

Mercury exists in three forms: elemental mercury, inorganic mercury compounds (primarily mercuric chloride), and organic mercury compounds (primarily methylmercury). Mercury is usually released in an elemental form and later converted into methylmercury by bacteria. Methylmercury may be more toxic to humans than other forms of mercury, in part because it is more easily absorbed in the body.[313] If the deposition is directly to a water body, then the processes of aqueous fate, transport, and transformation begin. If deposition is to land, then terrestrial fate and transport processes occur first and then aqueous fate and transport processes occur once the mercury has cycled into a water body. In both cases, mercury may be returned to the atmosphere through resuspension. In water, mercury is transformed to methylmercury through biological processes and for exposures affected by this rulemaking. Methylmercury is considered to be the form of greatest concern. Once mercury has been transformed into methylmercury, it can be ingested by the lower trophic level organisms where it can bioaccumulate in fish tissue (*i.e.*, concentrations of mercury remain in the fish's system for a long period of time and accumulates in the fish tissue as predatory fish consume other species in the food chain). Fish and wildlife at the top of the food chain can, therefore, have mercury concentrations that are higher than the lower species, and they can have concentrations of mercury that are higher than the concentration found in the water body itself. In addition, when humans consume fish containing methylmercury, the ingested methylmercury is almost completely absorbed into the blood and distributed to all tissues (including the brain); it also readily passes through the placenta to the fetus and fetal brain.[314]

Based on the findings of the National Research Council, EPA has concluded that benefits of Hg reductions would be most apparent at the human consumption stage, as consumption of fish is the major source of exposure to methylmercury. At lower levels, documented Hg exposure effects may include more subtle, yet potentially important, neurodevelopmental effects.

Some subpopulations in the U.S., such as: Native Americans, Southeast Asian Americans, and lower income subsistence fishers, may rely on fish as a primary source of nutrition and/or for cultural practices. Therefore, they consume larger amounts of fish than the general population and may be at a greater risk to the adverse health effects from Hg due to increased exposure. In pregnant women, methylmercury can be passed on to the developing fetus, and at sufficient exposure may lead to a number of neurological disorders in children. Thus, children who are exposed to low concentrations of methylmercury prenatally may be at increased risk of poor performance on neurobehavioral tests, such as those measuring attention, fine motor function, language skills, visual-spatial abilities (like drawing), and verbal memory. The effects from prenatal exposure can occur even at doses that do not result in effects in the mother. Mercury may also affect young children who consume fish containing mercury. Consumption by children may lead to neurological disorders and developmental problems, which may lead to later economic consequences.

In response to potential risks of mercury-containing fish consumption, EPA and FDA have issued fish consumption advisories which provide recommended limits on consumption of certain fish species for different populations. EPA and FDA have developed a new joint advisory that was released in March 2004. This new FDA-EPA fish advisory recommends that women and young children reduce the risks of Hg consumption in their diet by moderating their fish consumption, diversifying the types of fish they consume, and by checking any local advisories that may exist for local rivers and streams. This collaborative FDA-EPA effort will greatly assist in

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[313] *Regulatory Impact Analysis of the Final Industrial Boilers and Process Heaters NESHAP: Final Report,* February 2004.

[314] *Regulatory Impact Analysis of the Final Industrial Boilers and Process Heaters NESHAP: Final Report,* February 2004.

educating the most susceptible populations. Additionally, the reductions of Hg from this regulation may potentially lead to fewer fish consumption advisories (both from federal or state agencies), which will benefit the fishing community. Currently 44 states have issued fish consumption advisories for non-commercial fish for some or all of their waters due to contamination of mercury. The scope of FCA issued by states varies considerably, with some warnings applying to all water bodies in a state and others applying only to individual lakes and streams. Note that the absence of a state advisory does not necessarily indicate that there is no risk of exposure to unsafe levels of mercury in recreationally caught fish. Likewise, the presence of a state advisory does not indicate that there is a risk of exposure to unsafe levels of mercury in recreationally caught fish, unless people consume these fish at levels greater than those recommended by the fish advisory.

Reductions in methylmercury concentrations in fish should reduce exposure, subsequently reducing the risks of mercury-related health effects in the general population, to children, and to certain subpopulations. Fish consumption advisories (FCA) issued by the States may also help to reduce exposures to potential harmful levels of methylmercury in fish. To the extent that reductions in mercury emissions reduces the probability that a water body will have a FCA issued, there are a number of benefits that will result from fewer advisories, including increased fish consumption, increased fishing choices for recreational fishers, increased producer and consumer surplus for the commercial fish market, and increased welfare for subsistence fishing populations.

There is a great deal of variability among individuals in fish consumption rates; however, critical elements in estimating methylmercury exposure and risk from fish consumption include the species of fish consumed, the concentrations of methylmercury in the fish, the quantity of fish consumed, and how frequently the fish is consumed. The typical U.S. consumer eating a wide variety of fish from restaurants and grocery stores is not in danger of consuming harmful levels of methylmercury from fish and is not advised to limit fish consumption. Those who regularly and frequently consume large amounts of fish, either marine or freshwater, are more exposed. Because the developing fetus may be the most sensitive to the effects from methylmercury, women of child-bearing age are regarded as the population of greatest interest. The EPA, Food and Drug Administration, and many States have issued fish consumption advisories to inform this population of protective consumption levels.

The EPA's 1997 Mercury Study RTC supports a plausible link between anthropogenic releases of Hg from industrial and combustion sources in the U.S. and methylmercury in fish. However, these fish methylmercury concentrations also result from existing background concentrations of Hg (which may consist of Hg from natural sources, as well as Hg which has been re-emitted from the oceans or soils) and deposition from the global reservoir (which includes Hg emitted by other countries). Given the current scientific understanding of the environmental fate and transport of this element, it is not possible to quantify how much of the methylmercury in locally-caught fish consumed by the U.S. population is contributed by U.S. emissions relative to other sources of Hg (such as natural sources and re-emissions from the global pool). As a result, the relationship between Hg emission reductions from Phase I and Phase II sources assessed in this rule, and methylmercury concentrations in fish cannot be calculated in a quantitative manner with confidence. In addition, there is uncertainty regarding over what time period these changes would occur.

Given the present understanding of the Hg cycle, the flux of Hg from the atmosphere to land or water at one location is comprised of contributions from: the natural global cycle; the cycle perturbed by human activities; regional sources; and local sources. Recent advances allow for a general understanding of the global Hg cycle and the impact of the anthropogenic sources. It is more difficult to make accurate generalizations of the fluxes on a regional or local scale due to the site-specific nature of emission and deposition processes. Similarly, it is difficult to quantify how the water deposition of Hg leads to an increase in fish tissue levels. This will vary based on the specific characteristics of the individual lake, stream, or ocean.

Total Chlorine—We were not able to quantify the benefits associated with reductions in total chlorine emissions. Total chlorine is a combination of hydrogen chloride and chlorine gas. The replacement standards proposed today are expected to reduce total chlorine emissions by 2,638 tons. Hydrogen chloride is corrosive to the eyes, skin, and mucous membranes. Acute inhalation can cause eye, nose, and respiratory tract irritation and inflamation, and pulmonary edema. Chronic occupational inhalation has been reported to cause gastritis, bronchitis, and dermatitis in workers. Long term exposure can also cause dental discoloration and erosion. No information is available on the reproductive or developmental effects in humans. Chlorine gas inhalation can cause bronchitis, asthma and swelling of the lungs, headaches, heart disease, and meningitis. Acute exposure causes more severe respiratory and lung effects, and can result in fatalities in extreme cases. No information is available on the reproductive or developmental effects in humans. The proposed replacement standards are expected to reduce chlorine exposure for people in close proximity to hazardous waste combustion facilities, and are therefore likely to reduce the risk of all associated health effects.

Ecological Benefits—We examined ecological benefits through a comparison of the 1999 *Assessment* and the proposed replacement standards. Ecological benefits in the 1999 *Assessment* were based on reductions of approximately 100 tons per year in dioxin/furans and selected metals. Lead was the only pollutant of concern for aquatic ecosystems, while mercury appeared to be of greatest concern for terrestrial ecosystems. Dioxin/furan and lead emission reductions also provided some potential benefits for terrestrial ecosystems. The proposed replacement standards are expected to reduce dioxin/furan and selected metal emissions by about 15 to 20 percent of the 1999 estimate. The proposed replacement standards will produce fewer incremental benefits than those estimated for the 1999 *Assessment* (and later, for the 2002 Interim Standards). However, the 1999 *Assessment* did not estimate the ecological benefits of MACT standards for industrial boilers and industrial furnaces. These systems were excluded from the universe in 1999 but are part of the universe addressed by the proposed replacement standards. As a result, while the total ecological benefits of the proposed rule are likely to be modest, areas near facilities with boilers may enjoy more significant ecological benefits under the proposed replacement standards than areas near facilities that have already complied with the 2002 Interim standards.

Mercury, lead, and chlorides are among the HAPs that can cause damage to the health and visual appearance of plants.[315] While the total value of forest health is difficult to estimate, visible deterioration in the health of forests and plants can cause a measurable change in recreation behavior. Several studies that measure the change in outdoor recreation behavior according to forest health are available to place a value on aesthetic degradation of forests.[316] Although these studies are available, additional research is needed to fully understand the effects of these HAPs on the forest ecosystem. Thus, these benefits are not quantified in this analysis.

Emissions that are sufficient to cause structural and aesthetic damage to vegetation are likely to affect growth as well. Little research has been done on the effects of compounds such as chlorine, heavy metals (as air pollutants), and PM on agricultural productivity.[317] Even though the potential for visible damage and production decline from metals and other pollutants suggests the proposed replacement standards could increase agricultural productivity, these changes cannot be quantified.

3. Waste Minimization Benefits

Facilities that burn hazardous waste and remain in operation following implementation of the replacement standards are expected to experience marginally increased costs as a result of the MACT standards. This will result in an incentive to pass these increased costs on to their customers in the form of higher combustion prices. In the 1999 Assessment we conducted a waste minimization analysis to inform the expected price change. The analysis concluded that the demand for combustion is relatively inelastic. While a variety of waste minimization alternatives are available for managing hazardous waste streams that are currently combusted, the costs of these alternatives generally exceed the cost of combustion. When the additional costs of compliance with the MACT standards are taken into account, waste minimization alternatives still tend to exceed the higher combustion costs. This inelasticity suggests that, in the short term, large reductions in waste quantities are not likely. However, over the longer term (*i.e.*, as production systems are updated), companies may continue to seek alternatives to expensive waste-management (*i.e.*, source reduction). To the extent that increases in combustion prices provide additional incentive to adopt more efficient processes, the proposed replacement standards may contribute to the longer term process based waste minimization efforts.

No waste minimization impacts are captured in our quantitative analysis of costs and benefits. A quantitative assessment of the benefits associated with waste minimization may result in double-counting of some of the benefits described earlier. For example, waste minimization may reduce emissions of hazardous air pollutants and therefore have a positive effect on public health. Furthermore, emission reductions beyond those necessary for compliance with the replacement standards are not addressed in the benefits assessment. In addition, waste minimization is likely to result in specific types of benefits not captured in this Assessment. For example, waste generators that engage in waste minimization may experience a reduction in their waste handling costs and could also reduce the risk related to waste spills and waste management. Finally, waste minimization procedures potentially stimulated by today's action, as proposed, may result in additional costs to facilities that implement these technologies. These have not been assessed in our analysis but are likely to at least partially offset corresponding benefits.

4. Conclusion

Total non-discounted monetized benefits are estimated to range from $$4.6 million/year to $10.3 million/year. It is important to emphasize that monetized benefits represent only a portion of the total benefits associated with this rule. A significant portion of the benefits are not monetized. Specifically, ecological benefits, and human health benefits associated with reductions in chlorine, mercury, and lead are not quantified or monetized. In some locations these benefits may be significant. In addition, specific sub-populations near combustion facilities, including children and minority populations, may be disproportionately affected by environmental risks and may therefore enjoy more significant benefits. For a complete discussion of the methodology, data, findings, and limitations associated with our benefits analysis the reader is encouraged to review the *Assessment* and *Addendum* documents, as identified under Part Five, Section I.

IX. How Does the Proposed Rule Meet the RCRA Protectiveness Mandate?

As discussed in more detail below, we believe today's proposed standards, based on evaluating estimated emissions from sources, are generally protective. We therefore propose that these standards apply in lieu of RCRA air emission standards in most instances.

A. Background

Section 3004(a) of RCRA requires the Agency to promulgate standards for hazardous waste treatment, storage, and disposal facilities as necessary to protect human health and the environment. The standards for hazardous waste incinerators generally rest on this authority. In addition, section 3004(q) requires the Agency to promulgate standards for emissions from facilities that burn hazardous waste fuels (*e.g.*, cement and lightweight aggregate kilns, boilers, and hydrochloric acid production furnaces) as necessary to protect human health and the environment. Using RCRA authority, the Agency has historically established emission (and other) standards for hazardous waste combustors that are either entirely risk-based (*e.g.*, site-specific standards for metals under the Boiler and Industrial Furnace rule), or are technology-based but determined by a generic risk assessment to be protective (*e.g.*, the DRE standard for incinerators and BIFs).

The MACT standards proposed today implement the technology-based regime of CAA section 112. There is, however, a residual risk component to air toxics standards. Section 112(f) of the Clean Air Act requires the Agency to impose, within eight years after promulgation of the technology-based standards promulgated under section 112(d) (*i.e.*, the authority for today's proposed standards), additional controls if needed to protect public health with an ample

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[315] Although the primary pollutants which are detrimental to vegetation aesthetics and growth are tropospheric ozone, sulfur dioxide, and hydrogen fluoride, three pollutants which are not regulated in the MACT standards, some literature exists on the relationship between metal deposition and vegetation health. (Mercury Study Report to Congress Volume VI, 1997) (Several studies are cited in this report.)

[316] See, for example, Brown, T.C. *et al.* 1989, *Scenic Beauty and Recreation Value: Assessing the Relationship,* In J. Vining, ed., *Social Science and Natural Resources Recreation Management,* Westview Press, Boulder, Colorado; this work studies the relationship between forest characteristics and the value of recreational participation. Also see Peterson, D.G. *et al.* 1987, *Improving Accuracy and Reducing Cost of Environmental Benefit Assessments.* Draft Report to the U.S. EPA, by Energy and Resource Consultants, Boulder, Colorado; Walsh *et al.* 1990, Estimating the public benefits of protecting forest quality, *Journal of Forest Management,* 30:175–189., and Homes *et al.* 1992, *Economic Valuation of Spruce-Fir Decline in the Southern Appalachian Mountains: A comparison of Value Elicitation Methods.* Presented at the *Forestry and the Environment: Economic Perspectives Conference,* March 9–11, 1992 Jasper, Alberta, Canada for estimates of the WTP of visitors and residents to avoid forest damage.

[317] MacKenzie, James J., and Mohamed T. El-Ashry, *Air Pollution's Toll on Forests and Crops* (New Haven, Yale University Press, 1989).

margin of safety or to prevent adverse environmental effect.

RCRA section 1006 directs that EPA "integrate all provisions of [RCRA] for purposes of administration and enforcement and . . . avoid duplication, to the maximum extent possible, with the appropriate provisions of the Clean Air Act. . . ." Thus, although considerations of risk are not ordinarily part of the MACT process, in order to avoid duplicative standards where possible, we have evaluated the protectiveness of the standards proposed today.

As noted above, under RCRA, EPA must promulgate standards "as may be necessary to protect human health and the environment.'' RCRA section 3004(a) and (q). Technology-based standards developed under CAA section 112 do not automatically satisfy this requirement, but may do so in fact. *See* 59 FR at 29776 (June 6, 1994) and 60 FR at 32593 (June 23, 1995) (RCRA regulation of secondary lead smelter emissions unnecessary at this time given stringency of technology-based standard and pendency of section 112(f) determination). If the MACT standards, as a factual matter, are sufficiently protective to also satisfy the RCRA mandate, then no independent RCRA standards are required. Conversely, if MACT standards are inadequate, the RCRA authorities would have to be used to fill the gap.

B. Assessment of Risks

The Agency has conducted an evaluation, for the purposes of satisfying the RCRA statutory mandates, of the degree of protection afforded by the MACT standards being proposed today. We have not conducted a comprehensive risk assessment for this proposal; however, a comprehensive risk assessment for incinerators, cement kilns, and lightweight aggregate kilns was conducted for the 1999 MACT rule. For this proposed rule, we are instead comparing characteristics of the sources covered by the 1999 rule to the sources covered by the replacement rule that are related to risk (*e.g.*, emissions[318], stack characteristics, meteorology, and population). In the 1999 rule we concluded that the promulgated standards were sufficiently protective and the existing RCRA standards for incinerators, cement kilns, and lightweight aggregate kilns need not be retained. Based on the results of statistical comparisons, we infer whether risks for incinerators, cement kilns, lightweight aggregate kilns, boilers, and hydrochloric acid production furnaces will be about the same, less than, or greater than the risks estimated for the 1999 rule. We think the comparative analysis lends additional support to our view regarding the protectiveness of the proposed standards.[319]

We believe today's proposed standards provide a substantial degree of protection to human health and the environment. We therefore do not believe that we need to retain the existing RCRA standards for boilers and hydrochloric acid production furnaces (just as we found that existing RCRA standards for incinerators, cement kilns, and lightweight aggregate kilns were no longer needed after the 1999 rule). However, as previously discussed in more detail in Part Two, Section XVII.D, site-specific risk assessments may be warranted on an individual source basis to ensure that the MACT standards provide adequate protection in accordance with RCRA.

Part Five: Administrative Requirements

I. Executive Order 12866: Regulatory Planning and Review

Under Executive Order 12866 [58 FR 51735 (October 4, 1993)], the Agency must determine whether a regulatory action is "significant'' and therefore subject to OMB review and the requirements of the Executive Order. The Order defines "significant regulatory action'' as one that is likely to result in 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, or 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 this rule is a "significant regulatory action'' because this action may raise novel legal or policy issues due to the standards development methodology applied in development of the proposed replacement standards. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations will be documented in the public record.

The aggregate annualized social costs for this rule are under $100 million (ranging from $41 to $50 million/yr). We have prepared an economic assessment in support of today's action. This document is entitled: *Assessment of the Potential Costs, Benefits, and Other Impacts of the Hazardous Waste Combustion MACT Replacement Standards—Proposed Rule,* March 2004. This *Assessment* is designed to adhere to analytical requirements established under Executive Order 12866, and corresponding Agency and OMB guidance; subject to data, analytical, and resource limitations. An Addendum entitled: *Addendum to the Assessment of the Potential Costs, Benefits, and Other Impacts of the Hazardous Waste Combustion MACT Replacement Standards—Proposed Rule,* March 2004, has also been prepared. This *Addendum* addresses belated changes made to the final proposed standards that were not captured in the *Assessment.* The RCRA docket established for today's rulemaking maintains a copy of the *Assessment* and *Addendum* documents for public review. Interested persons are encouraged to read both documents for a full understanding of the analytical methodology, findings, and limitations associated with this report. Comments and supporting data are encouraged and welcomed.

II. Paperwork Reduction Act

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

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[318] We estimated emissions for each facility based on site-specific stack gas concentrations and flow rates measured during trial burn or compliance tests. For sources where stack gas measurements were unavailable, data were imputed by random selection from a pool of measurements for similar units. We assumed that sources would design their systems to meet an emission level below the proposed standard. (In the case of dioxin/furan for sources that would not be subject to a numerical emission standard, we assumed liquid boilers without dry air pollution control systems and solid fuel-fired boilers were emitting at their baseline emissions level as portrayed in the data base.) We called this the "design level.'' If available test data in our data base indicate that the source was emitting below the design level, we assumed that the source would continue to emit at the levels measured in test. For sources emitting above the design level of a standard, we assumed they would need to reduce emissions to the design level. In the 1999 rule, the design level was taken as 70% of the standard. For today's proposed standards, the design level is generally the lower of: (1) 70% of the standard; or (2) the arithmetic average of the emissions data of the best performing sources.

[319] See "Inferential Risk Analysis in Support of Standards for Emissions of Hazardous Air Pollutants from Hazardous Waste Combustors,'' prepared under contract to EPA by Research Triangle Institute, Research Triangle Park, NC.

Act, 44 U.S.C. 3501 *et seq.* The Information Collection Request (ICR) document prepared by EPA has been assigned EPA ICR number 1773.07.

EPA is proposing today's regulations under section 112 of the CAA, to protect and enhance the quality of our nation's air resources, and to promote public health and welfare and the productive capacity of the population. *See* CAA section 101(b)(1). To this end, CAA sections 112(a) and (d) direct EPA to set standards for stationary sources emitting the hazardous air pollutants. The records and reports required by the information collection under this proposal will be used to show compliance with the requirements of the rule. EPA believes that if these minimum requirements specified under the regulations are not met, EPA will not fulfill its Congressional mandate to protect public health and the environment.

The information collection required under this ICR is mandatory for the regulated sources as it is essential to properly enforce the emission limitation requirements of the rule and will be used to further the proper performance of the functions of EPA. EPA has made extensive efforts to integrate the monitoring, compliance testing and recordkeeping requirements of the CAA and RCRA, so that the burden on the sources is kept to a minimum, and the facilities are able to avoid duplicate and unnecessary submissions. We also ensure, to the fullest extent of the law, the confidentiality of the submitted information.

The projected annual burden under today's proposal is estimated at 70,199 hours at a total cost of $5.1 millions. For the hour burden, we estimate a total of 2,612 responses from 243 respondents, or an average of 27 hours per response, or 289 hours per respondent. The cost burden to respondents or recordkeepers resulting from the collection of information includes a total capital and start-up cost component, a total operation and maintenance component and a purchase of services component. The capital and start-up cost component is estimated at $36,184 annualized over its expected useful life, and the operation and maintenance component is estimated at $488,947 annualized over its expected useful life. The frequency of different responses varies and is monthly or annually for some and on occasion for others.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9.

To comment on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including the use of automated collection techniques, EPA has established a public docket for this rule, which includes this ICR, under Docket ID number RCRA–2003–0016. Submit any comments related to the ICR for this proposed rule to EPA and OMB. See **ADDRESSES** section at the beginning of this notice for where to submit comments to EPA. Send comments to OMB at the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW., Washington, DC 20503, Attention: Desk Office for EPA. Since OMB is required to make a decision concerning the ICR between 30 and 60 days after April 20, 2004, a comment to OMB is best assured of having its full effect if OMB receives it by May 20, 2004. The final rule will respond to any OMB or public comments on the information collection requirements contained in this proposal.

III. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), 5 U.S.C. 601 *et seq.* generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act, or any other statute. This analysis must be completed unless the agency is able to certify that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small not-for-profit enterprises, and small governmental jurisdictions.

We have determined that hazardous waste combustion facilities are not owned by small entities (local governments, tribes, *etc.*) other than businesses. Therefore, only businesses were analyzed for small entity impacts. For the purposes of the impact analyses, small entity is defined either by the number of employees or by the dollar amount of sales. The level at which a business is considered small is determined for each North American Industrial Classification System (NAICS) code by the Small Business Administration.

Affected individual waste combustors (incinerators, cement kilns, lightweight aggregate kilns, solid and liquid fuel-fired boilers, and hydrochloric acid production furnaces) will bear the impacts of today's rule. These units will incur direct economic impacts as a result of today's rule. Few of the hazardous waste combustion facilities affected by this proposed rule were found to be owned by small businesses, as defined by the Small Business Administration (SBA). From our universe of 150 facilities, we identified six facilities that are currently owned by small businesses. Three of these are liquid boilers, one is an on-site incinerator, one is a cement kiln, and one is an LWAK. Annualized economic impacts of the proposed replacement standards were found to range from 0.01 percent to 2.23 percent of gross annual corporate revenues. Economic impacts to five of the companies were found to be less than one percent, while the sixth company was found to experience potential impacts between one and 3 percent (2.23 percent). These findings reflect worst-case cost estimates under the Agency Preferred Approach. Actual economic impacts are likely to be less as market adjustments take effect (see appendix H of the Assessment and Assessment of Small Entity Impacts in the *Addendum*).

Based on the above findings we believe that one small company with potential impacts between one and 3 percent of gross revenues does not reflect a significant economic impact on a substantial number of potentially affected small entities. Therefore, after considering the economic impacts of today's proposed rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. The reader is encouraged to review and comment on our regulatory flexibility screening analysis prepared in support of this determination: *Regulatory Flexibility Screening Analysis for the Proposed Hazardous Waste Combustion MACT Replacement Standards.* This document is incorporated as Appendix H of the *Assessment* document.

IV. Unfunded Mandates Reform Act

Signed into law on March 22, 1995, the Unfunded Mandates Reform Act (UMRA) calls on all federal agencies to provide a statement supporting the need to issue any regulation containing an unfunded federal mandate and describing prior consultation with representatives of affected state, local, and tribal governments.

Today's proposed rule is not subject to the requirements of sections 202, 204 and 205 of UMRA. In general, a rule is subject to the requirements of these sections if it contains "Federal mandates'' that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of $100 million or more in any one year. Today's final rule does not result in $100 million or more in expenditures. The aggregate annualized social cost for today's rule is estimated to range from $41 to $50 million.

V. Executive Order 13132: Federalism

Executive Order 13132, entitled "Federalism'' (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' "Policies that have federalism implications'' is defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

Under Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, or EPA consults with State and local officials early in the process of developing the proposed regulation.

This proposed rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in the Order. The proposed rule focuses on requirements for facilities burning hazardous waste, without affecting the relationships between Federal and State governments. Thus, Executive Order 13132 does not apply to this rule. Although section 6 of Executive Order 13132 does not apply to this rule, EPA did include three State representatives on our Agency workgroup. These representatives participated in the development of this proposed rule. State officials were contacted concerning the methodology used in standards development.

In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicits comment on this proposed rule from State and local officials.

VI. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

Executive Order 13175 [320]: Consultation and Coordination with Indian Tribal Governments (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure "meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.'' Our Agency workgroup for this rulemaking includes Tribal representation. We have determined that this rule, as proposed, does not have tribal implications, as specified in the Order. No Tribal governments are known to own or operate hazardous waste combustors subject to the requirements of this proposed rule. Furthermore, this proposed rule focuses on requirements for all regulated sources without affecting the relationships between tribal governments in its implementation, and applies to all regulated sources, without distinction of the surrounding populations affected. Thus, Executive Order 13175 does not apply to this rule. EPA specifically solicits additional comment on this proposed rule from tribal officials.

VII. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks

Executive Order 13045: "Protection of Children from Environmental Health Risks and Safety Risks'' (62 FR. 19885, April 23, 1997) applies to any rule that: (1) Is determined to be "economically significant'' as defined under E.O. 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency. Today's final rule is not subject to the Executive Order because it is not economically significant as defined under point one of the Order, and because the Agency does not have reason to believe the environmental health or safety risks addressed by this action present a disproportionate risk to children.

VIII. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This rule is not subject to Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use'' (66 FR 28355 (May 22, 2001)). This rule, as proposed will not seriously disrupt energy supply, distribution patterns, prices, imports or exports. Furthermore, this rule is not an economically significant action under Executive Order 12866.

IX. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 ("NTTAA''), Public Law 104–113, 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (*e.g.*, materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This proposed rulemaking involves environmental monitoring or measurement. Consistent with the Agency's Performance Based Measurement System ("PBMS''), EPA proposes not to require the use of specific, prescribed analytic methods. Rather, the Agency plans to allow the use of any method that meets the prescribed performance criteria. The PBMS approach is intended to be more flexible and cost-effective for the regulated community; it is also intended to encourage innovation in analytical technology and improved data quality. EPA is not precluding the use of any method, whether it constitutes a

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[320] Executive Order 13084 is revoked by this Executive Order.

voluntary consensus standard or not, as long as it meets the performance criteria specified.

EPA welcomes comments on this aspect of the proposed rulemaking and, specifically, invites the public to identify potentially-applicable voluntary consensus standards and to explain why such standards should be used in this regulation.

X. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898, "Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations'' (February 11, 1994) requires us to complete an analysis of today's rule with regard to equity considerations. The Order is designed to address the environmental and human health conditions of minority and low-income populations. This section briefly discusses potential impacts (direct or disproportional) today's rule may have in the area of environmental justice.

To comply with the Executive Order, we have assessed whether today's rule may have negative or disproportionate effects on minority or low-income populations. We have recently analyzed demographic data from the U.S. Census. Previously we examined data from two other reports: "Race, Ethnicity, and Poverty Status of the Populations Living Near Cement Plants in the United States'' (EPA, August 1994) and "Race, Ethnicity, and Poverty Status of the Populations Living Near Hazardous Waste Incinerators in the United States'' (EPA, October 1994). These reports examine the number of low-income and minority individuals living near a relatively large sample of cement kilns and hazardous waste incinerators and provide county, state, and national population percentages for various sub-populations. The demographic data in these reports provide several important findings when examined in conjunction with the risk reductions projected from today's rule.

We find that combustion facilities, in general, are not located in areas with disproportionately high minority and low-income populations. However, there is evidence that hazardous waste burning cement kilns are somewhat more likely to be located in areas that have relatively higher low-income populations. Furthermore, there are a small number of commercial hazardous waste incinerators located in highly urbanized areas where there is a disproportionately high concentration of minorities and low-income populations within one and five mile radii. The reduced emissions at these facilities due to today's rule could represent meaningful environmental and health improvements for these populations. Overall, today's rule should not result in any adverse or disproportional health or safety effects on minority or low-income populations. Any impacts on these populations are likely to be positive due to the reduction in emissions from combustion facilities near minority and low-income population groups. The *Assessment* document available in the RCRA docket established for today's rule presents the full Environmental Justice Analysis.

XI. Congressional Review

The Congressional Review Act (CRA), 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. Prior to publication of the final rule in the **Federal Register**, we will submit all necessary information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States. Under the CRA, a major rule cannot take effect until 60 days after it is published in the **Federal Register**. As proposed, this action is not a "major rule'' as defined by 5 U.S.C. 804(2).

List of Subjects

40 CFR Part 63

Environmental protection, Air pollution control, Hazardous substances, Incorporation by reference, Reporting and recordkeeping requirements.

40 CFR Part 264

Environmental protection, Air pollution control, Hazardous waste, Insurance, Packaging and containers, Reporting and recordkeeping requirements, Security measures, Surety bonds.

40 CFR Part 265

Environmental protection, Air pollution control, Hazardous waste, Insurance, Packaging and containers, Reporting and recordkeeping requirements.

40 CFR Part 266

Environmental protection, Energy, Hazardous waste, Recycling, Reporting and recordkeeping requirements.

40 CFR Part 270

Environmental protection, Administrative practice and procedure, Confidential business information, Hazardous materials transportation, Hazardous waste, Reporting and recordkeeping requirements.

40 CFR Part 271

Administrative practice and procedure, Hazardous materials transportation, Hazardous waste, Intergovernmental relations, Reporting and recordkeeping requirements.

Dated: March 31, 2004.

Michael O. Leavitt,

Administrator.

For the reasons set out in the preamble, title 40, chapter I, of the Code of Federal Regulations is proposed to be amended as follows:

PART 63—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES

1. The authority citation for part 63 continues to read as follows:

Authority: 42 U.S.C. 7401 *et seq.*

2. Section 63.1200 is amended by revising the introductory text and paragraph (a)(2) to read as follows:

§ 63.1200 Who is subject to these regulations?

The provisions of this subpart apply to all hazardous waste combustors: incinerators that burn hazardous waste, cement kilns that burn hazardous waste, lightweight aggregate kilns that burn hazardous waste, solid fuel-fired boilers that burn hazardous waste, liquid fuel-fired boilers that burn hazardous waste, and hydrochloric acid production furnaces that burn hazardous waste. Hazardous waste combustors are also subject to applicable requirements under parts 260–270 of this chapter.

(a) * * *

(2) Both area sources and major sources subject to this subpart, but not previously subject to title V, are immediately subject to the requirement to apply for and obtain a title V permit in all States, and in areas covered by part 71 of this chapter.

* * * * *

3. Section 63.1201 is amended in paragraph (a) by revising the definition of "New source'', and adding definitions for "Hydrochloric acid production furnace'', "Liquid fuel-fired boiler'', and "Solid fuel-fired boiler'' in alphabetical order to read as follows:

§ 63.1201 Definitions and acronyms used in this subpart.

(a) * * *

Hydrochloric acid production furnace and *HCl production furnace* mean a halogen acid furnace defined in § 260.10 of this chapter that produces aqueous hydrochloric acid (HCl) product and that burns hazardous waste at any time.

* * * * *

Liquid fuel-fired boiler and *liquid boiler* mean a boiler defined in § 260.10 of this chapter that does not burn solid fuels and that burns hazardous waste at any time. Liquid fuel-fired boiler includes boilers that only burn gaseous fuels.

* * * * *

New source means any affected source the construction or reconstruction of which is commenced after the dates specified under §§ 63.1206(a)(1)(i)(B), (a)(1)(ii)(B), and (a)(2)(ii).

* * * * *

Solid fuel-fired boiler and *solid boiler* mean a boiler defined in § 260.10 of this chapter that burns a solid fuel and that burns hazardous waste at any time.

* * * * *

4. Section 63.1206 is amended by:

a. Revising paragraph (a).

b. Revising paragraphs (b)(1)(ii), (b)(6) introductory text, (b)(7)(i)(A), (b)(9)(i) introductory text, (b)(10)(i) introductory text, (b)(11), (b)(13)(i) introductory text, and (b)(3)(ii).

c. Revising paragraphs (c)(1)(i) introductory text and (c)(7)(ii) introductory text.

d. Adding paragraphs (c)(7)(ii)(C) and (c)(7)(iii).

The revisions and additions read as follows:

§ 63.1206 When and how must you comply with the standards and operating requirements?

(a) *Compliance dates.* (1) *Compliance dates for incinerators, cement kilns, and lightweight aggregate kilns that burn hazardous waste*—(i) *Compliance date for standards under §§ 63.1203, 63.1204, and 63.1205*—(A) *Compliance dates for existing sources.* You must comply with the emission standards under §§ 63.1203, 63.1204, and 63.1205 and the other requirements of this subpart no later than the compliance date, September 30, 2003, unless the Administrator grants you an extension of time under § 63.6(i) or § 63.1213.

(B) *New or reconstructed sources.* (*1*) If you commenced construction or reconstruction of your hazardous waste combustor after April 19, 1996, you must comply with the emission standards under §§ 63.1203, 63.1204, and 63.1205 and the other requirements of this subpart by the later of September 30, 1999 or the date the source starts operations, except as provided by paragraph (a)(1)(i)(B)(*2*) of this section. The costs of retrofitting and replacement of equipment that is installed specifically to comply with this subpart, between April 19, 1996 and a source's compliance date, are not considered to be reconstruction costs.

(*2*) For a standard under §§ 63.1203, 63.1204, and 63.1205 that is more stringent than the standard proposed on April 19, 1996, you may achieve compliance no later than September 30, 2003 if you comply with the standard proposed on April 19, 1996 after September 30, 1999. This exception does not apply, however, to new or reconstructed area source hazardous waste combustors that become major sources after September 30, 1999. As provided by § 63.6(b)(7), such sources must comply with the standards under §§ 63.1203, 63.1204, and 63.1205 at startup.

(ii) *Compliance date for standards under §§ 63.1219, 63.1220, and 63.1221*—(A) *Compliance dates for existing sources.* You must comply with the emission standards under §§ 63.1219, 63.1220, and 63.1221 and the other requirements of this subpart no later than the compliance date, [date three years after date of publication of the final rule in the **Federal Register**], unless the Administrator grants you an extension of time under § 63.6(i) or § 63.1213.

(B) *New or reconstructed sources.* (*1*) If you commenced construction or reconstruction of your hazardous waste combustor after April 20, 2004, you must comply with the emission standards under §§ 63.1219, 63.1220, and 63.1221 and the other requirements of this subpart by the later of [date of publication of the final rule in the **Federal Register**] or the date the source starts operations, except as provided by paragraph (a)(1)(ii)(B)(*2*) of this section. The costs of retrofitting and replacement of equipment that is installed specifically to comply with this subpart, between April 20, 2004, and a source's compliance date, are not considered to be reconstruction costs.

(*2*) For a standard under §§ 63.1219, 63.1220, and 63.1221 that is more stringent than the standard proposed on April 20, 2004, you may achieve compliance no later than [date three years after date of publication of the final rule in the **Federal Register**] if you comply with the standard proposed on April 20, 2004, after [date of publication of the final rule in the **Federal Register**]. This exception does not apply, however, to new or reconstructed area source hazardous waste combustors that become major sources after [date three years after date of publication of the final rule in the **Federal Register**]. As provided by § 63.6(b)(7), such sources must comply with the standards under §§ 63.1219, 63.1220, and 63.1221 at startup.

(2) *Compliance dates for solid fuel-fired boilers, liquid fuel-fired boilers, and hydrogen chloride production furnaces that burn hazardous waste for standards under §§ 63.1216, 63.1217, and 63.1218.*—(i) *Compliance date for existing sources.* You must comply with the standards of this subpart no later than the compliance date, [date three years after date of publication of the final rule in the **Federal Register**], unless the Administrator grants you an extension of time under § 63.6(i) or § 63.1213.

(ii) *New or reconstructed sources.* (A) If you commenced construction or reconstruction of your hazardous waste combustor after April 20, 2004, you must comply with this subpart by the later of [date of publication of the final rule in the **Federal Register**] or the date the source starts operations, except as provided by paragraph (a)(2)(ii)(B) of this section. The costs of retrofitting and replacement of equipment that is installed specifically to comply with this subpart, between April 20, 2004, and a source's compliance date, are not considered to be reconstruction costs.

(B) For a standard in the subpart that is more stringent than the standard proposed on April 20, 2004, you may achieve compliance no later than [date three years after date of publication of the final rule in the **Federal Register**] if you comply with the standard proposed on April 20, 2004, after [date of publication of the final rule in the **Federal Register**]. This exception does not apply, however, to new or reconstructed area source hazardous waste combustors that become major sources after [date three years after date of publication of the final rule in the **Federal Register**]. As provided by § 63.6(b)(7), such sources must comply with this subpart at startup.

(3) *Early compliance.* If you choose to comply with the emission standards of this subpart prior to the dates specified in paragraphs (a)(1) and (a)(*2*) of this section, your compliance date is the earlier of the date you postmark the Notification of Compliance under § 63.1207(j)(1) or the dates specified in paragraphs (a)(1) and (a)(*2*) of this section.

(b) * * *

(1) * * *

(ii) When hazardous waste is not in the combustion chamber (*i.e.*, the hazardous waste feed to the combustor has been cut off for a period of time not less than the hazardous waste residence time) and you have documented in the operating record that you are complying with all otherwise applicable requirements and standards promulgated under authority of sections 112 (*e.g.*, subparts LLL, NNNNN, DDDDD) or 129 of the Clean Air Act in lieu of the emission standards under §§ 63.1203, 63.1204, 63.1205, 63.1215, 63.1216, 63.1217, 63.1218, 63.1219, and 63.1220; the monitoring and compliance standards of this section and §§ 63.1207 through 63.1209, except the modes of operation requirements of § 63.1209(q); and the notification, reporting, and recordkeeping requirements of §§ 63.1210 through 63.1212.

* * * * *

(6) *Compliance with the carbon monoxide and hydrocarbon emission standards.* This paragraph applies to sources that elect to comply with the carbon monoxide and hydrocarbon emissions standards of this subpart by documenting continuous compliance with the carbon monoxide standard using a continuous emissions monitoring system and documenting compliance with the hydrocarbon standard during the destruction and removal efficiency (DRE) performance test or its equivalent.

* * * * *

(7) * * * (i) * * *

(A) You must document compliance with the Destruction and Removal Efficiency (DRE) standard under this subpart only once provided that you do not modify the source after the DRE test in a manner that could affect the ability of the source to achieve the DRE standard.

* * * * *

(9) * * * (i) You may petition the Administrator to recommend alternative semivolatile metal, low volatile metal, mercury, or hydrogen chloride/chlorine gas emission standards under § 63.1205 if:

* * * * *

(10) * * * (i) You may petition the Administrator to recommend alternative semivolatile metal, low volatile metal, mercury, or hydrogen chloride/chlorine gas emission standards under § 63.1204 if:

* * * * *

(11) *Calculation of hazardous waste residence time.* You must calculate the hazardous waste residence time and include the calculation in the performance test plan under § 63.1207(f) and the operating record. You must also provide the hazardous waste residence time in the Documentation of Compliance under § 63.1211(d) and the Notification of Compliance under §§ 63.1207(j) and 63.1210(d).

* * * * *

(13) * * *

(i) Cement kilns that feed hazardous waste at a location other than the end where products are normally discharged and where fuels are normally fired must comply with the carbon monoxide and hydrocarbon standards of this subpart as follows:

* * * * *

(ii) Lightweight aggregate kilns that feed hazardous waste at a location other than the end where products are normally discharged and where fuels are normally fired must comply with the hydrocarbon standards of this subpart as follows:

(A) Existing sources must comply with the 20 parts per million by volume hydrocarbon standard of this subpart;

(B) New sources must comply with the 20 parts per million by volume hydrocarbon standard of this subpart.

* * * * *

(c) * * * (1) * * * (i) You must operate only under the operating requirements specified in the Documentation of Compliance under § 63.1211(d) or the Notification of Compliance under §§ 63.1207(j) and 63.1210(d), except:

* * * * *

(7) * * *

(ii) *Bag leak detection system requirements.* If your combustor is equipped with a baghouse (fabric filter), you must continuously operate a bag leak detection system that meets the specifications and requirements of paragraph (c)(7)(ii)(A) of this section and you must comply with the corrective measures requirements of paragraph (c)(7)(ii)(B) of this section.

* * * * *

(C) *Excessive exceedances notification.* If you operate the combustor when the detector response exceeds the alarm set-point more than 5 percent of the time during any 6-month block time period, you must submit a notification to the Administrator within 5 days that describes the causes of the exceedances and the revisions to the design, operation, or maintenance of the combustor or baghouse you are taking to minimize exceedances.

(iii) *Particulate matter detection system requirements for electrostatic precipitators and ionizing wet scrubbers.* If your combustor is equipped with an electrostatic precipitator or ionizing wet scrubber, and you elect not to establish under § 63.1209(m)(1)(iv) site-specific operating parameter limits that are linked to the automatic waste feed cutoff system under paragraph (c)(3) of this section, you must continuously operate a particulate matter detection system that meets the specifications and requirements of paragraph (c)(7)(iii)(A) of this section and you must comply with the corrective measures requirements of paragraph (c)(7)(iii)(B) of this section.

(A) *Particulate matter detection system requirements.*—(*1*) The particulate matter detection system must be certified by the manufacturer to be capable of continuously detecting and recording particulate matter emissions at the loadings you expect to achieve during the comprehensive performance test;

(*2*) The particulate matter detector shall provide output of relative or absolute particulate matter loadings;

(*3*) The particulate matter detection system shall be equipped with an alarm system that will sound an audible alarm when an increase in relative or absolute particulate loadings is detected over the set-point

(*4*) You must install and operate the particulate matter detection system in a manner consistent with available written guidance from the U.S. Environmental Protection Agency or, in the absence of such written guidance, the manufacturer's written specifications and recommendations for installation, operation, and adjustment of the system;

(*5*) You must establish the alarm set-point as the average detector response of the test run averages achieved during the comprehensive performance test demonstrating compliance with the particulate matter emission standard. You must comply with the alarm set-point on a 6-hour rolling average, updated each hour with a one-hour block average that is the average of the detector responses over each 15-minute block.

(*6*) Where multiple detectors are required to monitor multiple control devices, the system's instrumentation and alarm system may be shared among the detectors.

(B) *Particulate matter detection system corrective measures requirements.* The operating and maintenance plan required by paragraph (c)(7)(i) of this section must include a corrective measures plan that specifies the procedures you will follow in the case of a particulate matter detection system alarm. The corrective measures plan must include, at a minimum, the procedures used to determine and record the time and cause of the alarm as well as the corrective measures taken to correct the control device malfunction or minimize emissions as specified below. Failure to initiate the corrective measures required by this paragraph is failure to ensure compliance with the emission standards in this subpart.

(*1*) You must initiate the procedures used to determine the cause of the alarm within 30 minutes of the time the alarm first sounds; and

(*2*) You must alleviate the cause of the alarm by taking the necessary corrective measure(s) which may include shutting down the combustor.

(C) *Excessive exceedances notification.* If you operate the combustor when the detector response exceeds the alarm set-point more than 5 percent of the time during any 6-month block time period, you must submit a notification to the Administrator within 5 days that describes the causes of the exceedances and the revisions to the design, operation, or maintenance of the combustor or electrostatic precipitator or ionizing wet scrubber you are taking to minimize exceedances.

5. Section 63.1207 is amended by:

a. Revising paragraph (b)(1).

b. Adding paragraph (b)(3).

c. Revising paragraph (c)(1).

d. Adding paragraph (c)(3).

e. Revising paragraphs (e)(2) and (e)(3)(iv).

f. Revising paragraphs (f)(1)(ii)(D), (f)(1)(xiii), and (f)(1)(xiv).

g. Adding paragraph (f)(1)(xv).

h. Revising paragraphs (j)(1)(ii) and (j)(3).

i. Revising paragraph (l)(1) introductory text.

The revisions and additions read as follows:

§ 63.1207 What are the performance testing requirements?

* * * * *

(b) * * *

(1) *Comprehensive performance test.* You must conduct comprehensive performance tests to demonstrate compliance with the emission standards provided by the subpart, establish limits for the operating parameters provided by § 63.1209, and demonstrate compliance with the performance specifications for continuous monitoring systems.

* * * * *

(3) *One-Time Dioxin/Furan Test for Boilers Not Subject to a Numerical Dioxin/Furan Standard.* For boilers that are not subject to a numerical dioxin/furan emission standard under §§ 63.1216 and 63.1217—solid fuel-fired boilers, and those liquid fuel-fired boilers that are not equipped with a dry particulate matter control device—you must conduct a one-time emission test for dioxin/furan under feed and operating conditions that are most likely to maximize dioxin/furan emissions, similar to a dioxin/furan compliance test.

(i) You must conduct the dioxin/furan emissions test no later than the deadline for conducting the initial comprehensive performance test.

(ii) You may use dioxin/furan emissions data from previous testing to meet this requirement, provided that:

(A) The testing was conducted under feed and operating conditions that are most likely to maximize dioxin/furan emissions, similar to a dioxin/furan compliance test;

(B) You have not changed the design or operation of the boiler in a manner that could significantly affect stack gas dioxin/furan emission concentrations; and

(C) The data meet quality assurance objectives that may be determined on a site-specific basis.

(iii) You may use dioxin/furan emissions data from a boiler to represent emissions from another on-site boiler in lieu of testing (*i.e.*, data in lieu of testing) if the design and operation, including fuels and hazardous waste feed, of the boilers are identical.

(iv) You must include the results of the one-time dioxin/furan emissions test with the results of the initial comprehensive performance test in the Notification of Compliance.

(v) You must repeat the dioxin/furan emissions test if you change the design or operation of the source in a manner that may increase dioxin/furan emissions.

(c) * * * (1) *Test date.* Except as provided by paragraphs (c)(2) and (c)(3) of this section, you must commence the initial comprehensive performance test not later than six months after the compliance date.

* * * * *

(3) For incinerators, cement kilns, and lightweight aggregate kilns, you must commence the initial comprehensive performance test to demonstrate compliance with the standards under §§ 63.1219, 63.1220, and 63.1221 not later than 12 months after the compliance date.

* * * * *

(e) * * *

(2) After the Administrator has approved the site-specific test plan and CMS performance evaluation test plan, but no later than 60 calendar days before initiation of the test, you must make the test plans available to the public for review. You must issue a public notice to all persons on your facility/public mailing list (developed pursuant to 40 CFR 70.7(h), 71.11(d)(3)(i)(E) and 124.10(c)(1)(ix)) announcing the approval of the test plans and the location where the test plans are available for review. The test plans must be accessible to the public for 60 calendar days, beginning on the date that you issue your public notice. The location must be unrestricted and provide access to the public during reasonable hours and provide a means for the public to obtain copies. The notification must include the following information at a minimum:

(i) The name and telephone number of the source's contact person;

(ii) The name and telephone number of the regulatory agency's contact person;

(iii) The location where the approved test plans and any necessary supporting documentation can be reviewed and copied;

(iv) The time period for which the test plans will be available for public review; and

(v) An expected time period for commencement and completion of the performance test and CMS performance evaluation test.

(3) * * *

(iv) *Public notice.* At the same time that you submit your petition to the Administrator, you must notify the public (*e.g.*, distribute a notice to the facility/public mailing list developed pursuant to 40 CFR 70.7(h), 71.11(d)(3)(i)(E) and 124.10(c)(1)(ix)) of your petition to waive a performance test. The notification must include all of the following information at a minimum:

(A) The name and telephone number of the source's contact person;

(B) The name and telephone number of the regulatory agency's contact person;

(C) The date the source submitted its site-specific performance test plan and CMS performance evaluation test plans; and

(D) The length of time requested for the waiver.

(f) * * *

(1) * * *

(ii) * * *

(D) The Administrator may approve on a case-by-case basis a hazardous waste feedstream analysis for organic hazardous air pollutants in lieu of the analysis required under paragraph (f)(1)(ii)(A) of this section if the reduced analysis is sufficient to ensure that the POHCs used to demonstrate compliance with the applicable DRE standards of this subpart continue to be representative of the organic hazardous air pollutants in your hazardous waste feedstreams;

* * * * *

(xiii) For cement kilns with in-line raw mills, if you elect to use the emissions averaging provision of this subpart, you must notify the Administrator of your intent in the initial (and subsequent) comprehensive performance test plan, and provide the information required by the emission averaging provision;

(xiv) For preheater or preheater/precalciner cement kilns with dual stacks, if you elect to use the emissions averaging provision of this subpart, you must notify the Administrator of your intent in the initial (and subsequent) comprehensive performance test plan, and provide the information required by the emission averaging provision;

(xv) If you request to use Method 23 for dioxin/furan you must provide the information required under § 63.1208(b)(1)(i)(B);

* * * * *

(j) * * * (1) * * *

(ii) Upon postmark of the Notification of Compliance, you must comply with all operating requirements specified in the Notification of Compliance in lieu of the limits specified in the Documentation of Compliance required under § 63.1211(d).

* * * * *

(3) See §§ 63.7(g), 63.9(h), and 63.1210(d) for additional requirements pertaining to the Notification of Compliance (*e.g.*, you must include results of performance tests in the Notification of Compliance).

* * * * *

(l) *Failure of performance test*—(1) *Comprehensive performance test.* The provisions of this paragraph do not apply to the initial comprehensive performance test if you conduct the test prior to your compliance date.

* * * * *

6. Section 63.1208 is amended by revising paragraphs (b)(1)(i) and (b)(5) to read as follows:

§ 63.1208 What are the test methods?

* * * * *

(b) * * *

(1) * * * (i) To determine compliance with the emission standard for dioxins and furans, you must use:

(A) Method 0023A, Sampling Method for Polychlorinated Dibenzp-p-Dioxins and Polychlorinated Dibenzofurans emissions from Stationary Sources, EPA Publication SW–846, as incorporated by reference in paragraph (a) of this section; or

(B) Method 23, provided in appendix A, part 60 of this chapter, except that for coal-fired boilers, sources equipped with an activated carbon injection system, and other sources that the Administrator determines may emit carbonaceous particulate matter that may bias Method 23 results, you may use Method 23 only upon the Administrator's approval. In determining whether to grant approval to use Method 23, the Administrator may consider factors including whether dioxin/furan are detected at levels substantially below the emission standard, and whether previous Method 0023 analyses detected low levels of dioxin/furan in the front half.

* * * * *

(5) *Hydrogen chloride and chlorine gas*—(i) *Compliance with MACT standards.* To determine compliance with the emission standard for hydrogen chloride and chlorine gas (combined), you must use:

(A) Method 26/26A as provided in appendix A, part 60 of this chapter; or

(B) Methods 320 or 321 as provided in appendix A, part 60 of this chapter, or ASTM D 6735–01, Test Method for Measurement of Gaseous Chlorides and Fluorides from Mineral Calcining Exhaust Sources—Impinger Method to measure emissions of hydrogen chloride, and Method 26/26A to measure emissions of chlorine gas.

(ii) *Compliance with risk-based limits under § 63.1215.* To demonstrate compliance with emission limits established under § 63.1215, you must use Methods 26/26A, 320,or 321, or ASTM D 6735–01, Test Method for Measurement of Gaseous Chlorides and Fluorides from Mineral Calcining Exhaust Sources—Impinger Method, except:

(A) For cement kilns and sources equipped with a dry acid gas scrubber, you must use Methods 320 or 321, or ASTM D 6735–01 to measure hydrogen chloride, and the back-half, caustic impingers of Method 26/26A to measure chlorine gas; and

(B) For incinerators, boilers, and lightweight aggregate kilns, you must use Methods 320 or 321, or ASTM D 6735–01 to measure hydrogen chloride, and Method 26/26A to measure total chlorine, and calculate chlorine gas by difference if:

(1) The bromine/chlorine ratio in feedstreams is greater than 5 percent; or

(2) The sulfur/chlorine ratio in feedstreams is greater than 50 percent.

* * * * *

7. Section 63.1209 is amended by:

a. Revising paragraphs (a)(1)(ii)(A), (a)(1)(iv)(D), and (a)(1)(v)(D).

b. Revising paragraph (f)(1).

c. Revising the heading of paragraph (g)(1) introductory text and paragraph (g)(1)(i).

d. Revising paragraphs (k)(1)(i) and (k)(2)(i).

e. Revising paragraph (l)(1).

f. Revising paragraph (m)(1)(iv) introductory text.

g. Revising paragraph (n)(2).

h. Revising paragraph (o)(1).

i. Revising paragraph (q)(1)(ii).

The revisions read as follows:

§ 63.1209 What are the monitoring requirements?

(a) * * * (1) * * *

(ii) * * *

(A) You must maintain and operate each COMS in accordance with the requirements of § 63.8(c) except for the requirements under § 63.8(c)(3). The requirements of § 63.1211(d) shall be complied with instead of § 63.8(c)(3); and

* * * * *

(iv) * * *

(D) To remain in compliance, all six-minute block averages must not exceed the opacity standard.

(v) * * *

(D) To remain in compliance, all six-minute block averages must not exceed the opacity standard.

* * * * *

(f) * * *

(1) *Section 63.8(c)(3).* The requirements of § 63.1211(d), that requires CMSs to be installed, calibrated, and operational on the compliance date, shall be complied with instead of § 63.8(c)(3).

* * * * *

(g) * * *

(1) *Requests to use alternatives to operating parameter monitoring requirements.* (i) You may submit an application to the Administrator or State with an approved Title V program under this paragraph for approval of alternative operating parameter monitoring requirements to document compliance with the emission standards of this subpart. For requests to use additional CEMS, however, you must use paragraph (a)(5) of this section and § 63.8(f).

* * * * *

(k) * * *

(1) * * * (i) For sources other than a lightweight aggregate kiln, if the combustor is equipped with an electrostatic precipitator, baghouse (fabric filter), or other dry emissions control device where particulate matter is suspended in contact with combustion gas, you must establish a limit on the maximum temperature of the gas at the inlet to the device on an hourly rolling average. You must establish the hourly rolling average limit as the average of the test run averages.

* * * * *

(2) * * * (i) For sources other than cement kilns, you must measure the

temperature of each combustion chamber at a location that best represents, as practicable, the bulk gas temperature in the combustion zone. You must document the temperature measurement location in the test plan you submit under §§ 63.1207(e) and (f);

* * * * *

(l) * * *

(1) *Feedrate of mercury.* (i) For incinerators, cement kilns, and lightweight aggregate kilns, when complying with the mercury emission standards under §§ 63.1203, 63.1204, and 63.1205, and for solid fuel-fired boilers, you must establish a 12-hour rolling average limit for the total feedrate of mercury in all feedstreams as the average of the test run averages.

(ii) For incinerators, cement kilns, and lightweight aggregate kilns, when complying with the mercury emission standards under §§ 63.1219, 63.1220, and 63.1221, you must establish an annual rolling average limit for the total feedrate of mercury in all feedstreams as follows:

(A) You must calculate a mercury system removal efficiency for each test run as [1—mercury emission rate (g/s) / mercury feedrate (g/s)], and calculate the average system removal efficiency of the test run averages, except if your source is not equipped with a control system that consistently and reproducibly controls mercury emissions, you must assume zero system removal efficiency. If emissions exceed the mercury emission standard, it is not a violation because compliance with these mercury emission standards, which are derived from normal emissions data, is based on compliance with the mercury feedrate limit on an annual rolling average.

(B) You must calculate the annual average mercury feedrate limit as the mercury emission standard ($\mu g/m^3$) divided by the system removal efficiency. The feedrate limit is expressed as an emission concentration, μg mercury/m^3 of stack gas.

(C) You must comply with the emission concentration-based annual average mercury feedrate limit by measuring the mercury feedrate (g/s) and the stack gas flowrate (m^3/s) at least once a minute to calculate a 60-minute average emission concentration-based feedrate as [mercury feedrate (g/s) / gas flowrate (m^3/s)].

(D) You must calculate an annual rolling average mercury feedrate that is updated each hour.

(iii) For liquid fuel-fired boilers, you must establish an annual rolling average hazardous waste mercury thermal concentration limit, as follows:

(A) You must calculate a mercury system removal efficiency for each test run as [1—mercury emission rate (g/s) / mercury feedrate (g/s)], and calculate the average system removal efficiency of the test run averages, except if your source is not equipped with a control system that consistently and reproducibly controls mercury emissions, you must assume zero system removal efficiency. If emissions exceed the mercury emission standard, it is not a violation because compliance with the mercury emission standard, which is derived from normal emissions data, is based on compliance with the hazardous waste mercury thermal concentration limit on an annual rolling average.

(B) You must calculate the annual average hazardous waste mercury thermal concentration limit as the mercury emission standard (lb/MM Btu) divided by the system removal efficiency. The hazardous waste thermal concentration limit is expressed as: lb mercury in hazardous waste feedstreams per million Btu of hazardous waste.

(C) You must comply with the annual average hazardous waste mercury thermal concentration limit by measuring the feedrate of mercury in all hazardous waste feedstreams (lb/s) and the hazardous waste thermal feedrate (MM Btu/s) at least once a minute to calculate a 60-minute average thermal emission concentration as [hazardous waste mercury feedrate (g/s) / hazardous waste thermal feedrate (MM Btu/s)].

(D) You must calculate an annual rolling average hazardous waste mercury thermal concentration that is updated each hour.

(iv) *Extrapolation of feedrate levels.* (A) In lieu of establishing mercury feedrate limits as specified in paragraphs (l)(1)(i) through (iii) of this section, you may request as part of the performance test plan under §§ 63.6(b) and (c) and §§ 63.1207 (e) and (f) to use the mercury feedrates and associated emission rates during the comprehensive performance test to extrapolate to higher allowable feedrate limits and emission rates. The extrapolation methodology will be reviewed and approved, as warranted, by the Administrator. The review will consider in particular whether:

(*1*) Performance test metal feedrates are appropriate (*i.e.*, whether feedrates are at least at normal levels; depending on the heterogeneity of the waste, whether some level of spiking would be appropriate; and whether the physical form and species of spiked material is appropriate); and

(*2*) Whether the extrapolated feedrates you request are warranted considering historical metal feedrate data.

(B) The Administrator will review the performance test results in making a finding of compliance required by §§ 63.6(f)(3) and 63.1206(b)(3) to ensure that you have interpreted the performance test results properly and the extrapolation procedure is appropriate for your source.

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(iv) *Other particulate matter control devices.* For each particulate matter control device that is not a fabric filter or high energy wet scrubber, or is not an electrostatic precipitator or ionizing wet scrubber for which you elect to monitor particulate matter loadings under § 63.1206(c)(7)(iii) of this chapter for process control, you must ensure that the control device is properly operated and maintained as required by § 63.1206(c)(7) and by monitoring the operation of the control device as follows:

* * * * *

(n) * * *

(2) *Maximum feedrate of semivolatile and low volatile metals*—(i) *General.* You must establish feedrate limits for semivolatile metals (cadmium and lead) and low volatile metals (arsenic, beryllium, and chromium) as follows, except as provided by paragraph (n)(2)(vii) of this section.

(ii) For incinerators, cement kilns, and lightweight aggregate kilns, when complying with the emission standards under §§ 63.1203, 63.1204, 63.1205, and 63.1219 and for solid fuel-fired boilers, you must establish 12-hour rolling average limits for the total feedrate of semivolatile and low volatile metals in all feedstreams as the average of the test run averages and as specified in paragraph (n)(2)(iv) of this section.

(iii) For cement kilns, when complying with the emission standards under § 63.1220, you must establish 12-hour rolling average feedrate limits for semivolatile and low volatile metals as the thermal concentration of semivolatile metals or low volatile metals in all hazardous waste feedstreams. You must calculate hazardous waste thermal concentrations for semivolatile metals and low volatile metals for each run as the total mass feedrate of semivolatile metals or low volatile metals for all hazardous waste feedstreams divided by the total heat input rate for all hazardous waste feedstreams. The 12-hour rolling average feedrate limits for semivolatile metals and low volatile metals are the average of the hazardous waste thermal concentrations for the runs.

(iv) *Lightweight aggregate kilns under § 63.1221*—(A) *Existing sources.* When complying with the emission standards under § 63.1221, you must establish semivolatile metal and low volatile metal feedrate limits as 12-hour rolling average feedrate limits and 12-hour rolling average hazardous waste thermal concentrations as specified in paragraphs (n)(2)(ii) and (iii). You must comply with both feedrate limits for semivolatile metals and low volatile metals.

(B) *New sources.* When complying with the emission standards under § 63.1221, you must establish semivolatile metal and low volatile metal feedrate limits as 12-hour rolling average hazardous waste thermal concentrations as specified in paragraphs (n)(2)(ii) and (iii).

(v) *Liquid fuel-fired boilers.* (A) For semivolatile metals, you must establish an annual rolling average hazardous waste thermal concentration limit, as follows:

(*1*) You must calculate a semivolatile metals system removal efficiency for each test run as [1—semivolatile metals emission rate (g/s) / semivolatile metals feedrate (g/s)], and calculate the average system removal efficiency of the test run averages, except if your source is not equipped with a control system that consistently and reproducibly controls semivolatile metals emissions, you must assume zero system removal efficiency. If emissions exceed the semivolatile metals emission standard, it is not a violation because compliance with the semivolatile metals emission standard, which is derived from normal emissions data, is based on compliance with the semivolatile metals hazardous waste thermal concentration limit on an annual rolling average.

(*2*) You must calculate the annual average hazardous waste semivolatile metals thermal concentration limit as the semivolatile metals emission standard (lb/MM Btu) divided by the system removal efficiency. The hazardous waste thermal concentration limit is expressed as: pounds semivolatile metals in hazardous waste feedstreams per million Btu of hazardous waste.

(*3*) You must comply with the annual average hazardous waste semivolatile metals thermal concentration limit by measuring the feedrate of semivolatile metals in all hazardous waste feedstreams (lb/s) and the hazardous waste thermal feedrate (MM Btu/s) at least once a minute to calculate a 60-minute average thermal emission concentration as [hazardous waste semivolatile metals feedrate (g/s) / hazardous waste thermal feedrate (MM Btu/s)].

(*4*) You must calculate an annual rolling average hazardous waste semivolatile metals thermal concentration that is updated each hour.

(B) For low volatile metals, you must establish 12-hour rolling average feedrate limits for chromium as the thermal concentration of chromium in all hazardous waste feedstreams. You must calculate a hazardous waste thermal concentration for chromium for each run as the total mass feedrate of chromium for all hazardous waste feedstreams divided by the total heat input rate for all hazardous waste feedstreams. The 12-hour rolling average feedrate limit for chromium is the average of the hazardous waste thermal concentrations for the runs.

(vi) *LVM limits for pumpable wastes.* You must establish separate feedrate limits for low volatile metals in pumpable feedstreams using the procedures prescribed above for total low volatile metals. Dual feedrate limits for both pumpable and total feedstreams are not required, however, if you base the total feedrate limit solely on the feedrate of pumpable feedstreams.

(vii) *Extrapolation of feedrate levels.* In lieu of establishing feedrate limits as specified in paragraphs (l)(1)(i) through (iii) of this section, you may request as part of the performance test plan under §§ 63.6(b) and (c) and 63.1207(e) and (f) to use the semivolatile metal and low volatile metal feedrates and associated emission rates during the comprehensive performance test to extrapolate to higher allowable feedrate limits and emission rates. The extrapolation methodology will be reviewed and approved, as warranted, by the Administrator. The review will consider in particular whether:

(A) Performance test metal feedrates are appropriate (*i.e.*, whether feedrates are at least at normal levels; depending on the heterogeneity of the waste, whether some level of spiking would be appropriate; and whether the physical form and species of spiked material is appropriate);

(B) Whether the extrapolated feedrates you request are warranted considering historical metal feedrate data; and

(C) Whether you have interpreted the performance test results properly and the extrapolation procedure is appropriate for your source.

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(o) * * *

(1) *Feedrate of total chlorine and chloride*—(i) *Incinerators, cement kilns, lightweight aggregate kilns, solid fuel-fired boilers, and hydrochloric acid production furnaces.* You must establish 12-hour rolling average limit for the total feedrate of chlorine (organic and inorganic) in all feedstreams as the average of the test run averages.

(ii) *Liquid fuel-fired boilers.* You must establish a 12-hour rolling average limit for the feedrate of chlorine (organic and inorganic) as the thermal concentration of chlorine in all hazardous waste feedstreams. You must calculate a hazardous waste thermal concentration for chlorine for each run as the total mass feedrate of chlorine for all hazardous waste feedstreams divided by the total heat input rate for all hazardous waste feedstreams. The 12-hour rolling average feedrate limit chlorine is the average of the hazardous waste thermal concentrations for the runs.

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(ii) You must specify (*e.g.*, by reference) the otherwise applicable requirements as a mode of operation in your Documentation of Compliance under § 63.1211(d), your Notification of Compliance under § 63.1207(j), and your title V permit application. These requirements include the otherwise applicable requirements governing emission standards, monitoring and compliance, and notification, reporting, and recordkeeping.

* * * * *

8. Section 63.1210 is amended by:

a. Revising the table in paragraph (a)(1) and the table in paragraph (a)(2).

b. Redesignating paragraph (b) as (d).

c. Adding new paragraph (b).

d. Adding new paragraph (c).

The revisions and additions read as follows:

§ 63.1210 What are the notification requirements?

(a) * * *

(1) * * *

Reference	Notification
63.9(b)	Initial notifications that you are subject to subpart EEE of this part.
63.9(d)	Notification that you are subject to special compliance requirements.

Reference	Notification
63.9(j)	Notification and documentation of any change in information already provided under § 63.9.
63.1206(b)(5)(i)	Notification of changes in design, operation, or maintenance.
63.1206(c)(7)(ii)(C)	Notification of excessive bag leak detection system exceedances.
63.1207(e), 63.9(e), 63.9(g)(1) and (3).	Notification of performance test and continuous monitoring system evaluation, including the performance test plan and CMS performance evaluation plan.[1]
63.1210(d), 63.1207(j), 63.1207(k), 63.1207(l), 63.9(h), 63.10(d)(2), 63.10(e)(2).	Notification of compliance, including results of performance tests and continuous monitoring system performance evaluations.

[1] You may also be required on a case-by-case basis to submit a feedstream analysis plan under § 63.1209(c)(3).

(2) * * *

Reference	Notification, request, petition, or application
63.9(i)	You may request an adjustment to time periods or postmark deadlines for submittal and review of required information.
63.10(e)(3)(ii)	You may request to reduce the frequency of excess emissions and CMS performance reports.
63.10(f)	You may request to waive recordkeeping or reporting requirements.
63.1204(d)(2)(iii), 63.1220(d)(2)(iii)	Notification that you elect to comply with the emission averaging requirements for cement kilns with in-line raw mills.
63.1204(e)(2)(iii), 63.1220(e)(2)(iii)	Notification that you elect to comply with the emission averaging requirements for preheater or preheater/precalciner kilns with dual stacks.
63.1206(b)(4), 63.1213, 63.6(i), 63.9(c).	You may request an extension of the compliance date for up to one year.
63.1206(b)(5)(i)(C)	You may request to burn hazardous waste for more than 720 hours and for purposes other than testing or pretesting after a making a change in the design or operation that could affect compliance with emission standards and prior to submitting a revised Notification of Compliance.
63.1206(b)(8)(iii)(B)	If you elect to conduct particulate matter CEMS correlation testing and wish to have federal particulate matter and opacity standards and associated operating limits waived during the testing, you must notify the Administrator by submitting the correlation test plan for review and approval.
63.1206(b)(8)(v)	You may request approval to have the particulate matter and opacity standards and associated operating limits and conditions waived for more than 96 hours for a correlation test.
63.1206(b)(9)	Owners and operators of lightweight aggregate kilns may request approval of alternative emission standards for mercury, semivolatile metal, low volatile metal, and hydrochloric acid/chlorine gas under certain conditions.
63.1206(b)(10)	Owners and operators of cement kilns may request approval of alternative emission standards for mercury, semivolatile metal, low volatile metal, and hydrochloric acid/chlorine gas under certain conditions.
63.1206(b)(14)	Owners and operators of incinerators may elect to comply with an alternative to the particulate matter standard.
63.1206(b)(15)	Owners and operators of cement and lightweight aggregate kilns may request to comply with the alternative to the interim standards for mercury.
63.1206(c)(2)(ii)(C)	You may request to make changes to the startup, shutdown, and malfunction plan.
63.1206(c)(5)(i)(C)	You may request an alternative means of control to provide control of combustion system leaks.
63.1206(c)(5)(i)(D)	You may request other techniques to prevent fugitive emissions without use of instantaneous pressure limits.
63.1207(c)(2)	You may request to base initial compliance on data in lieu of a comprehensive performance test.
63.1207(d)(3)	You may request more than 60 days to complete a performance test if additional time is needed for reasons beyond your control.
63.1207(e)(3), 63.7(h)	You may request a time extension if the Administrator fails to approve or deny your test plan.
63.1207(h)(2)	You may request to waive current operating parameter limits during pretesting for more than 720 hours.
63.1207(f)(1)(ii)(D)	You may request a reduced hazardous waste feedstream analysis for organic hazardous air pollutants if the reduced analysis continues to be representative of organic hazardous air pollutants in your hazardous waste feedstreams.
63.1207(g)(2)(v)	You may request to operate under a wider operating range for a parameter during confirmatory performance testing.
63.1207(i)	You may request up to a one-year time extension for conducting a performance test (other than the initial comprehensive performance test) to consolidate testing with other state or federally-required testing.
63.1207(j)(4)	You may request more than 90 days to submit a Notification of Compliance after completing a performance test if additional time is needed for reasons beyond your control.
63.1207(l)(3)	After failure of a performance test, you may request to burn hazardous waste for more than 720 hours and for purposes other than testing or pretesting.
63.1209(a)(5), 63.8(f)	You may request: (1) Approval of alternative monitoring methods for compliance with standards that are monitored with a CEMS; and (2) approval to use a CEMS in lieu of operating parameter limits.
63.1209(g)(1)	You may request approval of: (1) Alternatives to operating parameter monitoring requirements, except for standards that you must monitor with a continuous emission monitoring system (CEMS) and except for requests to use a CEMS in lieu of operating parameter limits; or (2) a waiver of an operating parameter limit.
63.1209(l)(1)	You may request to extrapolate mercury feedrate limits.
63.1209(n)(2)	You may request to extrapolate semivolatile and low volatile metal feedrate limits.
63.1211(e)	You may request to use data compression techniques to record data on a less frequent basis than required by § 63.1209.

(b) *Notification of intent to comply (NIC).* (1) You must prepare a Notification of Intent to Comply that includes all of the following information:

(i) General information:

(A) The name and address of the owner/operator and the source;

(B) Whether the source is a major or an area source;

(C) Waste minimization and emission control technique(s) being considered;

(D) Emission monitoring technique(s) you are considering;

(E) Waste minimization and emission control technique(s) effectiveness;

(F) A description of the evaluation criteria used or to be used to select waste minimization and/or emission control technique(s); and

(G) A general description of how you intend to comply with the emission standards of this subpart.

(ii) As applicable to each source, information on key activities and estimated dates for these activities that will bring the source into compliance with emission control requirements of this subpart. You must include all of the following key activities and dates in your NIC:

(A) The dates by which you will develop engineering designs for emission control systems or process changes for emissions;

(B) The date by which you will commit internal or external resources for installing emission control systems or making process changes for emission control, or the date by which you will issue orders for the purchase of component parts to accomplish emission control or process changes.

(C) The date by which you will submit construction applications;

(D) The date by which you will initiate on-site construction, installation of emission control equipment, or process change;

(E) The date by which you will complete on-site construction, installation of emission control equipment, or process change; and

(F) The date by which you will achieve final compliance. The individual dates and milestones listed in paragraphs (b)(1)(ii)(A) through (F) of this section as part of the NIC are not requirements and therefore are not enforceable deadlines; the requirements of paragraphs (b)(1)(ii)(A) through (F) of this section must be included as part of the NIC only to inform the public of your how you intend to comply with the emission standards of this subpart.

(iii) A summary of the public meeting required under paragraph (c) of this section;

(iv) If you intend to cease burning hazardous waste prior to or on the compliance date, you must include in your NIC a schedule of key dates for the steps to be taken to stop hazardous waste activity at your combustion unit. Key dates include the date for submittal of RCRA closure documents required under subpart G, part 264 of this chapter.

(2) You must make a draft of the NIC available for public review no later than 30 days prior to the public meeting required under paragraph (c)(1) of this section.

(3) You must submit the final NIC to the Administrator no later than one year following the effective date of the emission standards of this subpart.

(c) *NIC public meeting and notice.* (1) Prior to the submission of the NIC to the permitting agency, and no later than 10 months after the effective date of the emission standards of this subpart, you must hold at least one informal meeting with the public to discuss anticipated activities described in the draft NIC for achieving compliance with the emission standards of this subpart. You must post a sign-in sheet or otherwise provide a voluntary opportunity for attendees to provide their names and addresses;

(2) You must submit a summary of the meeting, along with the list of attendees and their addresses developed under paragraph (b)(1) of this section, and copies of any written comments or materials submitted at the meeting, to the Administrator as part of the final NIC, in accordance with paragraph (b)(1)(iii) of this section;

(3) You must provide public notice of the NIC meeting at least 30 days prior to the meeting. You must provide public notice in all of the following forms:

(i) *Newspaper advertisement.* You must publish a notice in a newspaper of general circulation in the county or equivalent jurisdiction of your facility. In addition, you must publish the notice in newspapers of general circulation in adjacent counties or equivalent jurisdiction where such publication would be necessary to inform the affected public. You must publish the notice as a display advertisement.

(ii) *Visible and accessible sign.* You must post a notice on a clearly marked sign at or near the source. If you place the sign on the site of the hazardous waste combustor, the sign must be large enough to be readable from the nearest spot where the public would pass by the site.

(iii) *Broadcast media announcement.* You must broadcast a notice at least once on at least one local radio station or television station.

(iv) *Notice to the facility mailing list.* You must provide a copy of the notice to the facility mailing list in accordance with § 124.10(c)(1)(ix) of this chapter.

(4) You must include all of the following in the notices required under paragraph (c)(3) of this section:

(i) The date, time, and location of the meeting;

(ii) A brief description of the purpose of the meeting;

(iii) A brief description of the source and proposed operations, including the address or a map (*e.g.*, a sketched or copied street map) of the source location;

(iv) A statement encouraging people to contact the source at least 72 hours before the meeting if they need special access to participate in the meeting;

(v) A statement describing how the draft NIC (and final NIC, if requested) can be obtained; and

(vi) The name, address, and telephone number of a contact person for the NIC.

9. Section 63.1211 is amended by:

a. Revising the table in paragraph (b).

b. Redesignating paragraphs (c) and (d) as (d) and (e).

c. Adding new paragraph (c).

The revisions and additions read as follows:

§ 63.1211 What are the recordkeeping and reporting requirements?

* * * * *

(b) * * *

Reference	Document, data, or information
63.1200, 53.10 (b) and (c)	General. Information required to document and maintain compliance with the regulations of subpart EEE, including data recorded by continuous monitoring systems (CMS), and copies of all notifications, reports, plans, and other documents submitted to the Administrator.
63.1204(d)(1)(ii), 63.1220(d)(1)(ii) ..	Documentation of mode of operation changes for cement kilns with in-line raw mills.
63.1204(d)(2)(ii), 63.1220(d)(2)(ii) ..	Documentation of compliance with the emission averaging requirements for cement kilns with in-line raw mills.
63.1204(e)(2)(ii), 63.1220(e)(2)(ii) ..	Documentation of compliance with the emission averaging requirements for preheater or preheater/precalciner kilns with dual stacks.

Reference	Document, data, or information
63.1206(b)(1)(ii)	If you elect to comply with all applicable requirements and standards promulgated under authority of the Clean Air Act, including sections 112 and 129, in lieu of the requirements of subpart EEE when not burning hazardous waste, you must document in the operating record that you are in compliance with those requirements.
63.1206(b)(5)(ii)	Documentation that a change will not adversely affect compliance with the emission standards or operating requirements.
63.1206(b)(11)	Calculation of hazardous waste residence time.
63.1206(c)(2)	Startup, shutdown, and malfunction plan.
63.1206(c)(2)(v)(A)	Documentation of your investigation and evaluation of excessive exceedances during malfunctions.
63.1206(c)(3)(v)	Corrective measures for any automatic waste feed cutoff that results in an exceedance of an emission standard or operating parameter limit.
63.1206(c)(3)(vii)	Documentation and results of the automatic waste feed cutoff operability testing.
63.1206(c)(4)(ii)	Emergency safety vent operating plan.
63.1206(c)(4)(iii)	Corrective measures for any emergency safety vent opening.
63.1206(c)(5)(ii)	Method used for control of combustion system leaks.
63.1206(c)(6)	Operator training and certification program.
63.1206(c)(7)(i)(D)	Operation and maintenance plan.
63.1209(c)(2)	Feedstream analysis plan.
63.1209(k)(6)(iii), 63.1209(k)(7)(ii), 63.1209(k)(9)(ii), 63.1209(o)(4)(iii).	Documentation that a substitute activated carbon, dioxin/furan formation reaction inhibitor, or dry scrubber sorbent will provide the same level of control as the original material.
63.1209(k)(7)(i)(C)	Results of carbon bed performance monitoring.
63.1209(q)	Documentation of changes in modes of operation.
63.1211(d)	Documentation of compliance.

(c) *Compliance progress reports associated with the notification of intent to comply*—(1) *General.* Not later than two years following the effective date of the emission standards of this subpart, you must comply with the following, unless you comply with paragraph (c)(2)(ii) of this section:

(i) Develop engineering design for any physical modifications to the source needed to comply with the emission standards of this subpart;

(ii) Submit applicable construction applications to the Administrator; and

(iii) Document an internal or external commitment of resources, *i.e.*, funds or personnel, to purchase, fabricate, and install any equipment, devices, and ancillary structures needed to comply with the emission standards and operating requirements of this subpart.

(2) *Progress report.* (i) You must submit to the Administrator a progress report not later than two years following the effective date of the emission standards of this subpart, which contains information documenting that you have met the requirements of paragraph (c)(1) of this section and updates the information you previously provided in your NIC. This information will be used by the Administrator to determine if you have made adequate progress towards compliance with the emission standards of this subpart. In any evaluation of adequate progress, the Administrator may consider any delays in a source's progress caused by the time required to obtain necessary permits (*e.g.*, operating and construction permits or licenses) from governmental regulatory agencies when the sources have submitted timely and complete permit applications.

(ii) If you can comply with the emission standards and operating requirements of this subpart, without undertaking any of the activities described in paragraph (c)(1) of this section, you must submit a progress report documenting either:

(A) That you, at the time of the progress report, are in compliance with the emission standards and operating requirements; or

(B) The steps you will take to comply, without undertaking any of the activities listed in paragraphs (c)(1)(i) through (c)(1)(iii) of this section.

(3) *Schedule.* (i) You must include in the progress report a detailed schedule that lists key dates for all projects that will bring the source into compliance with the emission standards and operating requirements of this subpart for the time period between submission of the progress report and the compliance date of the emission standards and operating requirements of this subpart.

(ii) The schedule must contain anticipated or actual dates for all of the following:

(A) Bid and award dates, as necessary, for construction contracts and equipment supply contractors;

(B) Milestones such as ground breaking, completion of drawings and specifications, equipment deliveries, intermediate construction completions, and testing;

(C) The dates on which applications will be submitted for operating and construction permits or licenses;

(D) The dates by which approvals of any operating and construction permits or licenses are anticipated; and

(E) The projected date by which you expect to comply with the emission standards and operating requirements of this subpart.

(4) *Sources that intend to cease burning hazardous waste prior to or on the compliance date.* (i) If you indicated in your NIC your intent to cease burning hazardous waste and do so prior to submitting a progress report, you are exempt from the requirements of paragraphs (c)(1) through (c)(3) of this section. However, you must submit and include in your progress report the date on which you stopped burning hazardous waste and the date(s) you submitted, or plan to submit RCRA closure documents.

(ii) If you signify in the progress report, submitted not later than two years following the effective date of the emission standards of this subpart, your intention to cease burning hazardous waste, you must stop burning hazardous waste on or before the compliance date of the emission standards of this subpart.

* * * * *

10. Section 63.1212 is added to subpart EEE to read as follows:

§ 63.1212 What are the other requirements pertaining to the NIC and associated progress report?

(a) *Certification of intent to comply.* (1) The Notice of Intent to Comply (NIC) and Progress Report must contain the following certification signed and dated by an authorized representative of the source: "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment''.

(2) An authorized representative should be a responsible corporate officer (for a corporation), a general partner (for a partnership), the proprietor (of a sole proprietorship), or a principal executive officer or ranking elected official (for a municipality, State, Federal, or other public agency).

(b) *Sources that begin burning hazardous waste after the effective date of the emission standards of this subpart.* (1) If you begin to burn hazardous waste after the effective date of the emission standards of this subpart, but prior to nine months after the effective date of the emission standards of this subpart, you must comply with the requirements of §§ 63.1206(a)(2), 63.1210(b) and (c), 63.1211(c), and paragraph (a) of this section, and associated time frames for public meetings and document submittals.

(2) If you intend to begin burning hazardous waste more than nine months after the effective date of the emission standards of this subpart, you must comply with the requirements of §§ 63.1206(a)(2), 63.1210(b) and (c), 63.1211(c), and paragraph (a) of this section prior to burning hazardous waste. In addition:

(i) You must make a draft NIC available to the public, notice the public meeting, conduct a public meeting, and submit a final NIC prior to burning hazardous waste; and

(ii) You must submit your progress report at the time you submit your final NIC.

11. Section 63.1214 is amended by revising paragraphs (c)(1), (c)(2), (c)(3), and (c)(4) to read as follows:

§ 63.1214 Implementation and enforcement.

* * * * *

(c) * * *

(1) Approval of alternatives to requirements in §§ 63.1200, 63.1203, 63.1204, 63.1205, 63.1206(a), 63.1215, 63.1216, 63.1217, 63.1218, 63.1219, 63.1220, and 63.1221.

(2) Approval of major alternatives to test methods under §§ 63.7(e)(2)(ii) and (f), 63.1208(b), and 63.1209(a)(1), as defined in § 63.90, and as required in this subpart.

(3) Approval of major alternatives to monitoring under §§ 63.8(f) and 63.1209(a)(5), as defined in § 63.90, and as required in this subpart.

(4) Approval of major alternatives to recordkeeping and reporting under §§ 63.10(f) and 63.1211(a) through (d), as defined in § 63.90, and as required in this subpart.

12. Section § 63.1215 is added to subpart EEE to read as follows:

§ 63.1215 What are the alternative risk-based standards for total chlorine?

(a) *General.* You may establish and comply with site-specific, risk-based emission limits for total chlorine under the procedures prescribed in this section. You may comply with these risk-based emission limits in lieu of the emission standards for total chlorine provided under §§ 63.1216, 63.1217, 63.1219, 63.1220, and 63.1221 of this chapter after review and approval by the permitting authority. To identify and comply with the limits, you must:

(1) Identify hydrogen chloride and chlorine gas emission rates for each on-site hazardous waste combustor. You may select hydrogen chloride and chlorine gas emission rates as you choose to demonstrate eligibility for the total chlorine standards under this section, except as provided by paragraph (b)(4) of this section;

(2) Perform an eligibility demonstration to determine if your HCl-equivalent emission rate limits meet the national exposure standards, as prescribed by paragraphs (b) and (c) of this section;

(3) Submit your eligibility demonstration for review and approval, as prescribed by paragraph (d) of this section;

(4) Demonstrate compliance with the HCl-equivalent emission rate limits, as prescribed by the testing and monitoring requirements under paragraph (e) of this section; and

(5) Comply with the requirements for changes, as prescribed by paragraph (f) of this section.

(b) *HCl-equivalent emission rates.* (1) You must establish a total chlorine limit for each hazardous waste combustor as an HCl-equivalent emission rate.

(2) You must calculate the toxicity-weighted HCl-equivalent emission rate for each combustor as follows:

$$ER_{tw} = \mathbf{\Sigma}(ER_i \times (RfC_{HCl}/RfC_i))$$

Where:

ER_{tw} is the HCl-equivalent emission rate, lb/hr

ER_i is the emission rate of HAP i in lbs/hr

RfC_i is the reference concentration of HAP i

RfC_{HCl} is the reference concentration of HCl

(3) You must use the RfC values for hydrogen chloride and chlorine gas found at *http://epa.gov/ttn/atw/toxsource/sumnmary.html.*

(4) The hydrogen chloride and chlorine gas emission rates you use to calculate the HCl-equivalent emission rate limit for incinerators, cement kilns, and lightweight aggregate kilns must not result in total chlorine emission concentrations exceeding the standards provided by §§ 63.1203, 63.1204, and 63.1205.

(c) *Eligibility demonstration*—(1) *General.* You must perform an eligibility demonstration to determine whether your selected hydrogen chloride and chlorine gas emission rates meet the national exposure standards using either a look-up table analysis prescribed by paragraph (c)(3) of this section, or a site-specific compliance demonstration prescribed by paragraph (c)(4) of this section.

(2) *Definition of eligibility.* Your facility is eligible for the alternative risk-based standards for total chlorine if either:

(i) The sum of the calculated HCl-equivalent emission rates for all on-site hazardous waste combustors is below the appropriate value in the look-up table; or

(ii) Your site-specific compliance demonstration indicates that your maximum Hazard Index for hydrogen chloride and chlorine gas emissions from all on-site hazardous waste combustors at a location where people live is less than or equal to 1.0, rounded to the nearest tenths decimal place (0.1).

(3) *Look-up table analysis.* (i) The look-up table is provided as Table 1 to this section.

(ii) To determine the correct HCl-equivalent emission rate value from the look-up table, you must use the average stack height for your hazardous waste combustors (*i.e.*, the mean of the stack height of all on-site hazardous waste combustors) and the minimum distance between any hazardous waste combustor stack and the property boundary.

(iii) If one or both of these values for stack height and distance to nearest property boundary do not match the exact values in the look-up table, you would use the next lowest table value.

(iv) You are not eligible for the look-up table analysis if your facility is located in complex terrain.

(v) If the sum of the calculated HCl-equivalent emission rates for all on-site hazardous waste combustors is below the appropriate value in the look-up table, the emission limit for total chlorine for each combustor is the HCl-equivalent emission rate you calculated.

(4) *Site-specific compliance demonstration.* (i) You may use any scientifically-accepted peer-reviewed risk assessment methodology for your site-specific compliance demonstration. An example of one approach for performing the demonstration for air toxics can be found in the EPA's "Air Toxics Risk Assessment Reference Library, Volume 2, Site-Specific Risk Assessment Technical Resource Document,'' which may be obtained through the EPA's Air Toxics Web site at *http://www.epa.gov/ttn/atw.*

(ii) Your facility is eligible for the alternative risk-based total chlorine emission limit if your site-specific compliance demonstration shows that the maximum Hazard Index for hydrogen chloride and chlorine gas emissions from each on-site hazardous waste combustor is less than or equal to 1.0 rounded to the nearest tenths decimal place (0.1).

(iii) At a minimum, your site-specific compliance demonstration must:

(A) Estimate long-term inhalation exposures through the estimation of annual or multi-year average ambient concentrations;

(B) Estimate the inhalation exposure for the actual individual most exposed to the facility's emissions from hazardous waste combustors;

(C) Use site-specific, quality-assured data wherever possible;

(D) Use health-protective default assumptions wherever site-specific data are not available, and:

(E) Contain adequate documentation of the data and methods used for the assessment so that it is transparent and can be reproduced by an experienced risk assessor and emissions measurement expert.

(iv) Your site-specific compliance demonstration need not:

(A) Assume any attenuation of exposure concentrations due to the penetration of outdoor pollutants into indoor exposure areas;

(B) Assume any reaction or deposition of the emitted pollutants during transport from the emission point to the point of exposure.

(v) If your site-specific compliance demonstration documents that the maximum Hazard Index for hydrogen chloride and chlorine gas emissions from your hazardous waste combustors is less than or equal to 1.0, you would establish a maximum HCl-equivalent emission rate limit for each combustor based on the hydrogen chloride and chlorine gas emission rates used in this site-specific compliance demonstration.

(d) *Review and approval of eligibility demonstrations*—(1) *Content of the eligibility demonstration*—(i) *General.* The eligibility demonstration must include the following information, at a minimum:

(A) Identification of each hazardous waste combustor combustion gas emission point (*e.g.*, generally, the flue gas stack);

(B) The maximum capacity at which each combustor will operate, and the maximum rated capacity for each combustor, using the metric of stack gas volume emitted per unit of time, as well as any other metric that is appropriate for the combustor (*e.g.*, million Btu/hr heat input for boilers; tons of dry raw material feed/hour for cement kilns);

(C) Stack parameters for each combustor, including, but not limited to stack height, stack area, stack gas temperature, and stack gas exit velocity;

(D) Plot plan showing all stack emission points, nearby residences, and property boundary line;

(E) Identification of any stack gas control devices used to reduce emissions from each combustor;

(F) Identification of the RfC values used to calculate the HCl-equivalent emissions rate;

(G) Calculations used to determine the HCl-equivalent emission rate;

(H) For incinerators, cement kilns, and lightweight aggregate kilns, calculations used to determine that the HCl-equivalent emission rate limit for each combustor does not exceed the standards for total chlorine at §§ 63.1203, 63.1204, and 63.1205; and

(I) The HCl-equivalent emission rate limit for each hazardous waste combustor that you will certify in the Documentation of Compliance required under § 63.1211(d) that you will not exceed, and the limits on the operating parameters specified under § 63.1209(o) that you will establish in the Documentation of Compliance.

(ii) *Additional content of look-up table demonstration.* If you use the look-up table analysis, your eligibility demonstration must also contain, at a minimum, the following:

(A) Calculations used to determine the average stack height of on-site hazardous waste combustors;

(B) Identification of the combustor stack with the minimum distance to the property boundary of the facility; and

(C) Comparison of the values in the look-up table to your maximum HCl-equivalent emission rate.

(iii) *Additional content of a site-specific compliance demonstration.* If you use a site-specific compliance demonstration, your eligibility demonstration must also contain, at a minimum, the following:

(A) Identification of the risk assessment methodology used;

(B) Documentation of the fate and transport model used;

(C) Documentation of the fate and transport model inputs, including the stack parameters listed in paragraph (d)(1)(i)(C) of this section converted to the dimensions required for the model;

(D) As applicable:

(*1*) Meteorological data;

(*2*) Building, land use, and terrain data;

(*3*) Receptor locations and population data; and

(*4*) Other facility-specific parameters input into the model;

(E) Documentation of the fate and transport model outputs;

(F) Documentation of any exposure assessment and risk characterization calculations; and,

(G) Documentation of the predicted Hazard Index for HCl-equivalents and comparison to the limit of less than 1.0.

(2) *Review and approval*—(i) *Existing sources.* (A) If you operate an existing source, you must be in compliance with the emission standards on the compliance date. If you elect to comply with the alternative risk-based emission rate limit for total chlorine, you must have completed the eligibility demonstration and received approval from your delegated permitting authority by the compliance date.

(B) You must submit the eligibility demonstration to your permitting authority for review and approval not later than 12 months prior to the compliance date. You must submit a separate copy of the eligibility demonstration to: U.S. EPA, Risk and Exposure Assessment Group, Emission Standards Division (C404–01), Attn: Group Leader, Research Triangle Park, North Carolina 27711.

(C) Your permitting authority will notify you of approval or intent to disapprove your eligibility demonstration within 6 months after receipt of the original demonstration, and within 3 months after receipt of any supplemental information that you submit. A notice of intent to disapprove your eligibility demonstration will identify incomplete or inaccurate information or noncompliance with prescribed procedures and specify how much time you will have to submit additional information.

(D) If your permitting authority has not approved your eligibility demonstration to comply with a risk-based HCl-equivalent emission rate(s) by the compliance date, you must comply with the MACT emission standards for total chlorine gas under §§ 63.1216, 63.1217, 63.1219, 63.1220, and 63.1221 of this chapter.

(ii) *New sources. General.* (A) If you operate a source that is not an existing source and that becomes subject to subpart EEE, you must comply with the MACT emission standards for total chlorine unless and until your eligibility demonstration has been approved by the permitting authority.

(B) If you operate a new or reconstructed source that starts up before the effective date of the emission standards proposed today, or a solid fuel-fired boiler or liquid fuel-fired boiler that is an area source that increases its emissions or its potential to emit such that it becomes a major source of HAP before the effective date of §§ 63.1216 and 63.1217, you would be required to comply with the emission standards under §§ 63.1216 and 63.1217 until your eligibility demonstration is approved by your permitting authority.

(C) If you operate a new or reconstructed source that starts up after the effective date of the emission standards proposed today, or a solid fuel-fired boiler or liquid fuel-fired boiler that is an area source that increases its emissions or its potential to emit such that it becomes a major source of HAP after the effective date of §§ 63.1216 and 63.1217, you would be required to comply with the emission standards under §§ 63.1216 and 63.1217 until your eligibility demonstration is approved by your permitting authority.

(e) *Testing and monitoring requirements*—(1) *General.* You must document compliance during the comprehensive performance test under § 63.1207 with the HCl-equivalent emission rate limit established in an approved eligibility demonstration for each hazardous waste combustor.

(2) *Test methods.* (i) If you operate a cement kiln or a combustor equipped with a dry acid gas scrubber, you must should use EPA Method 320/321 or ASTM D 6735–01, or an equivalent method, to measure hydrogen chloride, and the back-half (caustic impingers) of Method 26/26A, or an equivalent method, to measure chlorine gas.

(ii) If you operate an incinerator, boiler, or lightweight aggregate kiln, you must use EPA Method 320/321 or ASTM D 6735–01, or an equivalent method, to measure hydrogen chloride, and Method 26/26A, or an equivalent method, to measure total chlorine, and calculate chlorine gas by difference if:

(A) The bromine/chlorine ratio in feedstreams is greater than 5 percent; or

(B) The sulfur/chlorine ratio in feedstreams is greater than 50 percent.

(3) *Operating parameter limits.* (i) You must establish limits on the same operating parameters that apply to sources complying with the MACT standard for total chlorine under § 63.1209(o), except that feedrate limits on total chlorine and chloride must be established as specified under paragraph (e)(3)(ii) of this section.

(ii) *Annual rolling average feedrate.* You must establish an annual rolling average feedrate limit for total chlorine and chloride as the average of the test run averages during the comprehensive performance test.

(A) To document compliance with the feedrate limit, you must know the total chlorine and chloride concentration of feedstreams at all times and continuously monitor the flowrate of all feedstreams.

(B) You must measure the flowrate of each feedstream at least once each minute and update the annual rolling average hourly based on the average of the 60 previous 1-minute measurements.

(f) *Changes*—(1) *Changes over which you have control.* (i) Changes in design, operation, or maintenance of a hazardous waste combustor that may affect the rate of emissions of HCl-equivalents from the combustor are subject to the requirements of § 63.1206(b)(5).

(ii) If you change the information documented in the demonstration of eligibility for the HCl-equivalent emission rate limit and which is used to establish the HCl-equivalent emission rate limit, you are subject to the following requirements:

(A) *Changes that would decrease the allowable HCl-equivalent emission rate limit.* If you plan to make a change that would decrease the allowable HCl-equivalent emission rate limit documented in your eligibility demonstration, you must comply with § 63.1206(b)(5)(i)(A)–(C);

(B) *Changes that would not decrease the allowable HCl-equivalent emission rate limit.* (1) If you determine that a change would not decrease the allowable HCl-equivalent emission rate limit documented in your eligibility demonstration, you must document the change in the operating record upon making such change.

(*2*) If the change would increase your allowable HCl-equivalent emission rate limit and you elect to establish a higher HCl-equivalent limit, you must submit a revised eligibility demonstration for review and approval. Upon approval of the revised eligibility demonstration, you must comply with § 63.1206(b)(5)(i)(A)(*2*), (B), and (C).

(2) *Changes over which you do not have control.* (i) You must review the documentation you use in your eligibility demonstration every five years on the anniversary of the comprehensive performance test and submit for review and approval with the comprehensive performance test plan either a certification that the information used in your eligibility demonstration has not changed in a manner that would decrease the allowable HCl-equivalent emission rate limit, or a revised eligibility demonstration for a revised HCl-equivalent emission rate limit.

(ii) If you determine that you cannot demonstrate compliance with a lower allowable HCl-equivalent emission rate limit during the comprehensive performance test because you cannot complete changes to the design or operation of the source prior to the test, you may request that the permitting authority grant you additional time as necessary to make those changes, not to exceed three years.

TABLE 1. TO § 63.1215.—ALLOWABLE TOXICITY-WEIGHTED EMISSION RATE EXPRESSED IN HCL EQUIVALENTS (LB/HR)

Stack ht (m)	Distance to property boundary (m)					
	10	30	50	100	200	500
2	0.0244	0.0322	0.0338	0.0627	0.173	0.766
5	0.0475	0.0612	0.0881	0.168	0.309	0.881
10	0.165	0.187	0.216	0.336	0.637	1.59
20	0.661	1.01	1.01	1.2	1.87	4.31
35	2.02	2.02	4.04	4.11	5.08	10.4
50	4.11	4.11	4.11	9.74	10.8	18.0

13. Section 63.1216 and an undesignated center heading are added to subpart EEE to read as follows:

Emissions Standards and Operating Limits for Solid Fuel-Fired Boilers, Liquid Fuel-Fired Boilers, and Hydrochloric Acid Production Furnaces

§ 63.1216 What are the standards for solid fuel-fired boilers that burn hazardous waste?

(a) *Emission limits for existing sources.* You must not discharge or cause combustion gases to be emitted into the atmosphere that contain:

(1) For dioxin and furan, either carbon monoxide or hydrocarbon emissions in excess of the limits provided by paragraph (a)(5) of this section;

(2) Mercury in excess of 10 ug/dscm corrected to 7 percent oxygen;

(3) Except for an area source as defined in § 63.2, cadmium and lead in excess of 170 ug/dscm, combined emissions, corrected to 7 percent oxygen;

(4) Except for an area source as defined in § 63.2, arsenic, beryllium, and chromium in excess of 210 ug/dscm, combined emissions, corrected to 7 percent oxygen;

(5) For carbon monoxide and hydrocarbons, either:

(i) Carbon monoxide in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis and corrected to 7 percent oxygen. If you elect to comply with this carbon monoxide standard rather than the hydrocarbon standard under paragraph (a)(5)(ii) of this section, you must also document that, during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by § 63.1206(b)(7), hydrocarbons do not exceed 10 parts per million by volume during those runs, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; or

(ii) Hydrocarbons in excess of 10 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane;

(6) Except for an area source as defined in § 63.2, hydrogen chloride and chlorine gas in excess of 440 parts per million by volume, combined emissions, expressed as a chloride ($Cl^{(-)}$) equivalent, dry basis and corrected to 7 percent oxygen; and

(7) Except for an area source as defined in § 63.2, particulate matter in excess of 68 mg/dscm corrected to 7 percent oxygen.

(b) *Emission limits for new sources.* You must not discharge or cause combustion gases to be emitted into the atmosphere that contain:

(1) For dioxin and furan, either carbon monoxide or hydrocarbon emissions in excess of the limits provided by paragraph (b)(5) of this section;

(2) Mercury in excess of 10 µg/dscm corrected to 7 percent oxygen;

(3) Except for an area source as defined in § 63.2, cadmium and lead in excess of 170 µg/dscm, combined emissions, corrected to 7 percent oxygen;

(4) Except for an area source as defined in § 63.2, arsenic, beryllium, and chromium in excess of 190 µg/dscm, combined emissions, corrected to 7 percent oxygen;

(5) For carbon monoxide and hydrocarbons, either:

(i) Carbon monoxide in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis and corrected to 7 percent oxygen. If you elect to comply with this carbon monoxide standard rather than the hydrocarbon standard under paragraph (b)(5)(ii) of this section, you must also document that, during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by §§ 63.1206(b)(7), hydrocarbons do not exceed 10 parts per million by volume during those runs, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; or

(ii) Hydrocarbons in excess of 10 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane;

(6) Except for an area source as defined in § 63.2, hydrogen chloride and chlorine gas in excess of 73 parts per million by volume, combined emissions, expressed as a chloride ($Cl^{(-)}$) equivalent, dry basis and corrected to 7 percent oxygen; and

(7) Except for an area source as defined in § 63.2, particulate matter in excess of 34 mg/dscm corrected to 7 percent oxygen.

(c) *Destruction and removal efficiency (DRE) standard*—(1) *99.99% DRE.* Except as provided in paragraph (c)(2) of this section, you must achieve a DRE of 99.99% for each principle organic hazardous constituent (POHC) designated under paragraph (c)(3) of this section. You must calculate DRE for each POHC from the following equation:

$$DRE = [1 - (Wout / Win)] \times 100\%$$

Where:

Win = mass feedrate of one POHC in a waste feedstream; and

Wout = mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere.

(2) *99.9999% DRE.* If you burn the dioxin-listed hazardous wastes F020, F021, F022, F023, F026, or F027 (see § 261.31 of this chapter), you must achieve a DRE of 99.9999% for each POHC that you designate under paragraph (c)(3) of this section. You must demonstrate this DRE performance on POHCs that are more difficult to incinerate than tetra-, penta-, and hexachlorodibenzo-*p*-dioxins and dibenzofurans. You must use the equation in paragraph (c)(1) of this section to calculate DRE for each POHC. In addition, you must notify the Administrator of your intent to incinerate hazardous wastes F020, F021, F022, F023, F026, or F027.

(3) *Principal organic hazardous constituents (POHCs).* (i) You must treat the POHCs in the waste feed that you specify under paragraph (c)(3)(ii) of this section to the extent required by paragraphs (c)(1) and (c)(2) of this section.

(ii) You must specify one or more POHCs from the list of hazardous air pollutants established by 42 U.S.C. 7412(b)(1), excluding caprolactam (CAS number 105602) as provided by § 63.60, for each waste to be burned. You must base this specification on the degree of difficulty of incineration of the organic constituents in the waste and on their concentration or mass in the waste feed, considering the results of waste analyses or other data and information.

(d) *Significant figures.* The emission limits provided by paragraphs (a) and (b) of this section are presented with two significant figures. Although you must perform intermediate calculations using at least three significant figures, you may round the resultant emission levels to two significant figures to document compliance.

14. Section 63.1217 is added to subpart EEE to read as follows:

§ 63.1217 What are the standards for liquid fuel-fired boilers that burn hazardous waste?

(a) *Emission limits for existing sources.* You must not discharge or cause combustion gases to be emitted into the atmosphere that contain:

(1)(i) Dioxin and furan in excess of 0.40 ng TEQ/dscm corrected to 7 percent oxygen for incinerators equipped with either a waste heat boiler or dry air pollution control system; or

(ii) Either carbon monoxide or hydrocarbon emissions in excess of the limits provided by paragraph (a)(5) of this section for sources not equipped with either a waste heat boiler or dry air pollution control system;

(iii) A source equipped a wet air pollution control system followed by a dry air pollution control system is not considered to be a dry air pollution control system, and a source equipped with a dry air pollution control system followed a wet air pollution control system is considered to be a dry air pollution control system for purposes of this emission limit;

(2) Mercury in excess of 3.7×10^{-6} lbs mercury emissions attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste;

(3) Except for an area source as defined in § 63.2, in excess of 1.1×10^{-5} lbs combined emissions of cadmium and lead attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste;

(4) Except for an area source as defined in § 63.2, in excess of 1.1×10^{-4} lbs chromium emissions attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste;

(5) For carbon monoxide and hydrocarbons, either:

(i) Carbon monoxide in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis and corrected to 7 percent oxygen. If you elect to comply with this carbon monoxide standard rather than the hydrocarbon standard under paragraph (a)(5)(ii) of this section, you must also document that, during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by § 63.1206(b)(7), hydrocarbons do not exceed 10 parts per million by volume during those runs, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; or

(ii) Hydrocarbons in excess of 10 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane;

(6) Except for an area source as defined in § 63.2, in excess of 2.5×0^{-2} lbs combined emissions of hydrogen chloride and chlorine gas attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste; and

(7) Except for an area source as defined in § 63.2 or as provided by paragraph (e)(2) of this section, particulate matter in excess of 59 mg/dscm corrected to 7 percent oxygen.

(b) *Emission limits for new sources.* You must not discharge or cause combustion gases to be emitted into the atmosphere that contain:

(1)(i) Dioxin and furan in excess of 0.015 ng TEQ/dscm corrected to 7 percent oxygen for incinerators equipped with either a waste heat boiler or dry air pollution control system; or

(ii) Either carbon monoxide or hydrocarbon emissions in excess of the limits provided by paragraph (a)(5) of this section for sources not equipped with either a waste heat boiler or dry air pollution control system;

(iii) A source equipped a wet air pollution control system followed by a dry air pollution control system is not considered to be a dry air pollution control system, and a source equipped with a dry air pollution control system followed a wet air pollution control system is considered to be a dry air pollution control system for purposes of this emission limit;

(2) In excess of 3.8×10^{-7} lbs mercury emissions attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste;

(3) Except for an area source as defined in § 63.2, in excess of 4.3×10^{-6} lbs combined emissions of cadmium and lead attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste;

(4) Except for an area source as defined in § 63.2, in excess of 3.6×10^{-5} lbs chromium emissions attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste;

(5) For carbon monoxide and hydrocarbons, either:

(i) Carbon monoxide in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis and corrected to 7 percent oxygen. If you elect to comply with this carbon monoxide standard rather than the hydrocarbon standard under paragraph (a)(5)(ii) of this section, you must also document that, during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by § 63.1206(b)(7), hydrocarbons do not exceed 10 parts per million by volume during those runs, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; or

(ii) Hydrocarbons in excess of 10 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane;

(6) Except for an area source as defined in § 63.2, in excess of 7.2×10^{-4} lbs combined emissions of hydrogen chloride and chlorine gas attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste; and

(7) Except for an area source as defined in § 63.2 or as provided in paragraph (e)(3) of this section, particulate matter in excess of 9.8 mg/dscm corrected to 7 percent oxygen.

(c) *Destruction and removal efficiency (DRE) standard*—(1) *99.99% DRE.* Except as provided in paragraph (c)(2) of this section, you must achieve a DRE of 99.99% for each principle organic hazardous constituent (POHC) designated under paragraph (c)(3) of this section. You must calculate DRE for each POHC from the following equation:

$$DRE = [1 - (Wout / Win)] \times 100\%$$

Where:

Win = mass feedrate of one POHC in a waste feedstream; and

Wout = mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere.

(2) *99.9999% DRE.* If you burn the dioxin-listed hazardous wastes F020, F021, F022, F023, F026, or F027 (see § 261.31 of this chapter), you must achieve a DRE of 99.9999% for each POHC that you designate under paragraph (c)(3) of this section. You must demonstrate this DRE performance on POHCs that are more difficult to incinerate than tetra-, penta-, and hexachlorodibenzo-*p*-dioxins and dibenzofurans. You must use the equation in paragraph (c)(1) of this section to calculate DRE for each POHC. In addition, you must notify the Administrator of your intent to incinerate hazardous wastes F020, F021, F022, F023, F026, or F027.

(3) *Principal organic hazardous constituents (POHCs).* (i) You must treat the POHCs in the waste feed that you specify under paragraph (c)(3)(ii) of this section to the extent required by paragraphs (c)(1) and (c)(2) of this section.

(ii) You must specify one or more POHCs from the list of hazardous air pollutants established by 42 U.S.C. 7412(b)(1), excluding caprolactam (CAS number 105602) as provided by § 63.60, for each waste to be burned. You must base this specification on the degree of difficulty of incineration of the organic constituents in the waste and on their concentration or mass in the waste feed, considering the results of waste analyses or other data and information.

(d) *Significant figures.* The emission limits provided by paragraphs (a) and (b) of this section are presented with two significant figures. Although you must perform intermediate calculations using at least three significant figures, you may round the resultant emission levels to two significant figures to document compliance.

(e) *Alternative to the particulate matter standard for liquid fuel-fired boilers.* (1) *General.* In lieu of complying with the applicable particulate matter standards of paragraphs (a)(7) and (b)(7) of this section, you may elect to comply with the following alternative metal emission control requirements:

(2) *Alternative metal emission control requirements for existing sources.* (i) You must not discharge or cause combustion gases to be emitted into the atmosphere that contain in excess of 1.1×10^{-5} lbs combined emissions of cadmium, lead, and selenium attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste, corrected to 7 percent oxygen; and,

(ii) You must not discharge or cause combustion gases to be emitted into the atmosphere that contain in excess of 7.7×10^{-5} lbs combined emissions of antimony, arsenic, beryllium, chromium, cobalt, manganese, and nickel attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste, corrected to 7 percent oxygen.

(3) *Alternative metal emission control requirements for new sources.* (i) You must not discharge or cause combustion gases to be emitted into the atmosphere that contain in excess of 4.3×10^{-6} lbs combined emissions of cadmium, lead, and selenium attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste, corrected to 7 percent oxygen; and,

(ii) You must not discharge or cause combustion gases to be emitted into the atmosphere that contain in excess of 3.6×10^{-5} lbs combined emissions of antimony, arsenic, beryllium, chromium, cobalt, manganese, and nickel attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste, corrected to 7 percent oxygen.

15. Section 63.1218 is added to subpart EEE to read as follows:

§ 63.1218 What are the standards for hydrochloric acid production furnaces that burn hazardous waste?

(a) *Emission limits for existing sources.* You must not discharge or cause combustion gases to be emitted into the atmosphere that contain:

(1) Dioxin and furan emissions in excess of 0.40 ng TEQ/dscm, corrected to 7 percent oxygen;

(2) For mercury, hydrogen chloride and chlorine gas emissions in excess of the levels provided by paragraph (a)(6) of this section;

(3) For lead and cadmium, hydrogen chloride and chlorine gas emissions in excess of the levels provided by paragraph (a)(6) of this section;

(4) For arsenic, beryllium, and chromium, hydrogen chloride and chlorine gas emissions in excess of the levels provided by paragraph (a)(6) of this section;

(5) For carbon monoxide and hydrocarbons, either:

(i) Carbon monoxide in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis and corrected to 7 percent oxygen. If you elect to comply with this carbon monoxide standard rather than the hydrocarbon standard under paragraph (a)(5)(ii) of this section, you must also document that, during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by § 63.1206(b)(7), hydrocarbons do not exceed 10 parts per million by volume during those runs, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; or

(ii) Hydrocarbons in excess of 10 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane;

(6) For hydrogen chloride and chlorine gas, either:

(i) Emission in excess of 14 parts per million by volume, combined emissions, expressed as a chloride $(Cl^{(-)}$ equivalent, dry basis and corrected to 7 percent oxygen; or

(ii) Emissions greater than the levels that would be emitted if the source is achieving a system removal efficiency (SRE) of less than 99.9927 percent for total chlorine and chloride fed to the combustor. You must calculate SRE from the following equation:

$$SRE = [1 - (Cl_{out} / Cl_{in})] \text{ X } 100\%$$

Where:

Cl_{in} = mass feedrate of total chlorine or chloride in all feedstreams, reported as chloride; and

Cl_{out} = mass emission rate of hydrogen chloride and chlorine gas, reported as chloride, in exhaust emissions prior to release to the atmosphere.

(7) For particulate matter, hydrogen chloride and chlorine gas emissions in excess of the levels provided by paragraph (a)(6) of this section.

(b) *Emission limits for new sources.* You must not discharge or cause combustion gases to be emitted into the atmosphere that contain:

(1) Dioxin and furan emissions in excess of 0.40 ng TEQ/dscm, corrected to 7 percent oxygen;

(2) For mercury, hydrogen chloride and chlorine gas emissions in excess of the levels provided by paragraph (a)(6) of this section;

(3) For lead and cadmium, hydrogen chloride and chlorine gas emissions in excess of the levels provided by paragraph (a)(6) of this section;

(4) For arsenic, beryllium, and chromium, hydrogen chloride and chlorine gas emissions in excess of the levels provided by paragraph (a)(6) of this section;

(5) For carbon monoxide and hydrocarbons, either:

(i) Carbon monoxide in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis and corrected to 7 percent oxygen. If you elect to comply with this carbon monoxide standard rather than the hydrocarbon standard under paragraph (b)(5)(ii) of this section, you must also document that, during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by § 63.1206(b)(7), hydrocarbons do not exceed 10 parts per million by volume during those runs, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; or

(ii) Hydrocarbons in excess of 10 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane;

(6) For hydrochloric acid and chlorine gas, either:

(i) Emission in excess of 1.2 parts per million by volume, combined emissions, expressed as a chloride

($Cl^{(-)}$) equivalent, dry basis and corrected to 7 percent oxygen; or

(ii) Emissions greater than the levels that would be emitted if the source is achieving a system removal efficiency (SRE) of less than 99.99937 percent for total chlorine and chloride fed to the combustor. You must calculate SRE from the following equation:

$$SRE = [1 - (Cl_{out} / Cl_{in})] \times 100\%$$

Where:

Cl_{in} = mass feedrate of total chlorine or chloride in all feedstreams, reported as chloride; and

Cl_{out} = mass emission rate of hydrogen chloride and chlorine gas, reported as chloride, in exhaust emissions prior to release to the atmosphere.

(7) For particulate matter, hydrogen chloride and chlorine gas emissions in excess of the levels provided by paragraph (a)(6) of this section.

(c) *Destruction and removal efficiency (DRE) standard*—(1) *99.99% DRE.* Except as provided in paragraph (c)(2) of this section, you must achieve a DRE of 99.99% for each principle organic hazardous constituent (POHC) designated under paragraph (c)(3) of this section. You must calculate DRE for each POHC from the following equation:

$$DRE = [1 - (W_{out} / W_{in})] \times 100\%$$

Where:

W_{in} = mass feedrate of one POHC in a waste feedstream; and

W_{out} = mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere.

(2) *99.9999% DRE.* If you burn the dioxin-listed hazardous wastes F020, F021, F022, F023, F026, or F027 (see § 261.31 of this chapter), you must achieve a DRE of 99.9999% for each POHC that you designate under paragraph (c)(3) of this section. You must demonstrate this DRE performance on POHCs that are more difficult to incinerate than tetra-, penta-, and hexachlorodibenzo-*p*-dioxins and dibenzofurans. You must use the equation in paragraph (c)(1) of this section to calculate DRE for each POHC. In addition, you must notify the Administrator of your intent to incinerate hazardous wastes F020, F021, F022, F023, F026, or F027.

(3) *Principal organic hazardous constituents (POHCs).* (i) You must treat the POHCs in the waste feed that you specify under paragraph (c)(3)(ii) of this section to the extent required by paragraphs (c)(1) and (c)(2) of this section.

(ii) You must specify one or more POHCs from the list of hazardous air pollutants established by 42 U.S.C. 7412(b)(1), excluding caprolactam (CAS number 105602) as provided by § 63.60, for each waste to be burned. You must base this specification on the degree of difficulty of incineration of the organic constituents in the waste and on their concentration or mass in the waste feed, considering the results of waste analyses or other data and information.

(d) *Significant figures.* The emission limits provided by paragraphs (a) and (b) of this section are presented with two significant figures. Although you must perform intermediate calculations using at least three significant figures, you may round the resultant emission levels to two significant figures to document compliance.

16. Section 63.1219 and a new undesignated center heading are added to subpart EEE to read as follows:

Replacement Emissions Standards and Operating Limits for Incinerators, Cement Kilns, and Lightweight Aggregate Kilns

§ 63.1219 What are the replacement standards for hazardous waste incinerators?

(a) *Emission limits for existing sources.* You must not discharge or cause combustion gases to be emitted into the atmosphere that contain:

(1)(i) Dioxin and furan in excess of 0.28 ng TEQ/dscm corrected to 7 percent oxygen for incinerators equipped with either a waste heat boiler or dry air pollution control system; or

(ii) Dioxin and furan in excess of 0.40 ng TEQ/dscm corrected to 7 percent oxygen for sources not equipped with either a waste heat boiler or dry air pollution control system;

(iii) A source equipped a wet air pollution control system followed by a dry air pollution control system is not considered to be a dry air pollution control system, and a source equipped with a dry air pollution control system followed a wet air pollution control system is considered to be a dry air pollution control system for purposes of this emission limit;

(2) Mercury in excess of 130 μg/dscm corrected to 7 percent oxygen;

(3) Cadmium and lead in excess of 59 μg/dscm, combined emissions, corrected to 7 percent oxygen;

(4) Arsenic, beryllium, and chromium in excess of 84 μg/dscm, combined emissions, corrected to 7 percent oxygen;

(5) For carbon monoxide and hydrocarbons, either:

(i) Carbon monoxide in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis and corrected to 7 percent oxygen. If you elect to comply with this carbon monoxide standard rather than the hydrocarbon standard under paragraph (a)(5)(ii) of this section, you must also document that, during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by § 63.1206(b)(7), hydrocarbons do not exceed 10 parts per million by volume during those runs, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; or

(ii) Hydrocarbons in excess of 10 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane;

(6) Hydrogen chloride and chlorine gas (total chlorine) in excess of 1.5 parts per million by volume, combined emissions, expressed as a chloride ($Cl^{(-)}$) equivalent, dry basis and corrected to 7 percent oxygen; and

(7) Except as provided by paragraph (e)(2) of this section, particulate matter in excess of 34 mg/dscm corrected to 7 percent oxygen.

(b) *Emission limits for new sources.* You must not discharge or cause combustion gases to be emitted into the atmosphere that contain:

(1)(i) Dioxin and furans in excess of 0.11 ng TEQ/dscm corrected to 7 percent oxygen for incinerators equipped with either a waste heat boiler or dry air pollution control system; or

(ii) Dioxin and furans in excess of 0.20 ng TEQ/dscm corrected to 7 percent oxygen for sources not equipped with either a waste heat boiler or dry air pollution control system;

(iii) A source equipped a wet air pollution control system followed by a dry air pollution control system is not considered to be a dry air pollution control system, and a source equipped with a dry air pollution control system followed a wet air pollution control system is considered to be a dry air pollution control system for purposes of this standard;

(2) Mercury in excess of 8 μg/dscm corrected to 7 percent oxygen;

(3) Cadmium and lead in excess of 6.5 μg/dscm, combined emissions, corrected to 7 percent oxygen;

(4) Arsenic, beryllium, and chromium in excess of 8.9 μg/dscm, combined emissions, corrected to 7 percent oxygen;

(5) For carbon monoxide and hydrocarbons, either:

(i) Carbon monoxide in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis and corrected to 7 percent oxygen. If you elect to comply with this carbon monoxide standard rather than the hydrocarbon standard under paragraph (b)(5)(ii) of this section, you must also document that, during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by § 63.1206(b)(7), hydrocarbons do not exceed 10 parts per million by volume during those runs, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; or

(ii) Hydrocarbons in excess of 10 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane;

(6) Hydrogen chloride and chlorine gas in excess of 0.18 parts per million by volume, combined emissions, expressed as a chloride ($Cl^{(-)}$) equivalent, dry basis and corrected to 7 percent oxygen; and

(7) Except as provided by paragraph (e)(3) of this section, particulate matter in excess of 1.6 mg/dscm corrected to 7 percent oxygen.

(c) *Destruction and removal efficiency (DRE) standard*—(1) *99.99% DRE.* Except as provided in paragraph (c)(2) of this section, you must achieve a destruction and removal efficiency (DRE) of 99.99% for each principle organic hazardous constituent (POHC) designated under paragraph (c)(3) of this section. You must calculate DRE for each POHC from the following equation:

$$DRE = [1 - (W_{out} / W_{in})] \times 100\%$$

Where:

W_{in} = mass feedrate of one POHC in a waste feedstream; and

W_{out} = mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere.

(2) *99.9999%* DRE. If you burn the dioxin-listed hazardous wastes F020, F021, F022, F023, F026, or F027 (see § 261.31 of this chapter), you must achieve a DRE of 99.9999% for each POHC that you designate under paragraph (c)(3) of this section. You must demonstrate this DRE performance on POHCs that are more difficult to incinerate than tetra-, penta-, and hexachlorodibenzo-p-dioxins and dibenzofurans. You must use the equation in paragraph (c)(1) of this section to calculate DRE for each POHC. In addition, you must notify the Administrator of your intent to incinerate hazardous wastes F020, F021, F022, F023, F026, or F027.

(3) *Principal organic hazardous constituent (POHC).* (i) You must treat each POHC in the waste feed that you specify under paragraph (c)(3)(ii) of this section to the extent required by paragraphs (c)(1) and (c)(2) of this section.

(ii) You must specify one or more POHCs from the list of hazardous air pollutants established by 42 U.S.C. 7412(b)(1), excluding caprolactam (CAS number 105602) as provided by § 63.60, for each waste to be burned. You must base this specification on the degree of difficulty of incineration of the organic constituents in the waste and on their concentration or mass in the waste feed, considering the results of waste analyses or other data and information.

(d) *Significant figures.* The emission limits provided by paragraphs (a) and (b) of this section are presented with two significant figures. Although you must perform intermediate calculations using at least three significant figures, you may round the resultant emission levels to two significant figures to document compliance.

(e) *Alternative to the particulate matter standard for incinerators*—(1) *General.* In lieu of complying with the applicable particulate matter standards of paragraphs (a)(7) and (b)(7) of this section, you may elect to comply with the following alternative metal emission control requirements:

(2) *Alternative metal emission control requirements for existing sources.* (i) You must not discharge or cause combustion gases to be emitted into the atmosphere that contain cadmium, lead, and selenium in excess of 59 µg/dscm, combined emissions, corrected to 7 percent oxygen; and,

(ii) You must not discharge or cause combustion gases to be emitted into the atmosphere that contain antimony, arsenic, beryllium, chromium, cobalt, manganese, and nickel in excess of 84 µg/dscm, combined emissions, corrected to 7 percent oxygen.

(3) *Alternative metal emission control requirements for new sources.* (i) You must not discharge or cause combustion gases to be emitted into the atmosphere that contain cadmium, lead, and selenium in excess of 6.5/dscm, combined emissions, corrected to 7 percent oxygen; and,

(ii) You must not discharge or cause combustion gases to be emitted into the atmosphere that contain antimony, arsenic, beryllium, chromium, cobalt, manganese, and nickel in excess of 8.9 µg/dscm, combined emissions, corrected to 7 percent oxygen.

17. Section 63.1220 is added to subpart EEE to read as follows:

§ 63.1220 What are the replacement standards for hazardous waste burning cement kilns?

(a) *Emission limits for existing sources.* You must not discharge or cause combustion gases to be emitted into the atmosphere that contain:

(1)(i) Dioxin and furan in excess of 0.20 ng TEQ/dscm corrected to 7 percent oxygen; or

(ii) Dioxin and furan in excess of 0.40 ng TEQ/dscm corrected to 7 percent oxygen provided that the combustion gas temperature at the inlet to the initial dry particulate matter control device is 400°F or lower based on the average of the test run average temperatures;

(2) Mercury in excess of 64 µg/dscm corrected to 7 percent oxygen;

(3) In excess of 4.0×10^{-4} lbs combined emissions of cadmium and lead attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste;

(4) In excess of 1.4×10^{-5} lbs combined emissions of arsenic, beryllium, and chromium attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste;

(5) *Carbon monoxide and hydrocarbons.* (i) For kilns equipped with a by-pass duct or midkiln gas sampling system, either:

(A) Carbon monoxide in the by-pass duct or mid-kiln gas sampling system in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis and corrected to 7 percent oxygen. If you elect to comply with this carbon monoxide standard rather than the hydrocarbon standard under paragraph (a)(5)(i)(B) of this section, you must also document that, during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by § 63.1206(b)(7), hydrocarbons in the by-pass duct or mid-kiln gas sampling system do not exceed 10 parts per million by volume during those runs, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; or

(B) Hydrocarbons in the by-pass duct or midkiln gas sampling system in excess of 10 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane;

(ii) For kilns not equipped with a by-pass duct or midkiln gas sampling system, either:

(A) Hydrocarbons in the main stack in excess of 20 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; or

(B) Carbon monoxide in the main stack in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis and corrected to 7 percent oxygen. If you elect to comply with this carbon monoxide standard rather than the hydrocarbon standard under paragraph (a)(5)(ii)(A) of this section, you also must document that, during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by § 63.1206(b)(7), hydrocarbons in the main stack do not exceed 20 parts per million by volume during those runs, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane.

(6) Hydrogen chloride and chlorine gas in excess of 110 parts per million by volume, combined emissions, expressed as a chloride ($Cl^{(-)}$) equivalent, dry basis, corrected to 7 percent oxygen; and

(7) Particulate matter in excess of 65 mg/dscm corrected to 7 percent oxygen.

(b) *Emission limits for new sources.* You must not discharge or cause combustion gases to be emitted into the atmosphere that contain:

(1)(i) Dioxin and furan in excess of 0.20 ng TEQ/dscm corrected to 7 percent oxygen; or

(ii) Dioxin and furan in excess of 0.40 ng TEQ/dscm corrected to 7 percent oxygen provided that the combustion gas temperature at the inlet to the initial dry particulate matter control device is 400°F or lower based on the average of the test run average temperatures;

(2) Mercury in excess of 35 µg/dscm corrected to 7 percent oxygen;

(3) In excess of 6.2×10^{-5} lbs combined emissions of cadmium and lead attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste;

(4) In excess of 1.4×10^{-5} lbs combined emissions of arsenic, beryllium, and chromium attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste;

(5) *Carbon monoxide and hydrocarbons.* (i) For kilns equipped with a by-pass duct or midkiln gas sampling system, carbon monoxide and hydrocarbons emissions are limited in both the bypass duct or midkiln gas sampling system and the main stack as follows:

(A) Emissions in the by-pass or midkiln gas sampling system are limited to either:

(*1*) Carbon monoxide in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis and corrected to 7 percent oxygen. If you elect to comply with this carbon monoxide standard rather than the hydrocarbon standard under paragraph (b)(5)(i)(A)(*2*) of this section, you also must document that, during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by § 63.1206(b)(7), hydrocarbons do not exceed 10 parts per million by volume during those runs, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; or

(*2*) Hydrocarbons in the by-pass duct or midkiln gas sampling system in excess of 10 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; and

(B) Hydrocarbons in the main stack are limited, if construction of the kiln commenced after April 19, 1996 at a plant site where a cement kiln (whether burning hazardous waste or not) did not previously exist, to 50 parts per million by volume, over a 30-day block average (monitored continuously with a continuous monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane.

(ii) For kilns not equipped with a by-pass duct or midkiln gas sampling system, hydrocarbons and carbon monoxide are limited in the main stack to either:

(A) Hydrocarbons not exceeding 20 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; or

(B)(*1*) Carbon monoxide not exceeding 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen; and

(*2*) Hydrocarbons not exceeding 20 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane at any time during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by § 63.1206(b)(7); and

(*3*) If construction of the kiln commenced after April 19, 1996 at a plant site where a cement kiln (whether burning hazardous waste or not) did not previously exist, hydrocarbons are limited to 50 parts per million by volume, over a 30-day block average (monitored continuously with a continuous monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane.

(6) Hydrogen chloride and chlorine gas in excess of 78 parts per million, combined emissions, expressed as a chloride ($Cl^{(-)}$) equivalent, dry basis and corrected to 7 percent oxygen; and

(7) Particulate matter in excess of 13 mg/dscm corrected to 7 percent oxygen.

(c) *Destruction and removal efficiency (DRE) standard*—(1) *99.99% DRE.* Except as provided in paragraph (c)(2) of this section, you must achieve a destruction and removal efficiency (DRE) of 99.99% for each principle organic hazardous constituent (POHC) designated under paragraph (c)(3) of this section. You must calculate DRE for each POHC from the following equation:

$$DRE = [1 - (W_{out} / W_{in})] \times 100\%$$

Where:

W_{in} = mass feedrate of one POHC in a waste feedstream; and

W_{out} = mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere.

(2) *99.9999% DRE.* If you burn the dioxin-listed hazardous wastes F020, F021, F022, F023, F026, or F027 (see § 261.31 of this chapter), you must achieve a DRE of 99.9999% for each POHC that you designate under paragraph (c)(3) of this section. You must demonstrate this DRE performance on POHCs that are more difficult to incinerate than tetra-, penta-, and hexachlorodibenzo-*p*-dioxins and dibenzofurans. You must use the equation in paragraph (c)(1) of this section to calculate DRE for each POHC. In addition, you must notify the Administrator of your intent to incinerate hazardous wastes F020, F021, F022, F023, F026, or F027.

(3) *Principal organic hazardous constituent (POHC).* (i) You must treat each POHC in the waste feed that you specify under paragraph (c)(3)(ii) of this section to the extent required by paragraphs (c)(1) and (c)(2) of this section.

(ii) You must specify one or more POHCs from the list of hazardous air pollutants established by 42 U.S.C. 7412(b)(1), excluding caprolactam (CAS number 105602) as provided by § 63.60, for each waste to be burned. You must base this specification on the degree of difficulty of incineration of the organic constituents in the waste and on their concentration or mass in the waste feed, considering the results of waste analyses or other data and information.

(d) *Cement kilns with in-line kiln raw mills.* The provisions of § 63.1204(d) apply.

(1) *General.* (i) You must conduct performance testing when the raw mill is on-line and when the mill is off-line to demonstrate compliance with the emission standards, and you must establish separate operating parameter limits under § 63.1209 for each mode of operation, except as provided by paragraph (d)(1)(iv) of this section.

(ii) You must document in the operating record each time you change from one mode of operation to the alternate mode and begin complying with the operating parameter limits for that alternate mode of operation.

(iii) You must establish rolling averages for the operating parameter limits anew (*i.e.*, without considering previous recordings) when you begin complying with the operating limits for the alternate mode of operation.

(iv) If your in-line kiln raw mill has dual stacks, you may assume that the dioxin/furan emission levels in the by-pass stack and the operating parameter limits determined during performance testing of the by-pass stack when the raw mill is off-line are the same as when the mill is on-line.

(2) *Emissions averaging.* You may comply with the mercury, semivolatile metal, low volatile metal, and hydrochloric acid/chlorine gas emission standards on a time-weighted average basis under the following procedures:

(i) *Averaging methodology.* You must calculate the time-weighted average emission concentration with the following equation:

$$C_{\text{total}} = \{C_{\text{mill-off}} \times (T_{\text{mill-off}}/(T_{\text{mill-off}} + T_{\text{mill-on}}))\} + \{C_{\text{mill-on}} \times (T_{\text{mill-on}}/(T_{\text{mill-off}} + T_{\text{mill-on}}))\}$$

Where:

C_{total} = time-weighted average concentration of a regulated constituent considering both raw mill on time and off time;

$C_{\text{mill-off}}$ = average performance test concentration of regulated constituent with the raw mill off-line;

$C_{\text{mill-on}}$ = average performance test concentration of regulated constituent with the raw mill on-line;

$T_{\text{mill-off}}$ = time when kiln gases are not routed through the raw mill; and

$T_{\text{mill-on}}$ = time when kiln gases are routed through the raw mill.

(ii) *Compliance.* (A) If you use this emission averaging provision, you must document in the operating record compliance with the emission standards on an annual basis by using the equation provided by paragraph (d)(2) of this section.

(B) Compliance is based on one-year block averages beginning on the day you submit the initial notification of compliance.

(iii) *Notification.* (A) If you elect to document compliance with one or more emission standards using this emission averaging provision, you must notify the Administrator in the initial comprehensive performance test plan submitted under § 63.1207(e).

(B) You must include historical raw mill operation data in the performance test plan to estimate future raw mill down-time and document in the performance test plan that estimated emissions and estimated raw mill down-time will not result in an exceedance of an emission standard on an annual basis.

(C) You must document in the notification of compliance submitted under § 63.1207(j) that an emission standard will not be exceeded based on the documented emissions from the performance test and predicted raw mill down-time.

(e) *Preheater or preheater/precalciner kilns with dual stacks*—(1) *General.* You must conduct performance testing on each stack to demonstrate compliance with the emission standards, and you must establish operating parameter limits under § 63.1209 for each stack, except as provided by paragraph (d)(1)(iv) of this section for dioxin/furan emissions testing and operating parameter limits for the by-pass stack of in-line raw mills.

(2) *Emissions averaging.* You may comply with the mercury, semivolatile metal, low volatile metal, and hydrochloric acid/chlorine gas emission standards specified in this section on a gas flowrate-weighted average basis under the following procedures:

(i) *Averaging methodology.* You must calculate the gas flowrate-weighted average emission concentration using the following equation:

$$C_{\text{tot}} = \{C_{\text{main}} \times (Q_{\text{main}}/(Q_{\text{main}} + Q_{\text{bypass}}))\} + \{C_{\text{bypass}} \times (Q_{\text{bypass}}/(Q_{\text{main}} + Q_{\text{bypass}}))\}$$

Where:

C_{tot} = gas flowrate-weighted average concentration of the regulated constituent;

C_{main} = average performance test concentration demonstrated in the main stack;

C_{bypass} = average performance test concentration demonstrated in the bypass stack;

Q_{main} = volumetric flowrate of main stack effluent gas; and

Q_{bypass} = volumetric flowrate of bypass effluent gas.

(ii) *Compliance.* (A) You must demonstrate compliance with the emission standard(s) using the emission concentrations determined from the performance tests and the equation provided by paragraph (e)(1) of this section; and

(B) You must develop operating parameter limits for bypass stack and main stack flowrates that ensure the emission concentrations calculated with the equation in paragraph (e)(1) of this section do not exceed the emission standards on a 12-hour rolling average basis. You must include these flowrate limits in the Notification of Compliance.

(iii) *Notification.* If you elect to document compliance under this emissions averaging provision, you must:

(A) Notify the Administrator in the initial comprehensive performance test plan submitted under § 63.1207(e). The performance test plan must include, at a minimum, information describing the flowrate limits established under paragraph (e)(2)(ii)(B) of this section; and

(B) Document in the Notification of Compliance submitted under § 63.1207(j) the demonstrated gas flowrate-weighted average emissions that you calculate with the equation provided by paragraph (e)(2) of this section.

(f) *Significant figures.* The emission limits provided by paragraphs (a) and (b) of this section are presented with two significant figures. Although you must perform intermediate calculations using at least three significant figures, you may round the resultant emission levels to two significant figures to document compliance.

(g) [Reserved].

(h) When you comply with the particulate matter requirements of paragraphs (a)(7) or (b)(7) of this section, you are exempt from the New Source Performance Standard for particulate matter and opacity under § 60.60 of this chapter.

18. Section 63.1221 is added to subpart EEE to read as follows:

§ 63.1221 What are the replacement standards for hazardous waste burning lightweight aggregate kilns?

(a) *Emission limits for existing sources.* You must not discharge or cause combustion gases to be emitted into the atmosphere that contain:

(1) Dioxins and furans in excess of 0.40 ng TEQ/dscm corrected to 7 percent oxygen;

(2) Mercury in excess of 67 μg/dscm corrected to 7 percent oxygen;

(3)(i) In excess of 3.1×10^{-4} lbs combined emissions of cadmium and lead attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste; and

(ii) Lead and cadmium in excess of 250 μg/dscm, combined emissions, corrected to 7 percent oxygen;

(4)(ii) In excess of 9.5×10^{-5} lbs combined emissions of arsenic, beryllium, and chromium attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste; and

(ii) Arsenic, beryllium, and chromium in excess of 110 μg/dscm, combined emissions, corrected to 7 percent oxygen;

(5) *Carbon monoxide and hydrocarbons.* (i) Carbon monoxide in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis and corrected to 7 percent oxygen. If you elect to comply with this carbon monoxide standard rather than the hydrocarbon standard under paragraph (a)(5)(ii) of this section, you also must document that, during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by § 63.1206(b)(7), hydrocarbons do not exceed 20 parts per million by volume during those runs, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; or

(ii) Hydrocarbons in excess of 20 parts per million by volume, over an hourly rolling average, dry basis, corrected to 7 percent oxygen, and reported as propane;

(6) Hydrogen chloride and chlorine gas in excess of 600 parts per million by volume, combined emissions, expressed as a chloride ($Cl^{(-)}$) equivalent, dry basis and corrected to 7 percent oxygen; and

(7) Particulate matter in excess of 57 mg/dscm corrected to 7 percent oxygen.

(b) *Emission limits for new sources.* You must not discharge or cause combustion gases to be emitted into the atmosphere that contain:

(1) Dioxins and furans in excess of 0.40 ng TEQ/dscm corrected to 7 percent oxygen;

(2) Mercury in excess of 67 μg/dscm corrected to 7 percent oxygen;

(3)(i) In excess of 2.4×10^{-5} lbs combined emissions of cadmium and lead attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste; and

(ii) Lead and cadmium in excess of 43 μg/dscm, combined emissions, corrected to 7 percent oxygen;

(4)(i) In excess of 3.2×10^{-5} lbs combined emissions of arsenic, beryllium, and chromium attributable to the hazardous waste per million British thermal unit heat input from the hazardous waste; and

(ii) Arsenic, beryllium, and chromium in excess of 110 μg/dscm, combined emissions, corrected to 7 percent oxygen;

(5) *Carbon monoxide and hydrocarbons.* (i) Carbon monoxide in excess of 100 parts per million by volume, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis and corrected to 7 percent oxygen. If you elect to comply with this carbon monoxide standard rather than the hydrocarbon standard under paragraph (b)(5)(ii) of this section, you also must document that, during the destruction and removal efficiency (DRE) test runs or their equivalent as provided by § 63.1206(b)(7), hydrocarbons do not exceed 20 parts per million by volume during those runs, over an hourly rolling average (monitored continuously with a continuous emissions monitoring system), dry basis, corrected to 7 percent oxygen, and reported as propane; or

(ii) Hydrocarbons in excess of 20 parts per million by volume, over an hourly rolling average, dry basis, corrected to 7 percent oxygen, and reported as propane;

(6) Hydrogen chloride and chlorine gas in excess of 600 parts per million by volume, combined emissions, expressed as a chloride (Cl^{-}) equivalent, dry basis and corrected to 7 percent oxygen; and

(7) Particulate matter in excess of 23 mg/dscm corrected to 7 percent oxygen.

(c) *Destruction and removal efficiency (DRE) standard*—(1) *99.99% DRE.* Except as provided in paragraph (c)(2) of this section, you must achieve a destruction and removal efficiency (DRE) of 99.99% for each principal organic hazardous constituent (POHC) designated under paragraph (c)(3) of this section. You must calculate DRE for each POHC from the following equation:

$$DRE = [1 - (W_{out} / W_{in})] \times 100\%$$

Where:

W_{in} = mass feedrate of one POHC in a waste feedstream; and

W_{out} = mass emission rate of the same POHC present in exhaust emissions prior to release to the atmosphere.

(2) *99.9999% DRE.* If you burn the dioxin-listed hazardous wastes F020, F021, F022, F023, F026, or F027 (see § 261.31 of this chapter), you must achieve a destruction and removal efficiency (DRE) of 99.9999% for each POHC that you designate under paragraph (c)(3) of this section. You must demonstrate this DRE performance on POHCs that are more difficult to incinerate than tetra-, penta-, and hexachlorodibenzo-dioxins and dibenzofurans. You must use the equation in paragraph (c)(1) of this section to calculate DRE for each POHC. In addition, you must notify the Administrator of your intent to burn hazardous wastes F020, F021, F022, F023, F026, or F027.

(3) *Principal organic hazardous constituents (POHCs).* (i) You must treat each POHC in the waste feed that you specify under paragraph (c)(3)(ii) of this section to the extent required by paragraphs (c)(1) and (c)(2) of this section.

(ii) You must specify one or more POHCs from the list of hazardous air pollutants established by 42 U.S.C. 7412(b)(1), excluding caprolactam (CAS number 105602) as provided by § 63.60, for each waste to be burned. You must base this specification on the degree of difficulty of incineration of the organic constituents in the waste and on their concentration or mass in the waste feed, considering the results of waste analyses or other data and information.

(d) *Significant figures.* The emission limits provided by paragraphs (a) and (b) of this section are presented with two significant figures. Although you must perform intermediate calculations using at least three significant figures, you may round the resultant emission levels to two significant figures to document compliance.

PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

1. The authority citation for part 264 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, 6925, 6927, 6928(h), and 6974.

2. Section 264.340 is amended by revising the first sentence of paragraph (b)(1) and adding paragraph (b)(5) to read as follows:

§ 264.340 Applicability.

* * * * *

(b) * * * (1) Except as provided by paragraphs (b)(2) through (b)(5) of this section, the standards of this part no longer apply when an owner or operator demonstrates compliance with the maximum achievable control technology (MACT) requirements of part 63, subpart EEE, of this chapter by conducting a comprehensive performance test and submitting to the Administrator a Notification of Compliance under §§ 63.1207(j) and 63.1210(d) of this chapter documenting compliance with the requirements of part 63, subpart EEE, of this chapter. * * *

* * * * *

(5) The particulate matter standard of § 264.343(c) remains in effect for incinerators that elect to comply with the alternative to the particulate matter standard of § 63.1219(e) of this chapter.

* * * * *

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

1. The authority citation for part 265 continues to read as follows:

Authority: 42 U.S.C. 6905, 6906, 6912, 6922, 6923, 6924, 6925, 6935, 6936, and 6937.

2. Section 265.340 is amended by revising paragraph (b)(1) to read as follows:

§ 265.340 Applicability.

* * * * *

(b) * * * (1) Except as provided by paragraphs (b)(2) and (b)(3) of this section, the standards of this part no longer apply when an owner or operator demonstrates compliance with the maximum achievable control technology (MACT) requirements of part 63, subpart EEE, of this chapter by conducting a comprehensive performance test and submitting to the Administrator a Notification of Compliance under §§ 63.1207(j) and 63.1210(d) of this chapter documenting compliance with the requirements of part 63, subpart EEE, of this chapter.

* * * * *

PART 266—STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES

1. The authority citation for part 266 continues to read as follows:

Authority: 42 U.S.C. 1006, 2002(a), 3001–3009, 3014, 6905, 6906, 6912, 6921, 6922, 6924–6927, 6934, and 6937.

2. Section 266.100 is amended by revising the first sentence of paragraph (b)(1) and adding paragraph (b)(3) to read as follows:

§ 266.100 Applicability.

* * * * *

(b) * * * (1) Except as provided by paragraphs (b)(2) and (b)(3) of this section, the standards of this part no longer apply when an owner or operator demonstrates compliance with the maximum achievable control technology (MACT) requirements of part 63, subpart EEE, of this chapter by conducting a comprehensive performance test and submitting to the Administrator a Notification of Compliance under §§ 63.1207(j) and 63.1210(d) of this chapter documenting compliance with the requirements of part 63, subpart EEE, of this chapter. * * *

* * * * *

(3) If you own or operate a boiler or hydrochloric acid furnace that is an area source under § 63.2 of this chapter and you elect not to comply with the emission standards under §§ 63.1216, 63.1217, and 63.1218 of this chapter for particulate matter, semivolatile and low volatile metals, and total chlorine, you also remain subject to:

(i) Section 266.105—Standards to control particulate matter;

(ii) Section 266.106—Standards to control metals emissions, except for mercury; and

(iii) Section 266.107—Standards to control hydrogen chloride and chlorine gas.

* * * * *

PART 270—EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM

1. The authority citation for part 270 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912, 6924, 6925, 6927, 6939, and 6974.

2. Section 270.10 is amended by adding paragraph (l) to read as follows:

§ 270.10 General application requirements.

* * * * *

(l) If the Director concludes that there is reason to believe that compliance with the standards in 40 CFR part 63, subpart EEE alone may not be protective of human health or the environment, the Director shall require additional information or assessment(s) that the Director determines are necessary to ensure protection of human health and the environment. The Director also may require a permittee or an applicant to provide information necessary to determine whether such an assessment(s) should be required.

3. Section 270.19 is amended by revising paragraph (e) to read as follows:

§ 270.19 Specific part B information requirements for incinerators.

* * * * *

(e) When an owner or operator demonstrates compliance with the air emission standards and limitations in part 63, subpart EEE, of this chapter (*i.e.*, by conducting a comprehensive performance test and submitting a Notification of Compliance under §§ 63.1207(j) and 63.1210(d) of this chapter documenting compliance with all applicable requirements of part 63, subpart EEE, of this chapter), the requirements of this section do not apply, except those provisions the Director determines are necessary to ensure compliance with §§ 264.345(a) and 264.345(c) of this chapter if you elect to comply with § 270.235(a)(1)(i) to minimize emissions of toxic compounds from startup, shutdown, and malfunction events. Nevertheless, the Director may apply the provisions of this section, on a case-by-case basis, for purposes of information collection in accordance with §§ 270.10(k), 270.10(l), 270.32(b)(2), and 270.32(b)(3) of this chapter.

3. Section 270.22 is amended by revising the introductory text to read as follows:

§ 270.22 Specific part B information requirements for boilers and industrial furnaces burning hazardous waste.

When an owner or operator of a cement kiln, lightweight aggregate kiln, solid fuel-fired boiler, liquid fuel-fired boiler, or hydrochloric acid production furnace demonstrates compliance with the air emission standards and limitations in part 63, subpart EEE, of this chapter (*i.e.*, by conducting a comprehensive performance test and submitting a Notification of Compliance under §§ 63.1207(j) and 63.1210(d) of this chapter documenting compliance with all applicable requirements of part 63, subpart EEE, of this chapter), the requirements of this section do not apply. The requirements of this section do apply, however, if the Director determines certain provisions are necessary to ensure compliance with §§ 266.102(e)(1) and 266.102(e)(2)(iii) of this chapter if you elect to comply with § 270.235(a)(1)(i) to minimize emissions of toxic compounds from startup, shutdown, and malfunction events; or if you are an area source and elect to comply with the §§ 266.105, 266.106, and 266.107 standards and associated requirements for particulate matter, hydrogen chloride and chlorine gas, and non-mercury metals; or the Director determines certain provisions apply, on a case-by-case basis, for purposes of information collection in accordance with §§ 270.10(k), 270.10(l), 270.32(b)(2), and 270.32(b)(3).

* * * * *

4. Section 270.32 is amended by adding paragraph (b)(3) to read as follows:

§ 270.32 Establishing permit conditions.

* * * * *

(b) * * *

(3) If, as the result of an assessment(s) or other information, the Administrator or Director determines that conditions are necessary in addition to those required under 40 CFR parts 63, subpart EEE, 264 or 266 to ensure protection of human health and the environment, he shall include those terms and conditions in a RCRA permit for a hazardous waste combustion unit.

* * * * *

5. Section 270.42 is amended by:

a. Revising paragraph (j)(1).

b. Redesignating paragraph (j)(2) as (j)(3).

c. Adding new paragraph (j)(2).

d. Adding new paragraph (k); and

e. Adding a new entry 10 in numerical order in the table under section L of Appendix I.

The revisions and additions reads as follows:

§ 270.42 Permit modification at the request of the permittee.

* * * * *

(j) * * *

(1) Facility owners or operators must have complied with the Notification of Intent to Comply (NIC) requirements of 40 CFR 63.1210 that were in effect prior to October 11, 2000, (See 40 CFR part 63 §§ 63.1200–63.1499 revised as of July 1, 2000) in order to request a permit modification under this section for the purpose of technology changes needed to meet the 40 CFR 63.1203, 63.1204, and 63.1205 standards.

(2) Facility owners or operators must comply with the Notification of Intent to Comply (NIC) requirements of 40 CFR 63.1210(b) and 63.1212 before a permit modification can be requested under this section for the purpose of technology changes needed to meet the 40 CFR 63.1215, 63.1216, 63.1217, 63.1218, 63.1219, 63.1220, and 63.1221 standards promulgated on [date of publication of the final rule in the **Federal Register**].

* * * * *

(k) *Waiver of RCRA permitting requirements in support of transition to the part 63 MACT standards.* (1) You may request to have specific RCRA operating and emissions limits waived by submitting a Class 1 permit modification request under Appendix I of this section, section L(10). You must:

(i) Identify the specific RCRA permit operating and emissions limits which you are requesting to waive;

(ii) Provide an explanation of why the changes are necessary in order to minimize or eliminate conflicts between the RCRA permit and MACT compliance; and

(iii) Discuss how the revised provisions will be sufficiently protective.

(2) To request this modification in conjunction with MACT performance testing where permit limits may only be waived during actual test events and pretesting, as defined under 40 CFR 63.1207(h)(2)(i) and (ii), for an aggregate time not to exceed 720 hours of operation (renewable at the discretion of the Administrator) you must:

(i) Demonstrate that your site-specific emissions test plan and continuous monitoring system performance evaluation test plan have been submitted and approved by the Administrator as required in 40 CFR 63.1207(e), and

(ii) Submit your modification request upon approval of your test plan.

(3) The Director shall approve or deny the request within 30 days of receipt of the request. The Director may, at his or her discretion, extend this 30 day deadline one time for up to 30 days by notifying the facility owner or operator.

* * * * *

APPENDIX I TO § 270.42—CLASSIFICATION OF PERMIT MODIFICATION

Modifications	Class
* * * * *	
10. Changes to RCRA permit provisions needed to support transition to 40 CFR part 63 (Subpart EEE—National Emission Standards for Hazardous Air Pollutants From Hazardous Waste Combustors), provided the procedures of § 270.42(k) are followed	[1] 1

APPENDIX I TO § 270.42—CLASSIFICATION OF PERMIT MODIFICATION—Continued

Modifications	Class
* * * * *	

[1] Class 1 modifications requiring prior Agency approval.

6. Section 270.62 is amended by revising the introductory text to read as follows:

§ 270.62 Hazardous waste incinerator permits.

When an owner or operator demonstrates compliance with the air emission standards and limitations in part 63, subpart EEE, of this chapter (*i.e.*, by conducting a comprehensive performance test and submitting a Notification of Compliance under §§ 63.1207(j) and 63.1210(d) of this chapter documenting compliance with all applicable requirements of part 63, subpart EEE, of this chapter), the requirements of this section do not apply, except those provisions the Director determines are necessary to ensure compliance with §§ 264.345(a) and 264.345(c) of this chapter if you elect to comply with § 270.235(a)(1)(i) to minimize emissions of toxic compounds from startup, shutdown, and malfunction events. Nevertheless, the Director may apply the provisions of this section, on a case-by-case basis, for purposes of information collection in accordance with §§ 270.10(k), 270.10(l), 270.32(b)(2), and 270.32(b)(3) of this chapter.

* * * * *

7. Section 270.66 is amended by revising the introductory text to read as follows:

§ 270.66 Permits for boilers and industrial furnaces burning hazardous waste.

When an owner or operator of a cement kiln, lightweight aggregate kiln, solid fuel-fired boiler, liquid fuel-fired boiler, or hydrochloric acid production furnace demonstrates compliance with the air emission standards and limitations in part 63, subpart EEE, of this chapter (*i.e.*, by conducting a comprehensive performance test and submitting a Notification of Compliance under §§ 63.1207(j) and 63.1210(d) of this chapter documenting compliance with all applicable requirements of part 63, subpart EEE, of this chapter), the requirements of this section do not apply. The requirements of this section do apply, however, if the Director determines certain provisions are necessary to ensure compliance with §§ 266.102(e)(1) and 266.102(e)(2)(iii) of this chapter if you elect to comply with § 270.235(a)(1)(i) to minimize emissions of toxic compounds from startup, shutdown, and malfunction events; or if you are an area source and elect to comply with the §§ 266.105, 266.106, and 266.107 standards and associated requirements for particulate matter, hydrogen chloride and chlorine gas, and non-mercury metals; or the Director determines certain provisions apply, on a case-by-case basis, for purposes of information collection in accordance with §§ 270.10(k), 270.10(l), 270.32(b)(2), and 270.32(b)(3).

* * * * *

8. Section 270.235 is amended by:

a. Revising paragraphs (a)(1) introductory text and (a)(2) introductory text.

b. Revising paragraphs (b)(1) introductory text and (b)(2).

The revisions read as follows:

§ 270.235 Options for incinerators, cement kilns, lightweight aggregate kilns, solid fuel-fired boilers, liquid fuel-fired boilers and hydrochloric acid production furnaces to minimize emissions from startup, shutdown, and malfunction events.

(a) * * * (1) *Revisions to permit conditions after documenting compliance with MACT.* The owner or operator of a RCRA-permitted incinerator, cement kiln, lightweight aggregate kiln, solid fuel-fired boiler, liquid fuel-fired boiler, or hydrochloric acid production furnace may request that the Director address permit conditions that minimize emissions from startup, shutdown, and malfunction events under any of the following options when requesting removal of permit conditions that are no longer applicable according to §§ 264.340(b) and 266.100(b) of this chapter:

* * * * *

(2) *Addressing permit conditions upon permit reissuance.* The owner or operator of an incinerator, cement kiln, lightweight aggregate kiln, solid fuel-fired boiler, liquid fuel-fired boiler, or hydrochloric acid production furnace that has conducted a comprehensive performance test and submitted to the Administrator a Notification of Compliance documenting compliance with the standards of part 63, subpart EEE, of this chapter may request in the application to reissue the permit for the combustion unit that the Director control emissions from startup, shutdown, and malfunction events under any of the following options:

* * * * *

(b) * * * (1) *Interim status operations.* In compliance with §§ 265.340 and 266.100(b), the owner or operator of an incinerator, cement kiln, lightweight aggregate kiln, solid fuel-fired boiler, liquid fuel-fired boiler, or hydrochloric acid production furnace that is operating under the interim status standards of part 265 or 266 of this chapter may control emissions of toxic compounds during startup, shutdown, and malfunction events under either of the following options after conducting a comprehensive performance test and submitting to the Administrator a Notification of Compliance documenting compliance with the standards of part 63, subpart EEE, of this chapter.

* * * * *

(2) *Operations under a subsequent RCRA permit.* When an owner or operator of an incinerator, cement kiln, lightweight aggregate kiln, solid fuel-fired boiler, liquid fuel-fired boiler, or hydrochloric acid production furnace that is operating under the interim status standards of parts 265 or 266 of this chapter submits a RCRA permit application, the owner or operator may request that the Director control emissions from startup, shutdown, and malfunction events under any of the options provided by paragraphs (a)(2)(i), (a)(2)(ii), or (a)(2)(iii) of this section.

* * * * *

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

1. The authority citation for part 271 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), and 6926.

2. Section 271.1(j) is amended by adding the following entry to Table 1 in chronological order by date of publication in the **Federal Register**, to read as follows:

§ 271.1 Purpose and scope.

* * * * *

(j) * * *

TABLE 1.—REGULATIONS IMPLEMENTING THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Promulgation date	Title of regulation	**Federal Register** reference	Effective date
* * *	* *	*	*
Insert date of publication of final rule in the **Federal Register** (FR)].	Standards for Hazardous Air Pollutants for Hazardous Waste Combustors.	[Insert FR page numbers of final rule].	[Insert date of publication of final rule].

[FR Doc. 04–7858 Filed 4–19–04; 8:45 am]

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