The EPA Administrator, Lee Zeldin, signed the following notice on 10/28/2025, and EPA is submitting it for publication in the Federal Register (FR). While we have taken steps to ensure the accuracy of this Internet version of the rule, it is not the official version of the rule for purposes of compliance. Please refer to the official version in a forthcoming FR publication, which will appear on the Government Printing Office's govinfo website (https://www.govinfo.gov/app/collection/fr) and on Regulations.gov (https://www.regulations.gov) in Docket No. EPA-HQ-OAR-2004-0022. Once the official version of this document is published in the FR, this version will be removed from the Internet and replaced with a link to the official version.

6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 63

[EPA-HQ-OAR-2004-0022; FRL-10654-01-OAR]

RIN 2060-AV96

National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors: Residual Risk and Technology Review; Withdrawal of Proposed Revisions to Standards for Periods of Malfunction

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule and withdrawal of proposed rule.

SUMMARY: This proposal presents the results of the U.S. Environmental Protection Agency's (EPA) residual risk and technology review for the National Emission Standards for Hazardous Air Pollutants (NESHAP) from Hazardous Waste Combustors (HWC) as required under the Clean Air Act (CAA). In this action, the EPA is proposing to establish emission limits and work practice standards for hydrogen fluoride and hydrogen cyanide emissions from HWC incinerators, cement kilns, solid fuel boilers, and liquid fuel boilers; eliminate the startup, shutdown, and malfunction (SSM) exemption; add a work practice standard for periods of SSM; add electronic reporting procedures and requirements; allow states to choose to exempt area sources from certain permitting requirements; and other clarifications and corrections. In response to comments received on certain aspects of the July 24, 2024, proposed revisions for periods of malfunction, the

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EPA is withdrawing that proposed rule and instead proposing different provisions to address periods of SSM.

DATES: *Comments*. Comments must be received on or before **[INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. As of **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, the proposed rule published on July 24, 2024, at 89 FR 59867, is withdrawn. Under the Paperwork Reduction Act (PRA), comments on the information collection provisions are best assured of consideration if the Office of Management and Budget (OMB) receives a copy of your comments on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

Public hearing: If anyone contacts us requesting a public hearing on or before **[INSERT DATE 5 CALENDAR DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, we will hold a virtual public hearing. See **SUPPLEMENTARY INFORMATION** for information on requesting and registering for a public hearing.

ADDRESSES: You may send comments, identified by Docket ID No. EPA-HQ-OAR-2004-0022, by any of the following methods:

- Federal eRulemaking Portal: *https://www.regulations.gov/* (our preferred method). Follow the online instructions for submitting comments.
- Email: *a-and-r-docket@epa.gov*. Include Docket ID No. EPA-HQ-OAR-2004-0022 in the subject line of the message.

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- Mail: U.S. Environmental Protection Agency, EPA Docket Center, Docket ID No. EPA-HQ-OAR-2004-0022, Mail Code 28221T, 1200 Pennsylvania Avenue, NW, Washington, DC 20460.
- Hand/Courier Delivery: EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue, NW, Washington, DC 20004. The Docket Center's hours of operation are 8:30 a.m.-4:30 p.m., Monday-Friday (except Federal holidays).

Instructions: All submissions received must include the Docket ID No. for this rulemaking. Comments received may be posted without change to *https://www.regulations.gov/*, including any personal information provided. For detailed instructions on sending comments and additional information on the rulemaking process, see the **SUPPLEMENTARY INFORMATION** section of this document.

FOR FURTHER INFORMATION CONTACT: For information about this proposed rule, contact U.S. EPA, Attn: Rachel Smoak, Mail Drop: E143-02, 109 T.W. Alexander Drive, P.O. Box 12055, RTP, North Carolina 27711; telephone number: (919) 541-0253; and email address: *smoak.rachel@epa.gov*. For specific information regarding the risk modeling methodology, contact U.S. EPA, Attn: Matt Woody, PhD, Mail Drop: C539-02, 109 T.W. Alexander Drive, P.O. Box 12055, RTP, North Carolina 27711; telephone number: (919) 541-1535; and email address: *woody.matt@epa.gov*.

SUPPLEMENTARY INFORMATION:

Participation in virtual public hearing. To request a virtual public hearing, contact the public hearing team at (888) 372-8699 or by email at

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SPPDpublichearing@epa.gov. If requested, the hearing will be held via virtual platform on **[INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. The EPA may close a session 15 minutes after the last pre-registered speaker has testified if there are no additional speakers. The EPA will announce further details at *https://www.epa.gov/stationary-sources-air-pollution/hazardous-waste-combustors-national-emission-standards-hazardous*.

The EPA will begin pre-registering speakers for the hearing no later than one business day after a request has been received. To register to speak at the virtual hearing, please use the online registration form available at *https://www.epa.gov/stationary-sources-air-pollution/hazardous-waste-combustors-national-emission-standards-hazardous* or contact the public hearing team at (888) 372-8699 or by email at *SPPDpublichearing@epa.gov*. The last day to pre-register to speak at the hearing will be **[INSERT DATE 12 CALENDAR DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Prior to the hearing, the EPA will post a general agenda that will list pre-registered speakers at: *https://www.epa.gov/stationary-sources-air-pollution/hazardous-waste-combustors-national-emission-standards-hazardous*.

The EPA will make every effort to follow the schedule as closely as possible on the day of the hearing; however, please plan for the hearings to run either ahead of schedule or behind schedule. Each commenter will have four minutes to provide oral testimony. The EPA encourages commenters to submit the text of your oral testimony as written comments to the rulemaking docket. The EPA may ask clarifying questions during the oral presentations but will not respond to the presentations at that time.

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Written statements and supporting information submitted during the comment period will be considered with the same weight as oral testimony and supporting information presented at the public hearing.

Please note that any updates made to any aspect of the hearing will be posted online at *https://www.epa.gov/stationary-sources-air-pollution/hazardous-waste-combustors-national-emission-standards-hazardous*. While the EPA expects the hearing to go forward as set forth above, please monitor this website or contact the public hearing team at (888) 372-8699 or by email at *SPPDpublichearing@epa.gov* to determine if there are any updates. The EPA does not intend to publish a document in the *Federal Register* (FR) announcing updates.

If you require special accommodation such as audio description, please pre-register for the hearing with the public hearing team and describe your needs by **[INSERT DATE 7 CALENDAR DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. The EPA may not be able to arrange accommodations without advanced notice.

Docket. The EPA has established a docket for this proposed rule under Docket ID No. EPA-HQ-OAR-2004-0022. All documents in the docket are listed in the *https://www.regulations.gov/* index. Although listed in the index, some information is not publicly available, *e.g.*, Confidential Business Information (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 as Portable Document Format (PDF) versions that can only be accessed on the EPA computers in the

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docket office reading room. Certain databases and physical items cannot be downloaded from the docket but may be requested by contacting the docket office at 202-566-1744. The docket office has up to 10 business days to respond to these requests. With the exception of such material, publicly available docket materials are available electronically at *https://www.regulations.gov*.

Written Comments. Submit your comments, identified by Docket ID No. EPA-HQ-OAR-2004-0022, at *https://www.regulations.gov/* (our preferred method), or the other methods identified in the **ADDRESSES** section. Once submitted, comments cannot be edited or removed from the docket. The EPA may publish any comment received to its public docket. Do not submit to the EPA's docket at *https://www.regulations.gov/* any information that you consider to be CBI or other information whose disclosure is restricted by statute. This type of information should be submitted as discussed in the *Submitting CBI* section of this document.

The EPA is soliciting comment on numerous aspects of the proposed rule. The EPA has indexed each comment solicitation with a unique identifier (*e.g.*, "C-1," "C-2," "C-3" . . .) to provide a consistent framework for effective and efficient provision of comments. Accordingly, we ask that commenters include the corresponding identifier when providing comments relevant to that comment solicitation. We ask that commenters include the identifier either in a heading or within the text of each comment (*e.g.,* "In response to C-1, . . ") to make clear which comment solicitation is being addressed. We emphasize that we are not limiting comment to these identified areas and encourage provision of any other comments relevant to this proposed action.

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Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.*, on the Web, cloud, or other file sharing system). Please visit *https://www.epa.gov/dockets/commenting-epa-docket* for additional submission methods; the full EPA public comment policy; information about CBI or multimedia submissions; and general guidance on making effective comments.

The *https://www.regulations.gov/* website allows you to submit your comment anonymously, which means the EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an email comment directly to the EPA without going through *https://www.regulations.gov/*, your email 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, the EPA recommends that you include your name and other contact information in the body of your comment and with any digital storage media you submit. If the EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, the EPA may not be able to consider your comment. Electronic files should not include special characters or any form of encryption and should be free of any defects or viruses.

Submitting CBI. Do not submit information containing CBI to the EPA through *https://www.regulations.gov/*. Clearly mark the part or all of the information that you

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claim to be CBI. For CBI information on any digital storage media that you mail to the EPA, note the docket ID, mark the outside of the digital storage media as CBI, and identify electronically within the digital storage media the specific information that is claimed as CBI. In addition to one complete version of the comments that includes information claimed as CBI, you must submit a copy of the comments that does not contain the information claimed as CBI directly to the public docket through the procedures outlined in *Written Comments* above. If you submit any digital storage media that does not contain CBI, mark the outside of the digital storage media clearly that it does not contain CBI and note the docket ID. Information not marked as CBI will be included in the public docket and the EPA's electronic public docket without prior notice. Information marked as CBI will not be disclosed except in accordance with procedures set forth in 40 Code of Federal Regulations (CFR) part 2.

Our preferred method to receive CBI is for it to be transmitted electronically using email attachments, File Transfer Protocol (FTP), or other online file sharing services (*e.g.*, Dropbox, OneDrive, Google Drive). Electronic submissions must be transmitted directly to the OAQPS CBI Office at the email address *oaqps_cbi@epa.gov*, and as described above, should include clear CBI markings and note the docket ID. If assistance is needed with submitting large electronic files that exceed the file size limit for email attachments, and if you do not have your own file sharing service, please email *oaqps_cbi@epa.gov* to request a file transfer link. If sending CBI information through the postal service, please send it to the following address: OAQPS Document Control Officer (C404-02), OAQPS, U.S. Environmental Protection Agency, 109 T.W. Alexander Drive

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P.O. Box 12055 RTP, North Carolina 27711, Attention Docket ID No. EPA-HQ-OAR-2004-0022. The mailed CBI material should be double wrapped and clearly marked. Any CBI markings should not show through the outer envelope.

Preamble acronyms and abbreviations. Throughout this preamble the use of "we," "us," or "our" is intended to refer to the EPA. We use multiple acronyms and terms in this preamble. While this list may not be exhaustive, to ease the reading of this preamble and for reference purposes, the EPA defines the following terms and acronyms here:

AEGL	acute exposure guideline level
AERMOD	air dispersion model used by the HEM model
APCD	air pollution control device
AWFCO	automatic waste feed cutoff
CAA	Clean Air Act
CalEPA	California EPA
CBI	Confidential Business Information
CEDRI	Compliance and Emissions Data Reporting Interface
CEMS	continuous emission monitoring system
CFR	Code of Federal Regulations
CfPT	confirmatory performance test
CMS	continuous monitoring system
CPT	comprehensive performance test
DRE	destruction and removal efficiency
EPA	Environmental Protection Agency
ERPG	emergency response planning guideline
ERT	Electronic Reporting Tool
HAP	hazardous air pollutant(s)
HBEL	health-based emission limit
HCl	hydrochloric acid
HCN	hydrogen cyanide
HEM	Human Exposure Model
HF	hydrogen fluoride
HI	hazard index
HQ	hazard quotient
HWC	hazardous waste combustor
ICR	information collection request
IRIS	Integrated Risk Information System
km	kilometer
LOAEL	lowest-observed-adverse-effect level

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MACT	maximum achievable control technology
mg/kg-day	milligrams per kilogram per day
mg/m^3	milligrams per cubic meter
MIR	maximum individual risk
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NESHAP	national emission standards for hazardous air pollutants
NOAEL	no-observed-adverse-effect level
NRC	National Research Council
NTTAA	National Technology Transfer and Advancement Act
OAQPS	Office of Air Quality Planning and Standards
OECA	Office of Enforcement and Compliance Assurance
OMB	Office of Management and Budget
PAH	polycyclic aromatic hydrocarbons
PB-HAP	hazardous air pollutants known to be persistent and bioaccumulative in the environment
PCDD/PCDF	polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans
PM	particulate matter
POM	polycyclic organic matter
ppm	parts per million
REL	reference exposure level
RFA	Regulatory Flexibility Act
RfC	reference concentration
RfD	reference dose
RTR	residual risk and technology review
SAB	Science Advisory Board
SBA	Small Business Administration
SSM	startup, shutdown, and malfunction
TEQ	toxic equivalency quotient
TOSHI	target organ-specific hazard index
tpy	tons per year
TRIM.FaTE	Total Risk Integrated Methodology.Fate, Transport, and Ecological Exposure model
UF	uncertainty factor
$\mu g/m^3$	micrograms per cubic meter
UMRA	Unfunded Mandates Reform Act
UPL	upper prediction limit
URE	unit risk estimate
VCS	voluntary consensus standards

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I. General Information

A. Does this action apply to me?

Table 1 of this preamble lists the NESHAP and associated regulated industrial source categories that are the subject of this proposal. Table 1 is not intended to be exhaustive but rather provides a guide for readers regarding the entities that this proposed action is likely to affect. The proposed standards, if finalized, would be directly applicable to the affected sources. State, local, and Tribal government entities do not own or operate sources that would be affected by this proposed action. The hazardous waste combustor (HWC) source category, which is the subject of this proposal, is regulated under 40 CFR part 63, subpart EEE, the National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors (HWC NESHAP). The HWC NESHAP includes hazardous waste combusting sources from five initial source categories: Hazardous Waste Incineration, Portland Cement Manufacturing, Clay Products Manufacturing (including lightweight aggregate kilns), Industrial Boilers, and Hydrochloric Acid (HCl) Production.

Hazardous waste combusting sources from five initial source categories are regulated as HWCs under 40 CFR part 63, subpart EEE, the HWC NESHAP. As defined in the *Initial List of Categories of Sources Under Section 112(c)(1) of the Clean Air Act Amendments of 1990* (57 FR 31576, July 16, 1992) and *Documentation for Developing the Initial Source Category List, Final Report* (EPA-450/3-91-030, July 1992), the "Hazardous Waste Incineration" source category includes any source that incinerates hazardous waste in "any furnace, or other device, used in the process of burning waste for

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the primary purpose of reducing the volume of the waste by removing combustible matter." The "Portland Cement Manufacturing" source category includes "any facility engaged in manufacturing Portland cement by either the wet or dry process." The "Clay Products Manufacturing" source category includes lightweight aggregate kilns and is defined as "any facility engaged in manufacturing of clay products such as brick, vitrified clay pipe, structural clay tile, and clay refractories." The "Industrial Boilers" source category includes "boilers used in manufacturing, processing, mining, and refining or any other industry to provide steam, hot water, and/or electricity." In 2004, the Industrial Boilers source category was combined with the Institutional/Commercial Boilers and the Process Heaters source categories into the Industrial/Commercial/Institutional Boilers and Process Heaters source category.[1] The "Hydrochloric Acid Production" source category includes "any facility engaged in the production of hydrochloric acid."

Table 1—NESHAP and Source Categories Affected by This Proposed Action

Source Category	NESHAP	NAICS Code[1]
Petroleum and coal products manufacturing	40 CFR part 63, subpart EEE	3241
Chemical manufacturing	40 CFR part 63, subpart EEE	325
Cement and concrete product manufacturing	40 CFR part 63, subpart EEE	3273
Other nonmetallic mineral product manufacturing	40 CFR part 63, subpart EEE	3279
Hazardous waste treatment and disposal	40 CFR part 63, subpart EEE	562211
Remediation and other waste management services	40 CFR part 63, subpart EEE	5629

[1] North American Industry Classification System.

B. Where can I get a copy of this document and other related information?

[1] 70 FR 37819 (June 30, 2005).

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In addition to being available in the docket, an electronic copy of this action is available on the internet. In accordance with 5 U.S. Code (U.S.C.) 553(b)(4), a brief summary of this rule may be found at *https://www.regulations.gov*, Docket ID No. EPA-HQ-OAR-2004-0022. Following signature by the Administrator, the EPA will post a copy of this proposed action at *https://www.epa.gov/stationary-sources-air-pollution/hazardous-waste-combustors-national-emission-standards-hazardous*. Following publication in the *Federal Register*, the EPA will post the *Federal Register* version of the proposal and key technical documents at this same webpage. Information on the overall residual risk and technology review (RTR) program is available at *https://www.epa.gov/stationary-sources-air-pollution/risk-and-technology-review-national-emissions-standards-hazardous*.

A memorandum showing the rule edits that would be necessary to incorporate the changes to 40 CFR part 63, subpart EEE, proposed in this action is available in the docket (Docket ID No. EPA-HQ-OAR-2004-0022). Following signature by the Administrator, the EPA also will post a copy of this document to *https://www.epa.gov/stationary-sources-air-pollution/hazardous-waste-combustors-national-emission-standards-hazardous*.

II. Background

A. What is the statutory authority for this proposed action?

The statutory authority for this proposed action is provided by CAA sections 112, 301(a), and 502(a) (42 U.S.C. 7412, 7601(a), 7661a(a)). CAA section 112 establishes a two-stage regulatory process to develop standards for emissions of hazardous air

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pollutants (HAP) from stationary sources. Generally, the first stage involves establishing technology-based standards that reflect the maximum achievable control technology (MACT) or an appropriate alternative.[2] The second stage involves evaluating those standards within eight years to determine whether additional standards are needed to address any remaining risk associated with HAP emissions.[3] This second stage is commonly referred to as the "residual risk review." In addition to the residual risk review, CAA section 112 also requires the EPA to review the standards every eight years and "revise as necessary" taking into account "developments in practices, processes, or control technologies."[4] This review is commonly referred to as the "technology review." When the two reviews are combined into a single rulemaking, it is commonly referred to as the "risk and technology review" (RTR). The discussion that follows identifies the most relevant statutory sections and briefly explains the contours of the methodology used to implement these statutory requirements.

In the first stage of the CAA section 112 standard-setting process, the EPA promulgates technology-based standards under CAA section 112(d) for categories of sources identified as emitting one or more of the HAP listed in CAA section 112(b). Sources of HAP emissions are either major sources or area sources, and CAA section 112 establishes different requirements for major and area source standards. "Major sources" are those that emit or have the potential to emit 10 tons per year (tpy) or more of a single HAP or 25 tpy or more of any combination of HAP.[5] All other sources are "area

[2] 42 U.S.C. 7412(d)(1)-(4).
[3] *Id*. 7412(f)(2).
[4] *Id*. 7412(d)(6).
[5] 42 U.S.C. 7412(a)(1).

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sources."[6] For major sources, CAA section 112(d)(2) provides that the technology-based NESHAP must reflect the maximum degree of emission reductions of HAP achievable (after considering cost, energy requirements, and non-air quality health and environmental impacts). These standards are commonly referred to as MACT standards. CAA section 112(d)(3) also establishes a minimum control level for MACT standards, known as the MACT "floor," based on emission controls achieved in practice by the best performing sources. In certain instances, as provided in CAA section 112(h), the EPA may set work practice standards in lieu of numerical emission standards. Under CAA section 112(h), the EPA may adopt a work practice standard in lieu of a numerical emission standard if it is "not feasible in the judgment of the Administrator to prescribe or enforce an emission standard for control of a hazardous air pollutant."[7] CAA section 112(h)(2)(A) defines this phrase as applying in any situation where a HAP "cannot be emitted through a conveyance designed and constructed to emit or capture such pollutant, or that any requirement for, or use of such a conveyance would be inconsistent with any Federal, State or local law."[8] This phrase is further defined in CAA section 112(h)(2)(B) as applying where "the Administrator determines that the application of measurement methodology to a particular class of sources is not practicable due to technological and economic limitations."[9] The EPA has long considered situations where the majority of the measurements are below the detection limit as being a situation where measurement

[6] *Id*. 7412(a)(2).
[7] *Id*. 7412(h)(1). *Sierra Club v. EPA*, 479 F.3d 875, 883–84 (D.C. Cir. 2007); The EPA may "adopt[] a method to account for measurement imprecision that has a rational basis in the correlation between increased emission values and increased testing precision." *Nat'l Ass'n of Clean Water Agencies v. EPA,* 734 F.3d 1115, 1154-55 (D.C. Cir. 2013).
[8] 42 U.S.C. 7412(h)(2)(A).
[9] 42 U.S.C. 7412(h)(2)(B).
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is not "technologically practicable" within the meaning of CAA section 112(h)(2)(B). Additionally, unreliable measurements raise issues of practicability, feasibility and enforceability. The application of measurement methodology in this situation would also not be "practicable due to . . . economic limitation" within the meaning of CAA section 112(h)(2)(B) because it would just result in cost expended to produce analytically suspect measurements. The EPA also considers control options that are more stringent than the floor.[10] Standards more stringent than the floor are commonly referred to as "beyond-the-floor" standards. For area sources, CAA section 112(d)(5) allows the EPA to set standards based on generally available control technologies or management practices (GACT standards) in lieu of MACT standards.

For categories of major sources and any area source categories subject to MACT standards, the second stage focuses on identifying and addressing any remaining (*i.e.*, "residual") risk within eight years pursuant to CAA section 112(f). Specifically, CAA section 112(f)(2) requires the EPA to determine not later than eight years after establishment of the MACT standards whether promulgation of additional standards is needed to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect. CAA section 112(d)(5) provides that this residual risk review is not required for categories of area sources subject to GACT standards. CAA section 112(f)(2)(B) expressly preserves the EPA's use of the two-step approach for developing standards to address any residual risk and the Agency's interpretation of "ample margin of safety" developed in the *National Emissions Standards for Hazardous*

[10] *Id*. 7412(d)(2).

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Air Pollutants: Benzene Emissions from Maleic Anhydride Plants, Ethylbenzene/Styrene Plants, Benzene Storage Vessels, Benzene Equipment Leaks, and Coke By-Product Recovery Plants ("Benzene NESHAP").[11] The EPA notified Congress in the Residual Risk Report that the Agency intended to use the Benzene NESHAP approach in making CAA section 112(f) residual risk determinations (EPA–453/R–99–001, p. ES–11). The EPA subsequently adopted this approach in its residual risk determinations, and the United States Court of Appeals for the District of Columbia Circuit upheld the EPA's interpretation that CAA section 112(f)(2) incorporates the approach established in the Benzene NESHAP. *See NRDC v. EPA*, 529 F.3d 1077, 1083 (D.C. Cir. 2008).

The approach incorporated into the CAA and used by the EPA to evaluate residual risk and develop standards under CAA section 112(f)(2) is also a two-step approach. In the first step, the EPA determines whether risks are acceptable. This determination "considers all health information, including risk estimation uncertainty, and includes a presumptive limit on maximum individual lifetime [cancer] risk (MIR) of approximately 1 in 10 thousand".[12] If risks are unacceptable, the EPA must determine the emission standards necessary to reduce risk to an acceptable level without considering costs. In the second step of the approach, the EPA considers whether the emission standards provide an ample margin of safety to protect public health "in consideration of all health information, including the number of persons at risk levels higher than approximately 1 in 1 million, as well as other relevant factors, including costs and

[11] 54 FR 38044, Sept. 14, 1989.
[12] 54 FR 38045, Sept. 14, 1989. Although defined as "maximum individual risk," MIR refers only to cancer risk. MIR, one metric for assessing cancer risk, is the estimated risk if an individual were exposed to the maximum level of a pollutant for a lifetime.
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economic impacts, technological feasibility, and other factors relevant to each particular decision".[13] The EPA must promulgate emission standards necessary to provide an ample margin of safety to protect public health or determine that the standards being reviewed provide an ample margin of safety without any revisions. After conducting the ample margin of safety analysis, we consider whether a more stringent standard is necessary to prevent, taking into consideration costs, energy, safety, and other relevant factors, an adverse environmental effect.

CAA section 112(d)(6) separately requires the EPA to review standards promulgated under CAA section 112 and revise them "as necessary (taking into account developments in practices, processes, and control technologies)" no less often than every eight years. In conducting this review, which we call the "technology review," the EPA is not required to recalculate the MACT floors that were established during earlier rulemakings.[14] The EPA may consider cost in deciding whether to revise the standards pursuant to CAA section 112(d)(6).[15]

CAA sections 112(c)(3) and (k) require the EPA to identify and list the area source categories that represent 90 percent of the emissions of the 30 urban air toxics associated with area sources and subject them to standards under the CAA. CAA section 112(k)(3), which cross-references CAA section 112(c)(3), requires the EPA to identify a list of at least 30 air toxics that pose the greatest potential health threat in urban areas (the

[13] *Id*.
[14] *Ass'n of Battery Recyclers, Inc. v. EPA*, 716 F.3d 667, 673-674 (D.C. Cir. 2013); *NRDC*, 529 F.3d at 1084.
[15] 42 U.S.C. 7412(d)(2), (6); *Ass'n of Battery Recyclers*, 617 F.3d at 673-74.

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"urban" HAP). Taken together, these requirements are known as the Urban Air Toxics Strategy. These are the HAP that present the greatest threat to public health in the largest number of urban areas (CAA section 112(k)(3)(B)(i)). CAA sections 112(k)(3)(B)(ii) and 112(c)(3) also require the EPA to "assure that sources accounting for 90 percent or more of the 30 identified hazardous air pollutants are subject to standards."

In *Louisiana Environmental Action Network (LEAN) v. EPA*, the D.C. Circuit held that the EPA must address missing MACT standards for listed HAP known to be emitted from a major source category as part of its periodic review of MACT standards under CAA section 112(d)(6). 955 F.3d 1088 (D.C. Cir. 2020). In October 2022, Earthjustice filed an action in the U.S. District Court for the District of Columbia to compel the EPA to review and revise the HWC NESHAP under CAA sections 112(d)(6) and (f)(2) (*i.e.*, complete the RTR). In December 2024, the district court issued an order requiring that the EPA sign the final RTR rule for this source category by December 31, 2025, and establish standards for any previously unregulated HAP in the final RTR. Order, *Blue Ridge Envtl. Def. League v. Regan*, 22-cv-3134 (APM), at 4 (D.D.C. Dec. 12, 2024). The EPA is proposing this action in response to that court order.

Further, under CAA section 301(a) "[t]he Administrator is authorized to prescribe such regulations as are necessary to carry out his functions." The EPA is also required to specify relevant test methods, best practices, procedures, or protocols and recordkeeping requirements for standards promulgated under CAA section 112.

Finally, CAA section 502(d)(l) requires each state to develop and submit to the EPA an operating permit program to meet the requirements of title V of the CAA and the

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EPA's implementing regulations at 40 CFR part 70 ("title V"). Major stationary sources of air pollution and certain other non-major sources are required to apply for and operate in accordance with title V operating permits that include emission limitations and other conditions as necessary to assure compliance with applicable requirements of the CAA, including the requirements of the applicable implementation plan.

B. What is this source category and how does the current NESHAP regulate its HAP emissions?

HWCs are incinerators, cement kilns, lightweight aggregate kilns, boilers, or HCl production furnaces that combust hazardous waste for waste reduction, thermal energy recovery, and/or production of a product. Hazardous waste is defined under the Resource Conservation and Recovery Act (RCRA), which establishes a comprehensive regulatory structure overseeing the safe treatment, storage, and disposal of hazardous waste.[16] HWCs act as a disposal method for hazardous waste but can also provide other benefits to their owners and operators. The primary purpose of HWC incinerators is the destruction or volume reduction of hazardous waste. The primary purpose of HWC cement kilns is the production of cement using hazardous waste as a fuel to reduce the need for non-waste energy inputs. Similarly, HWC lightweight aggregate kilns use hazardous waste to provide energy for producing lightweight aggregate. HWC boilers produce thermal energy (often used in the form of steam), with hazardous waste often replacing the need for some non-waste fuel. An HWC HCl production furnace produces HCl, often using hazardous waste as a chlorine source.

[16] 42 U.S.C. 6901- 6992k.

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HWCs may either burn only hazardous waste produced onsite or by the owner, which is referred to as a "captive" HWC, or burn hazardous waste produced offsite or by someone other than the owner, which is referred to as a "commercial" HWC. Facilities with captive HWCs typically use their HWC as a waste management strategy. The most common captive HWCs are solid fuel boilers, liquid fuel boilers, HCl production furnaces, and some incinerators. Facilities with commercial HWCs typically use their HWC for revenue generation. The most common commercial HWCs are cement kilns, lightweight aggregate kilns, and incinerators. The main line of business for some commercial HWC incinerators is waste management. There are approximately 160 HWCs located at approximately 90 facilities in the United States. In 2023, approximately 32.2 million tons of hazardous waste were generated in the United States, all of which must be treated or disposed of in ways that protect human health and the environment.[17] Hazardous waste incineration provided that disposal for approximately 1.1 million tons of that hazardous waste, and energy recovery in units like hazardous waste burning boilers accounted for an additional 1.4 million tons.[18]

HWCs are regulated under both the CAA and RCRA. Under the CAA, all unit types are regulated under the HWC NESHAP. Prior to demonstrating compliance with the HWC NESHAP, incinerators were primarily regulated by 40 CFR part 264, subpart O, and cement kilns, lightweight aggregate kilns, boilers, and HCl production furnaces were primarily regulated by 40 CFR part 266, subpart H. For most sources, air emission

[17] U.S. Environmental Protection Agency. (Last updated Dec. 30, 2024). Biennial Report Summary: https://rcrapublic.epa.gov/rcra-hwip/trends-and-analysis/details/4.
[18] U.S. Environmental Protection Agency. (Last updated Jul. 10, 2025). Biennial Report Management Methods: https://rcrapublic.epa.gov/rcra-hwip/trends-and-analysis/details/3.
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standards and associated operating requirements are no longer contained in their RCRA permits. Sources continue to hold RCRA permits for activities related to hazardous waste management, including general facility standards, manifest requirements, closure, financial responsibility, and any risk-based emission limit and associated operating conditions deemed necessary to protect human health and the environment.

The HWC NESHAP, which was originally promulgated in 1999, regulated hazardous waste incinerators, cement kilns, and lightweight aggregate kilns.[19] These standards were vacated in 2001[20] and replaced with interim standards in 2002.[21] The EPA promulgated replacement standards for hazardous waste incinerators, cement kilns, and lightweight aggregate kilns and first-time standards for hazardous waste solid fuel boilers, liquid fuel boilers, and HCl production furnaces in 2005.[22] Subsequently, the EPA received four petitions for reconsideration of the final rule. In 2006, the EPA granted reconsideration for eight issues raised by the petitions[23] and in 2007 reopened the 2005 rule[24] (the "Solicitation of Comment on Legal Analysis") to consider comments relating to an intervening decision by the D.C. Circuit.[25] The EPA took final action on the eight reconsideration issues, responded to comments on the Solicitation of Comment on Legal Analysis, and made technical corrections in 2008.[26] In response to a petition for

[19] 64 FR 52828 (September 30, 1999).
[20] *Cement Kiln Recycling Coal. v. EPA*, 255 F.3d 855, 872 (D.C. Cir. 2001).
[21] 67 FR 6792 (Feb. 13, 2002).
[22] 70 FR 59402 (Oct. 12, 2005).
[23] 71 FR 14665 (Mar. 23, 2006); 71 FR 52624 (Sept. 6, 2006).
[24] 72 FR 54875 (Sept. 27, 2007).
[25] *Sierra Club v. EPA*, 479 F.3d 875 (D.C. Cir. 2007).
[26] 73 FR 64068 (Oct. 28, 2008).

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reconsideration of the 2008 final rule, the EPA sought and received a full voluntary remand of the rule in 2009 to reexamine the HWC NESHAP in totality.[27]

In July 2024, the EPA issued a notice of proposed rulemaking for the HWC NESHAP regarding emission standards during periods of malfunction, electronic reporting provisions, emergency safety vent provisions, and other minor technical corrections.[28] The EPA is withdrawing certain aspects of that proposal in this document for the reasons explained in section IV.E. of this preamble. The EPA is instead proposing different requirements and soliciting comments on certain topics from the 2024 proposal that include emission standards during periods of malfunction and electronic reporting provisions in this notice of proposed rulemaking**.** The EPA will respond to other comments on aspects of the July 2024 proposal that are not withdrawn in the final action for this proposal.

The key pollutants that the HWC NESHAP regulates include polychlorinated dibenzodioxins and furans (PCDD/PCDF); mercury (Hg); cadmium (Cd) and lead (Pb) as semi-volatile metals (SVM); arsenic (As), beryllium (Be), and chromium (Cr) as low-volatile metals (LVM); antimony (Sb), cobalt (Co), manganese (Mn), nickel (Ni), and selenium (Se) as non-enumerated metal HAP; HCl and chlorine gas; and other hydrocarbon HAP, including polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs). The HWC NESHAP also includes several other emission limits such as a carbon monoxide (CO) or total hydrocarbon (THC) limit associated with

[27] *Sierra Club* v. *EPA*, Docket No. 05-1441 (consolidated with Docket Nos. 05-1442, 05-1443, 05-1445, 05-1449) (D.C. Cir.).
[28] 89 FR 59867 (Jul. 24, 2024).
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demonstrating good combustion practices, a destruction and removal efficiency (DRE) standard also for demonstrating good combustion practices, and a particulate matter (PM) emission limit in some subcategories.

The HWC NESHAP regulates HAP through a combination of numeric emission limits and surrogate standards, where compliance with one emission standard demonstrates compliance with the standard for another HAP. For example, emissions of non-PCDD/PCDF organic HAP, including PCBs and PAHs, are regulated by the combination of the DRE standard and either the CO or THC standard, as chosen by the source. Another example of a surrogate is the PM standard, which primarily regulates emissions of non-enumerated metal HAP. These metals are not regulated by another metal HAP standard. Sources may also choose to regulate non-enumerated metal HAP directly as an alternative to the PM standard. An alternative health-based emission limit (HBEL) based on a site-specific risk assessment is also available for HCl and chlorine gas.[29]

The HWC NESHAP regulates HAP emissions from HWCs at major and area sources, as defined by CAA sections 112(a)(1) and (2). The HWC NESHAP also requires both major and area sources to obtain a title V air permit. Major and area sources are subject to the same standards for HWC incinerators, cement kilns, and lightweight aggregate kilns. Area source HWC boilers and HCl production furnaces are only subject to the same emission standards as major sources for Hg, PCDD/PCDF, and non-PCDD/PCDF organic HAP. RCRA standards for Cd and Pb, Cr, HCl and chlorine gas,

[29] For more information on the alternative HBEL for HCl and chlorine gas, *see* 70 FR 59413-25 (Oct. 12, 2005); *see also* 69 FR 21298-305-06 (Apr. 20, 2004).

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and PM under 40 CFR part 266, subpart H, apply to area source HWC boilers and HCl production furnaces unless an area source elects to comply with the HWC NESHAP major source standards in lieu of the RCRA standards. Area sources otherwise have the same requirements as major sources, including recordkeeping, reporting, operator training, the startup, shutdown, and malfunction (SSM) plan, and the automatic waste feed cutoff (AWFCO) system.[30]

Periods of SSM are addressed under both the RCRA rules and the HWC NESHAP. The requirements of both rules apply simultaneously to HWCs. Under the RCRA rules, sources may choose to retain or revise certain RCRA permit conditions that are specific to periods of SSM, including a requirement not to feed most types of hazardous waste during periods of SSM. Alternatively, sources may choose to remove RCRA operating permit conditions specific to periods of SSM if an SSM plan has been developed under the HWC NESHAP and approved by the Administrator.[31] Most sources have chosen to remove conditions specific to periods of SSM from their RCRA permits because they have approved SSM plans under the HWC NESHAP.

The emission standards and operating requirements of the HWC NESHAP currently do not apply during periods of SSM.[32] However, there are two requirements relating to periods of SSM that apply to all HWCs. Specifically, all HWCs must develop

[30] *See* 70 FR 59432 (Oct. 12, 2005) for further discussion on the similarities and differences between major and area source standards.
[31] *See* 40 CFR part 270, subpart I, for the integration of RCRA and CAA standards during periods of SSM.
[32] In July 2024, the EPA proposed to remove the malfunction exemption from the HWC NESHAP, which, if finalized, would have required standards for periods of normal operation to apply at all times (89 FR 59870). After considering the comments received on that proposal, the EPA is withdrawing the proposed removal of the malfunction exemption and is instead proposing different requirements for periods of malfunction, as described in section IV.E of this preamble.
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an SSM plan and operate an AWFCO system. All HWCs are subject to the SSM plan provisions of the 40 CFR part 63, subpart A general provisions, including the requirements to develop an SSM plan and update it as necessary. Under the general provisions, if actions taken by the owner or operator cause the source to exceed any applicable emission limitation and are consistent with the procedures specified in the SSM plan, then the owner or operator must keep records and confirm in their reporting that their actions were consistent with the SSM plan. If actions taken by the owner or operator cause the source to exceed any applicable emission limitation and are not consistent with the procedures specified in the SSM plan, then the owner or operator must also record and report those actions.

If an HWC uses their CAA SSM plan to comply with RCRA requirements, then the SSM plan must be submitted to the Administrator for review and approval and the SSM plan must include a description of potential causes of malfunctions and actions the source is taking to minimize the frequency and severity of those malfunctions. The Administrator must also approve any changes to the SSM plan if the changes may significantly increase emissions of HAP.

All HWCs are also required to operate an AWFCO system, which is a system that immediately (or within one minute in some circumstances) and automatically cuts off the hazardous waste feed to the HWC when an operating parameter limit (OPL) established per the HWC NESHAP is exceeded, an emission standard monitored by a continuous emission monitoring system (CEMS) is met or exceeded, the allowable combustion chamber pressure is exceeded, the span value of any continuous monitoring system

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(CMS) detector except a CEMS is met or exceeded, a CMS monitoring an emission level or an OPL established per the HWC NESHAP malfunctions, or any component of the AWFCO system fails. During an AWFCO, owners or operators must continue to send combustion gases to the air pollution control system while hazardous waste remains in the combustion chamber of the HWC. Hazardous waste feed to the HWC cannot restart until the OPLs and emission levels are within the specified limits, which typically takes no less than one hour. The AWFCO system must generally be tested at least weekly.

HWCs must comply with the described AWFCO system requirements during malfunctions, although an exceedance of an OPL or emission standard interlocked with the AWFCO system is not a violation of the HWC NESHAP if the corrective measures prescribed in the SSM plan are correctly followed.

Additionally, HWCs must comply with AWFCO requirements during periods of startup and shutdown if they burn hazardous waste during those periods. An exceedance of an OPL or emission standard interlocked with the AWFCO system is not a violation of the HWC NESHAP if the corrective measures prescribed in the SSM plan are correctly followed. If owners or operators of HWCs feed hazardous waste during periods of startup or shutdown, they must include waste feed restrictions and other appropriate operating conditions and limits in the SSM plan and interlock those OPLs with the AWFCO system. Under the RCRA incinerator (40 CFR part 264, subpart O) and boiler and industrial furnaces (BIF; 40 CFR part 266, subpart H) requirements, hazardous waste may be fed into an HWC during startup and shutdown if all OPLs are being met. This is typically the case shortly before startup ends and shortly after shutdown begins. In

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addition, certain types of hazardous waste may be fed during startup and shutdown under certain stipulations, regardless of whether OPLs for periods of normal operation are being met. One example is a waste that is only considered hazardous because it is ignitable and easily burned; an owner or operator might feed this waste into the combustor during startup and use the energy released by its combustion to raise the HWC's temperature to the allowable range for periods of normal operation. Most HWCs do not combust hazardous waste during startup and shutdown. In cases where an HWC does so, we expect that the HWC NESHAP's SSM plans closely mirror RCRA's restrictions on hazardous waste feed during periods of startup and shutdown.

C. What data collection activities were conducted to support this action?

The EPA conducted multiple data collection activities to support this action, including collecting HWC facility permits and emissions testing information available through state and local authorities, a two-phased request for information under CAA section 114, and site visits to HWC facilities.[33]

To develop the facility list, we began with a partial facility list provided by the EPA Office of Land and Emergency Management (OLEM), which administers the RCRA rules for HWCs. We also gathered a list of all facilities listed as subject to the HWC NESHAP in the EPA Office of Enforcement and Compliance Assurance's (OECA) Enforcement and Compliance History Online (ECHO) tool (*https://echo.epa.gov*). We reviewed and cross-referenced these lists and confirmed that facilities were subject to the

[33] In its 1999 report to Congress on how the agency planned to address residual risks, the EPA stated that "source and emissions data can be derived from broad-scale emissions inventories, *specific data collection efforts with particular industries,* or information from regional, State, or local air toxics agencies." *Residual Risk Report to Congress*, EPA–453/R–99–001 at 13 (March 1999) (emphasis added).

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HWC NESHAP by gathering title V air permits from the websites of state and local governments or agencies, where available. The resulting facility list is available in the docket for this proposed rule (Docket ID No. EPA-HQ-OAR-2004-0022).

The EPA also collected emissions test reports for the comprehensive performance test (CPT) and confirmatory performance test (CfPT) required by the HWC NESHAP. These test reports were gathered from the websites of state and local governments or agencies where available, from the EPA regional offices, and from some industry stakeholders who voluntarily provided courtesy copies. The CPT and CfPT reports provide unit- and site-specific emissions information for the HAP regulated by the HWC NESHAP and are the basis for emissions of the currently regulated HAP in the risk modeling for the HWC source category. The collected emissions test reports used to develop emissions for the HWC source category are available in the docket for this proposed rule (Docket ID No. EPA-HQ-OAR-2004-0022).

In August 2023 and January 2024, the EPA issued requests to collect information from HWC facilities owned and operated by nine entities (*i.e.*, corporations) pursuant to CAA section 114. These facilities were chosen to represent the six HWC subcategories and commercial and captive units. The August 2023 request was a questionnaire designed to collect comprehensive information about process equipment, control technologies, emissions, composition of the hazardous waste feed to the unit, periods of SSM, and other aspects of facility operations. Companies submitted responses (and follow-up

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responses) in November 2023. A copy of the questionnaire and the information not claimed as CBI by respondents is available in the docket for this proposed rule.[34]

Following the review of the August 2023 questionnaire information, the EPA issued an emissions testing request to the same nine entities in January 2024 to obtain emissions information about targeted pollutants and to characterize emissions of any HAP not currently regulated by the HWC NESHAP. Companies submitted responsive emissions testing results (and follow-up responses) between September 2024 and November 2024. The EPA did not receive emissions testing results from one company that temporarily ceased operation of their HWCs between January 2024 and September 2024. The January 2024 request generally required emissions testing of PCBs, PAHs, hydrogen fluoride (HF), hydrogen cyanide (HCN), hydrogen bromide (HBr), THC, and supporting measurements like oxygen and moisture, though the requests were tailored to the specific survey responses of each recipient. Notably, all HCl production furnaces indicated in their survey responses that they do not feed any fluorine to their units because it would contaminate their HCl product with HF, and so HCl production furnaces were not required to test for HF. The EPA has used the collected information to identify and quantify emissions of HAP not measured during a CPT or CfPT, fill data gaps, and estimate the public health, environmental, and cost impacts associated with the regulatory options considered in this proposed action. A copy of the emissions testing request and the information not claimed as CBI by respondents is available in the docket for this proposed rule (Docket ID No. EPA-HQ-OAR-2004-0022).

[34] Docket ID No. EPA-HQ-OAR-2004-0022, Document ID No. EPA-HQ-OAR-2004-0022-0651.

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The EPA also conducted two site visits to HWC facilities in 2023. The primary goals of these site visits were to learn about the day-to-day operations of incinerators, solid fuel boilers, and cement kilns. Reports documenting these site visits are available in the docket for this proposed rule.[35]

D. What other relevant background information and data are available?

The EPA used emissions and supporting data from the National Emissions Inventory (NEI) based on emissions year 2022, supporting data from the database developed for the 2005 HWC NESHAP Final Rule, available RCRA trial or risk burn data, and CPT and CfPT stack test data from as many sources as possible to develop model file inputs for the residual risk assessment of sources subject to the HWC NESHAP.

The NEI is a database that contains information about sources that emit criteria air pollutants, their precursors, and HAP. The NEI contains data necessary for conducting risk modeling, including annual HAP emissions estimates from individual emissions sources at facilities and the related emissions release parameters. The database includes estimates of annual air pollutant emissions from point, nonpoint, and mobile sources in the 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands. The EPA collects this information and releases a full, updated version of the NEI database every three years. The 2022 emissions data is not a full, triennial NEI; instead, the 2020 NEI was taken as a basis and more recent 2022 data was incorporated. In cases where we had emissions and release point parameters for the same HWC from multiple data

[35] Docket ID No. EPA-HQ-OAR-2004-0022, Document ID Nos. EPA-HQ-OAR-2004-0022-0649 and EPA-HQ-OAR-2004-0022-0650.

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sources (*e.g.*, the NEI, CPT, and August 2023 questionnaire), we prioritized information in the following order: August 2023 questionnaire, CPT or CfPT data, then NEI data. Additional information on the development of the modeling file can be found in the docket for this proposed rule (Docket ID No. EPA-HQ-OAR-2004-0022).

To identify control technologies in use and determine whether there have been developments in practices, processes, or control technologies to consider under the technology review, the EPA collected information from the August 2023 questionnaire, January 2024 emissions testing request, CPT and CfPT reports, consent decrees involving HWCs regulated by the HWC NESHAP, and the Reasonably Available Control Technology (RACT)/Best Available Control Technology (BACT)/Lowest Achievable Emission Rate (LAER) Clearinghouse (RBLC). The EPA established the RBLC to provide a central database of air pollution technology information (including technologies required in source-specific permits) to promote the sharing of information among permitting agencies and to ais in identifying future control technology options that might apply to numerous sources within a category or only on a source-by-source basis.[36] The EPA also reviewed subsequent CAA regulatory actions for other source categories to determine whether there have been other developments in practices, processes, or control technologies that may also be applicable to the HWC NESHAP source category. Additional information about the technology review can be found in the docket for this proposed rule (Docket ID No. EPA-HQ-OAR-2004-0022).

[36] U.S. Environmental Protection Agency. (Last updated Sept. 29, 2025). RACT/BACT/LAER Clearinghouse (RBLC) Basic Information: *https://www.epa.gov/catc/ractbactlaer-clearinghouse-rblc-basic-information*.

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III. Analytical Procedures and Decision-Making

In this section, we describe the analyses performed to support the proposed decisions for the RTR and other issues addressed in this proposal.

A. How do we consider risk in our decision-making?

As discussed in section II.A. of this preamble and in the Benzene NESHAP, in evaluating and developing standards under CAA section 112(f)(2), we apply a two-step approach to determine whether or not risks are acceptable and to determine if the standards provide an ample margin of safety to protect public health. As explained in the Benzene NESHAP, "the first step judgment on acceptability cannot be reduced to any single factor" and, thus, "[t]he Administrator believes that the acceptability of risk under section 112 is best judged on the basis of a broad set of health risk measures and information."[37] Similarly, with regard to the ample margin of safety determination, "the Agency again considers all of the health risk and other health information considered in the first step" (*id.*). "Beyond that information, additional factors relating to the appropriate level of control will also be considered, including cost and economic impacts of controls, technological feasibility, uncertainties, and any other relevant factors" (*id.*).

The Benzene NESHAP approach provides flexibility regarding factors the EPA may consider in making determinations and how the EPA may weigh those factors for each source category.[38] The EPA conducts a risk assessment that provides estimates of the MIR posed by emissions of HAP that are carcinogens from each source in the source category, the hazard index (HI) for chronic exposures to HAP with the potential to cause

[37] 54 FR 38046, Sept. 14, 1989.
[38] *See NRDC*, 529 F.3d at 1082-1084.

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noncancer health effects, and the hazard quotient (HQ) for acute exposures to HAP with the potential to cause noncancer health effects.[39] The assessment also provides estimates of the distribution of cancer risk within the exposed populations, cancer incidence, and an evaluation of the potential for an adverse environmental effect. The scope of the EPA's risk analysis is consistent with the explanation in the EPA's response to comments on our policy under the Benzene NESHAP:

> The policy chosen by the Administrator permits consideration of multiple measures of health risk. Not only can the MIR figure be considered, but also incidence, the presence of non-cancer health effects, and the uncertainties of the risk estimates. In this way, the effect on the most exposed individuals can be reviewed as well as the impact on the general public. These factors can then be weighed in each individual case. This approach complies with the *Vinyl Chloride* mandate that the Administrator ascertain an acceptable level of risk to the public by employing his expertise to assess available data. It also complies with the Congressional intent behind the CAA, which did not exclude the use of any particular measure of public health risk from the EPA's consideration with respect to CAA section 112 regulations, and thereby implicitly permits consideration of any and all measures of health risk which the Administrator, in his judgment, believes are appropriate to determining what will "protect the public health."[40]

Thus, the level of the MIR is only one factor to be weighed in determining acceptability of risk. As the EPA explained in the Benzene NESHAP: "[A]n MIR of approximately one in 10 thousand should ordinarily be the upper end of the range of acceptability. As risks increase above this benchmark, they become presumptively less acceptable under [CAA] section 112 and would be weighed with the other health risk measures and

[39] The MIR is defined as the cancer risk associated with a lifetime of exposure at the highest concentration of HAP where people are likely to live. The HQ is the ratio of the potential HAP exposure concentration to the noncancer dose-response value; the HI is the sum of HQs for HAP that affect the same target organ or organ system.

[40] 54 FR 38057, Sept. 14, 1989.

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information in making an overall judgment on acceptability. Or, the Agency may find, in a particular case, that a risk that includes an MIR less than the presumptively acceptable level is unacceptable in the light of other health risk factors."[41] In other words, risks that include an MIR above 100-in-1 million (1-in-10 thousand) may be determined to be acceptable, and risks with an MIR below that level may be determined to be unacceptable, depending on the available health information. Similarly, with regard to the ample margin of safety analysis, the EPA stated in the Benzene NESHAP that: "EPA believes the relative weight of the many factors that can be considered in selecting an ample margin of safety can only be determined for each specific source category. This occurs mainly because technological and economic factors (along with the health-related factors) vary from source category to source category."[42] We also consider the uncertainties associated with the various risk analyses, as discussed later in this preamble, in our determinations of acceptability and ample margin of safety.

The EPA notes that, as a matter of longstanding practice, we do not attempt to quantify the HAP risk that may be associated with emissions from other facilities that do not include the source category under review, mobile source emissions, natural source emissions, persistent environmental pollution, or atmospheric transformation in the vicinity of the sources in the category. The EPA understands the potential importance of considering an individual's total exposure to HAP in addition to considering exposure to HAP emissions from the source category and facility. We recognize that such consideration may be particularly important when assessing noncancer risk, where

[41] *Id*. at Sept. 14, 1989.
[42] 54 FR 38061, Sept. 14, 1989.

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pollutant-specific exposure health reference levels (*e.g.*, reference concentrations (RfCs)) are based on the assumption that thresholds exist for adverse health effects. For example, the EPA recognizes that, although exposures attributable to emissions from a source category or facility alone may not indicate the potential for increased risk of adverse noncancer health effects in a population, the exposures resulting from emissions from the facility in combination with emissions from all of the other sources (*e.g.*, other facilities) to which an individual is exposed may be sufficient to result in an increased risk of adverse noncancer health effects. In May 2010, the Science Advisory Board (SAB) advised the EPA "that RTR assessments will be most useful to decision makers and communities if results are presented in the broader context of aggregate and cumulative risks, including background concentrations and contributions from other sources in the area."[43]

In response to the SAB recommendations, the EPA incorporates cumulative risk analyses into its RTR risk assessments. The Agency (1) conducts facility-wide assessments, which include source category emission points, as well as other emission points within the facilities; (2) combines exposures from multiple sources in the same category that could affect the same individuals; and (3) for some persistent and bioaccumulative pollutants, analyzes the ingestion route of exposure. In addition, the RTR risk assessments consider aggregate cancer risk from all carcinogens and aggregated

[43] Recommendations of the SAB Risk and Technology Review Methods Panel are provided in their report, which is available at: *https://www.epa.gov/sites/default/files/2021-02/documents/epa-sab-10-007-unsigned.pdf*.

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noncancer HQs for all noncarcinogens affecting the same target organ or target organ system.

Although we are interested in placing source category and facility-wide HAP risk in the context of total HAP risk from all sources combined in the vicinity of each source, we note there are uncertainties of doing so. Estimates of total HAP risk from emission sources other than those that we have studied in depth during this RTR review would have greater associated uncertainties than the source category or facility-wide estimates. We further note that CAA section 112(f)(2) does not require or authorize the EPA to promulgate standards based on cumulative assessments of a person's total exposure to HAP from all sources.

B. How do we perform the technology review?

The EPA's technology review primarily focuses on the identification and evaluation of developments in practices, processes, and control technologies that have occurred since the MACT standards were promulgated. Where we identify such developments, we analyze their technical feasibility, estimated costs, energy implications, and non-air environmental impacts. We also consider the emission reductions associated with the potential application of each development. This analysis informs our decision whether it is "necessary" to revise the emission standards. In addition, we consider the appropriateness of applying controls to new sources versus retrofitting existing sources. For this exercise, we consider any of the following to be a "development":[44]

[44] *Nat'l Ass'n for Surface Finishing v. EPA*, 795 F.3d 1, 11 (D.C. Cir. 2015) (upholding EPA's interpretation of what is considered "developments" under CAA section 112(d)(6) and deferring to EPA's methodology and balancing decisions for a technology review under the *Skidmore* standard of review).

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- Any add-on control technology or other equipment that was not identified and considered during development of the original MACT standards;
- Any improvements in add-on control technology or other equipment (that were identified and considered during development of the original MACT standards) that could result in additional emissions reduction;
- Any work practice or operational procedure that was not identified or considered during development of the original MACT standards;
- Any process change or pollution prevention alternative that could be broadly applied to the industry and that was not identified or considered during development of the original MACT standards; and
- Any significant changes in the cost (including cost effectiveness) of applying controls (including controls the EPA considered during the development of the original MACT standards).

In addition to reviewing the practices, processes, and control technologies that were considered at the time we originally developed the NESHAP, we review a variety of data sources in our investigation of potential practices, processes, or controls. Pursuant to the D.C. Circuit's decision in *LEAN*, we also review available data to determine if there are any unregulated emissions of HAP within the source category and evaluate this data for use in developing new emission standards. The *LEAN* decision requires the EPA to address regulatory gaps when reviewing MACT standards, such as missing standards for listed air toxics known to be emitted from a major source category. See sections II.C. and

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II.D of this preamble for information on the specific data sources that were reviewed as part of the technology review.

C. How do we estimate post-MACT risk posed by the source category?

In this section, the EPA provides a description of the types of analyses that we generally perform during the risk assessment process. In some cases, we do not perform a specific analysis because it is not relevant. For example, in the absence of emissions of HAP known to be persistent and bioaccumulative in the environment (PB-HAP), we would not perform a multipathway exposure assessment. Where we do not perform an analysis, we state that we do not and provide the reason. While we present all of our risk assessment methods, we only present risk assessment results for the analyses actually conducted (see section IV.B. of this preamble).

The EPA conducts a risk assessment that provides estimates of the MIR for cancer posed by the HAP emissions from each source in the source category, the HI for chronic exposures to HAP with the potential to cause noncancer health effects, and the HQ for acute exposures to HAP with the potential to cause noncancer health effects. The assessment also provides estimates of the distribution of cancer risk within the exposed populations, cancer incidence, and an evaluation of the potential for an adverse environmental effect, taking into consideration the factors set out in CAA section 112(f). The following eight subsections describe how we estimated emissions and conducted the risk assessment. The docket for this proposed rule contains the following document which provides more information on the risk assessment inputs and models: *Residual Risk Assessment for the Hazardous Waste Combustor Source Category in Support of the*

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2025 Risk and Technology Review Proposed Rule. The methods used to assess risk (as described in the eight primary steps below) are consistent with those described by the EPA in the document reviewed by a panel of the EPA's SAB in 2009;[45] and described in the SAB review report issued in 2010.[46] They are also consistent with the key recommendations contained in that report.

1. How did we estimate actual emissions and identify the emissions release characteristics?

The EPA used the actual emissions and emissions release characteristics from the NEI based on emissions year 2022 for each HWC facility to create the initial risk modeling input file. For each NEI record, the EPA reviewed the standard classification code, emission unit description, and process description to classify each record as either belonging to the source category (*i.e.*, the record represents emissions from an HWC) or not belonging to the source category. Source category emissions of HAP are stack emissions only because the source category is specific to the HWC unit. We included both stack and fugitive emissions in non-category records. We removed duplicate emission records for an HWC. For example, some facilities listed emissions from the HWC when the unit was and was not combusting hazardous waste separately. To consolidate these records, we removed the records identified as periods when hazardous

[45] U.S. Environmental Protection Agency. (Last updated Mar. 20, 2012). Risk and Technology Review (RTR) Risk Assessment Methodologies: For Review by the EPA's Science Advisory Board – Case Studies – MACT I Petroleum Refining Sources and Portland Cement Manufacturing (EPA-452/R-09-006): https://cfpub.epa.gov/si/si_public_record_report.cfm?LAB=OAQPS&dirEntryID=238928.

[46] U.S. Environmental Protection Agency. (Last updated May 7, 2010). Review of EPA's draft entitled, "Risk and Technology Review (RTR) Risk Assessment Methodologies: For Review by the EPA's Science Advisory Board – Case Studies – MACT I Petroleum Refining Sources and Portland Cement Manufacturing": *https://www.epa.gov/sites/default/files/2021-02/documents/epa-sab-10-007-unsigned.pdf*. This document is a prepublication version, signed by EPA Administrator, Lee Zeldin on 10/28/2025. We have taken steps to ensure the accuracy of this version, but it is not the official version.

waste was not being combusted. We then cross-referenced each source category record against the facility list and added units in the facility list that could not be identified in the NEI records. We identified emission release characteristics from emissions testing information, as available.

Emissions test data or values derived from emissions test data replaced or augmented NEI data for HWC emissions of PCDD/PCDF, HAP metals, HCl, chlorine gas, PCBs, PAHs, HF, and HCN. When we had CPT data or data responsive to the CAA section 114 emissions testing request for a unit, we used that data to estimate emissions. Most of the data were concentration data, and we calculated emissions on a tpy basis using the stack gas flow rate and by assuming that units operate 8,760 hours (hr) per year (*i.e.*, continuous operation). Some of the data were in a thermal concentration format (like pounds (lb) per million british thermal units (MMBTU)), and we used the thermal hazardous waste feedrate (MMBTU/hr) to calculate emissions. When we had units with data from multiple CPTs, test conditions, or runs, we used the mean to estimate annual emissions (tpy). For cement kilns with in-line raw mills, we calculated weighted averages to account for the typical time spent with the raw mill on (85 percent) and off (15 percent).

In accordance with the HWC NESHAP, owners and operators conduct CPTs at worst-case test conditions. Companies use multiple strategies to ensure that CPTs are conducted at worst-case conditions, including operating at worst-case operating parameter limits (*e.g.*, low combustion chamber temperature, high hazardous waste feed rate, high stack gas velocity) and intentionally adding extra HAP, HAP surrogates, or

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HAP precursors to the feed of the HWC to account for potential variability in the HWC feed. This means that emissions estimates based on CPT data are conservative, worst-case estimates. We expect that actual annual HAP emissions are lower than the estimates based on CPT data.

The EPA used CfPT data to help account for the conservative, worst-case estimates, where available. Unlike CPTs, CfPTs are conducted at normal operating conditions, and so we expect operating parameters to better reflect average operations of HWCs. CfPTs are only conducted for incinerators, cement kilns, lightweight aggregate kilns, and some liquid fuel boilers. Only PCDD/PCDF is measured when CfPTs are conducted. To scale the estimates produced by the CPT data to better resemble normal operating conditions, we developed ratios between the average stack gas flow rate during CPTs and CfPTs ("CPT adjustment factor") and used them to adjust the CPT emissions estimates, with a maximum value of one.

The HWC NESHAP regulates metal HAP in groups: Hg; Cd and Pb are regulated as SVM; As, Be, and Cr are regulated as LVM (except for liquid fuel boilers, where the LVM standard regulates Cr only); and Sb, Co, Mn, Ni, and Se are typically regulated by PM surrogate. Because the HWC NESHAP regulates metals in groups, metals are often reported by group in CPT results; however, the residual risk review requires the emissions of each metal to be determined separately. Cr also required further speciation because Cr species vary widely in both physiochemical properties and toxicity. To separate these results, the EPA developed speciation factors for Cr, SVM, LVM, and the other metals (regulated using PM as a surrogate) by unit type using the database

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developed for the 2005 HWC NESHAP final rule.[47] Generally, we developed the speciation factors by calculating the ratio of the emission of the chemical species in question to the emission of the total group. We averaged speciation factors by unit type, and only the unit type averages were used to account for variability in chemical speciation. We also used standard Hg speciation factors to calculate emissions for Hg species with different physiochemical and toxicity properties. For liquid fuel boilers, the only regulated LVM is Cr, so speciation of Cr from LVM was not required. We did not speciate liquid fuel boiler emissions of As and Be from PM; instead, we collected separate emissions testing data (from trial or risk burns, or to demonstrate compliance with state or RCRA limits) for As and Be and used the data to estimate emissions.

We did not have complete data to support unit-specific estimates for all units. The EPA made several informed assumptions to help fill the gaps. First, the EPA calculated average CPT adjustment factors for each unit type and applied those factors for units without a unit-specific CPT adjustment factor. Two HWC subcategories, solid fuel boilers and HCl production furnaces, are required to conduct CPTs but not CfPTs. We assumed that the unit type average CPT adjustment factor for these units was the average of the four other unit subcategory average CPT adjustment factors. Second, some companies have units that have been deemed identical units ("sister units") for the purpose of demonstrating compliance with the HWC NESHAP. Typically, the companies perform emissions testing on one HWC of a set of sister units, and they attribute the

[47] Docket ID No. EPA-HQ-OAR-2004-0022, Document ID No. EPA-HQ-OAR-2004-0022-0433. Available at *https://www.epa.gov/stationary-sources-air-pollution/hazardous-waste-combustors-national-emission-standards-hazardous*.

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results to the sister units. When an HWC did not have emissions data, but a sister unit did, we attributed those emissions to all sister unit HWCs without unit-specific data. Third, we calculated average emissions for each unit subcategory. We assumed that the emissions for an HWC without emissions data for a specific HAP were the average emissions of the unit subcategory. We applied this assumption widely for PCBs, PAHs, HF, and HCN because most of the emissions data represented a limited number of HWCs in the January 2024 emissions testing request. No emissions data were submitted in response to the January 2024 emissions testing request for lightweight aggregate kilns; instead, we combined the maximum concentration of each pollutant measured in the January 2024 emissions testing request and the average stack gas flow rate for lightweight aggregate kilns to estimate conservative emissions of these HAP from lightweight aggregate kilns. Fourth, for units with HAP emissions estimated by the HWC subcategory average emission, we substituted the estimated allowable emissions for the HWC subcategory average emission if the HWC subcategory average emission exceeded the estimated allowable emissions (calculated as described in section III.C.2. of this preamble). This affected HWCs with a known flow rate but no known concentration, and it allowed us to better estimate actual emissions from HWCs with smaller-than-average flow rates since the average emissions from the HWC subcategory are based on units with higher flow rates.

Additional information on the development of the modeling file for the HWC NESHAP source category, including the development of the actual emissions and

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emissions release characteristics, can be found in the docket for this proposed rule (Docket ID No. EPA-HQ-OAR-2004-0022).

2. How did we estimate MACT-allowable emissions?

The available emissions data in the RTR emissions dataset include estimates of the mass of HAP emitted during a specified annual time period. These "actual" emission levels are often lower than the emission levels allowed under the requirements of the current MACT standards. The emissions allowed under the MACT standards are referred to as the "MACT-allowable" emissions. We discussed the consideration of both MACT-allowable and actual emissions in the final Coke Oven Batteries RTR (70 FR 19992, 19998–99, Apr. 15, 2005) and in the proposed and final Hazardous Organic NESHAP RTR (71 FR 34421, 34428, June 14, 2006; 71 FR 76603, 76609, Dec. 21, 2006). In those actions, we noted that assessing the risk at the MACT-allowable level is inherently reasonable since that risk reflects the maximum level facilities could emit and still comply with NESHAP. We also explained that it is reasonable to consider actual emissions, where such data are available, in both steps of the risk analysis, in accordance with the Benzene NESHAP approach (54 FR 38044).

The current HWC NESHAP specifies numeric emission limits for PCDD/PCDF, HAP metals (directly, as groups, or through a surrogate), HCl, and chlorine gas for existing and new HWCs. These limits were used as the basis for calculating the MACT-allowable emissions. CPT stack gas flow rates and thermal hazardous waste feed rates were identified for each HWC, where possible. For HWCs without stack gas flow rate or thermal feed rate data, average rates were calculated for each type of HWC and used to

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fill gaps. These rates were combined with the emission limits and the assumption of 8,760 hours of operation per year (*i.e.*, 24 hours per day, 365 days per year) to produce the upper bound of MACT-allowable emissions. In the case where a standard has two formats (*i.e.*, both a mass and thermal concentration basis), we took the greater of the two as the MACT-allowable emission. We then speciated the MACT-allowable emissions following the same procedures as the actual emissions, except that we speciated As and Be MACT-allowable emissions for liquid fuel boilers were speciated from PM. For PAHs, PCBs, HCN, and HF, we estimated the unit type allowable emissions from the average actual emissions for each unit type.

For the HWC source category, actual emissions tend to be lower than allowable emissions, in some cases much lower. This shows that HWCs are generally performing better than they are required to by the HWC NESHAP. We generally expect that actual emissions will be lower than allowable emissions because HWCs must demonstrate that their emissions are consistently below the emission limits, which practically means that they operate in such a manner as to be far enough below the emission limit that slight variations in the combustor operation would not cause them to exceed the emission limit. We use the full value of the emission limit to calculate allowable emissions. Another contributing factor in some cases could be that additional non-HWC NESHAP emission limits are established for HWCs under RCRA. Most HWCs have completed site-specific risk assessments using RCRA methodology and under specific provisions of RCRA. Some HWCs may have additional emission restrictions under RCRA based on those results. The methodologies in the RCRA site-specific risk assessments and this CAA

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residual risk review are not comparable, and one should not be used in lieu of the other. Additional information on the development of the modeling file for the HWC NESHAP source category, including the estimation of MACT-allowable emissions, can be found in the docket for this proposed rule (Docket ID No. EPA-HQ-OAR-2004-0022).

3. How do we conduct dispersion modeling, determine inhalation exposures, and estimate individual and population inhalation risk?

Both long- and short-term inhalation exposure concentrations and health risk from the source category addressed in this proposal were estimated using the Human Exposure Model (HEM).[48] The HEM performs three primary risk assessment activities: (1) conducting dispersion modeling to estimate the concentrations of HAP in ambient air; (2) estimating long- and short-term inhalation exposures to individuals residing within 50 kilometers (km) of the modeled sources; and (3) estimating individual and population-level inhalation risk using the exposure estimates and quantitative dose-response information.

a. Dispersion Modeling

The air dispersion model AERMOD (American Meteorological Society/EPA Regulatory Model dispersion modeling system), used by the HEM model, is one of the EPA's preferred models for assessing air pollutant concentrations from industrial facilities.[49] To perform the dispersion modeling and to develop the preliminary risk estimates, HEM draws on three data libraries. The first is a library of meteorological data,

[48] For more information about HEM, go to *https://www.epa.gov/fera/risk-assessment-and-modeling-human-exposure-model-hem*.

[49] U.S. EPA. Revision to the *Guideline on Air Quality Models: Adoption of a Preferred General Purpose (Flat and Complex Terrain) Dispersion Model and Other Revisions* (70 FR 68218, Nov. 9, 2005).

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which is used for dispersion calculations. This library includes one year (2019) of hourly surface and upper air observations from over 800 meteorological stations, selected to provide coverage of the United States and Puerto Rico. A second library of United States Census Bureau census block[50] internal point locations and populations provides the basis of human exposure calculations (U.S. Census, 2020). In addition, for each census block, the census library includes the elevation and controlling hill height, which are also used in dispersion calculations. A third library of pollutant-specific dose-response values is used to estimate health risk. These are discussed below.

b. Risk from Chronic Exposure to HAP

In developing the risk assessment for chronic exposures, we use the estimated annual average ambient air concentrations of each HAP emitted by each source in the source category. The HAP air concentrations at each nearby census block centroid located within 50 km of the facility are a surrogate for the chronic inhalation exposure concentration for all the people who reside in that census block. A distance of 50 km is consistent with both the analysis supporting the 1989 Benzene NESHAP (54 FR 38044) and the limitations of Gaussian dispersion models, including AERMOD.

For each facility, we calculate the MIR as the cancer risk associated with health protective assumptions, such as a continuous lifetime (24 hours per day, seven days per week, 52 weeks per year, 70 years) exposure to the maximum annual average concentration at the centroid of each inhabited census block. This is meant to provide an upper bound estimate of cancer risks as people are unlikely to be in the same location for

[50] A census block is the smallest geographic area for which census statistics are tabulated.

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70 years. We calculate individual cancer risk by multiplying the estimated lifetime exposure to the ambient concentration of each HAP (in micrograms per cubic meter ($\mu g/m^3$)) by its unit risk estimate (URE). The URE is an upper-bound estimate of an individual's incremental risk of contracting cancer over a lifetime of exposure to a concentration of 1 $\mu g/m^3$ of air. For residual risk assessments, we currently use UREs from the EPA's Integrated Risk Information System (IRIS) when they are available. For carcinogenic pollutants without IRIS values, we look to other reputable sources of cancer dose-response values, often using California EPA (CalEPA) UREs, where available. In cases where new, scientifically credible dose-response values have been developed in a manner consistent with EPA guidelines and have undergone a peer review process similar to that used by the EPA, we may use such dose-response values in place of, or in addition to, other values, if appropriate. The pollutant-specific dose-response values used to estimate health risk are available at *https://www.epa.gov/fera/dose-response-assessment-assessing-health-risks-associated-exposure-hazardous-air-pollutants*.

To estimate individual lifetime cancer risks associated with exposure to HAP emissions from each facility in the source category, we sum the risks for each of the carcinogenic HAP[51] emitted by the modeled facility. We estimate cancer risk at every

[51] The EPA's 2005 *Guidelines for Carcinogen Risk Assessment* identifies five recommended standard hazard descriptors: "Carcinogenic to Humans," "Likely to Be Carcinogenic to Humans," "Suggestive

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census block within 50 km of every facility in the source category. The MIR is the highest individual lifetime cancer risk estimated for any of those census blocks. In addition to calculating the MIR, we estimate the distribution of individual cancer risks for the source category by summing the number of individuals within 50 km of the sources whose estimated risk falls within a specified risk range. We also estimate annual cancer incidence by multiplying the estimated lifetime cancer risk at each census block by the number of people residing in that block, summing results for all of the census blocks, and then dividing this result by a 70-year lifetime.

To assess the risk of noncancer health effects from chronic exposure to HAP, we calculate either an HQ or a target organ-specific hazard index (TOSHI). We calculate an HQ when a single noncancer HAP is emitted. Where more than one noncancer HAP is emitted, we sum the HQ for each of the HAP that affects a common target organ or target organ system to obtain a TOSHI. The HQ is the estimated exposure divided by the chronic noncancer dose-response value, which is a value selected from one of several sources. The preferred chronic noncancer dose-response value is the EPA RfC, defined as "an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous

Evidence of Carcinogenic Potential," "Inadequate Information to Assess Carcinogenic Potential," and "Not Likely to Be Carcinogenic to Humans." The first three are treated as carcinogenic and coincide with the terms "known carcinogen, probable carcinogen, and possible carcinogen," respectively, which are the terms advocated in the EPA's *Guidelines for Carcinogen Risk Assessment*, published in 1986 (51 FR 33992, Sept. 24, 1986). In August 2000, the EPA published a document entitled *Supplemental Guidance for Conducting Health Risk Assessment of Chemical Mixtures* (EPA/630/R-00/002) as a supplement to the 1986 document. Copies of both documents can be obtained from *https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=20533&CFID=70315376&CFTOKEN=71597944*. Summing the risk of these individual compounds to obtain the cumulative cancer risk is an approach that was recommended by the EPA's SAB in their 2002 peer review of the EPA's National Air Toxics Assessment (NATA) titled *NATA - Evaluating the National-scale Air Toxics Assessment* 1996 Data -- an SAB Advisory, available at *https://archive.epa.gov/airtoxics/nata/web/html/sabrev.html*.

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inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime."[52] In cases where an RfC from the EPA's IRIS is not available or where the EPA determines that using a value other than the RfC is appropriate, the chronic noncancer dose-response value can be a value from the following prioritized sources, which define their dose-response values similarly to the EPA: (1) the Agency for Toxic Substances and Disease Registry (ATSDR) Minimum Risk Level (*https://www.atsdr.cdc.gov/minimal-risk-levels/about/index.html*); (2) the CalEPA Chronic Reference Exposure Level (REL) (*https://oehha.ca.gov/air/general-info/oehha-acute-8-hour-and-chronic-reference-exposure-level-rel-summary*); or (3) as noted above, a scientifically credible dose-response value that has been developed in a manner consistent with EPA guidelines and has undergone a peer review process similar to that used by the EPA. The pollutant-specific dose-response values used to estimate health risks are available at *https://www.epa.gov/fera/dose-response-assessment-assessing-health-risks-associated-exposure-hazardous-air-pollutants*.

c. Risk from Acute Exposure to HAP that May Cause Health Effects Other Than Cancer

For each HAP for which appropriate acute inhalation dose-response values are available, the EPA also assesses the potential health risks due to acute exposure. For these assessments, the EPA makes health protective assumptions about emission rates, meteorology, and exposure location. As part of our efforts to continually improve our methodologies to evaluate the risks that HAP emitted from categories of industrial

[52] U.S. Environmental Protection Agency. (Last updated May 2, 2025). IRIS Glossary: *https://www.epa.gov/iris/iris-glossary*.

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sources pose to human health and the environment,[53] we revised our treatment of meteorological data to use reasonable worst-case air dispersion conditions in our acute risk screening assessments instead of worst-case air dispersion conditions. This revised treatment of meteorological data and the supporting rationale are described in more detail in *Residual Risk Assessment for the Hazardous Waste Combustor Source Category in Support of the 2025 Risk and Technology Review Proposed Rule* and in appendix 5 of the report: *Technical Support Document for Acute Risk Screening Assessment,* which are available in the docket for this proposed rule. This revised approach has been used in this proposed rule and in all other RTR rulemakings proposed on or after June 3, 2019.[54]

To assess the potential acute risk to the maximally exposed individual, we use the peak hourly emission rate for each emission point,[55] reasonable worst-case air dispersion conditions (*i.e.*, 99th percentile), and the point of highest off-site exposure. Specifically, we assume that peak emissions from the source category and reasonable worst-case air dispersion conditions co-occur and that a person is present at the point of maximum exposure.

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[53] *See, e.g.*, U.S. EPA. *Screening Methodologies to Support Risk and Technology Reviews (RTR): A Case Study Analysis* (Report, Sept. 2018). *https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=OAQPS&dirEntryID=307074*.

[54] See for example, 85 FR 40740, (July 7, 2020) (Organic Liquids Distribution RTR); 85 FR 40386, (July 6, 2020) (Ethylene Production RTR); 85 FR 15608, (March 18, 2020) (Solvent Extraction for Vegetable Oil Production RTR).

[55] In the absence of hourly emission data, we develop estimates of maximum hourly emission rates by multiplying the average actual annual emission rates by a factor (either a category-specific factor or a default factor of 10) to account for variability. We used the default factor of 10 for this risk assessment because we did not have hourly emissions data. This is documented in *Residual Risk Assessment for the Hazardous Waste Combustor Source Category in Support of the 2025 Risk and Technology Review Proposed Rule* and in appendix 5 of the report: *Technical Support Document for Acute Risk Screening Assessment*. Both are available in the docket for this rulemaking.

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To characterize the potential health risks associated with estimated acute inhalation exposures to a HAP, we generally use multiple acute dose-response values, including acute RELs, acute exposure guideline levels (AEGLs), and emergency response planning guidelines (ERPG) for 1-hour exposure durations, if available, to calculate acute HQs. The acute HQ is calculated by dividing the estimated acute exposure concentration by the acute dose-response value. For each HAP for which acute dose-response values are available, the EPA calculates acute HQs.

An acute REL is defined as "the concentration level at or below which no adverse health effects are anticipated for a specified exposure duration."[56] Acute RELs are based on the most sensitive, relevant, adverse health effect reported in the peer-reviewed medical and toxicological literature. They are designed to protect the most sensitive individuals in the population through the inclusion of margins of safety. Because margins of safety are incorporated to address data gaps and uncertainties, exceeding the REL does not automatically indicate an adverse health impact. AEGLs represent threshold exposure limits for the general public and are applicable to emergency exposures ranging from 10 minutes to eight hours.[57] They are guideline levels for "once-in-a-lifetime, short-term

[56] CalEPA issues acute RELs as part of its *Air Toxics Hot Spots Program*, and the 1-hour and 8-hour values are documented in *Air Toxics Hot Spots Program Risk Assessment Guidelines, Part I*, *The Determination of Acute Reference Exposure Levels for Airborne Toxicants*, which is available at *https://oehha.ca.gov/air/general-info/oehha-acute-8-hour-and-chronic-reference-exposure-level-rel-summary*.

[57] National Academy of Sciences, 2001. Standing Operating Procedures for Developing Acute Exposure Levels for Hazardous Chemicals, at 2. Available at *https://www.epa.gov/sites/production/files/2015-09/documents/sop_final_standing_operating_procedures_2001.pdf*. Note that the National Advisory Committee for Acute Exposure Guideline Levels for Hazardous Substances ended in October 2011, but the AEGL program continues to operate at the EPA and works with the National Academies to publish final AEGLs *(https://www.epa.gov/aegl*).

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exposures to airborne concentrations of acutely toxic, high-priority chemicals."[58] The AEGL–1 is specifically defined as "the airborne concentration (expressed as ppm (parts per million) or mg/m^3 (milligrams per cubic meter)) 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." The document also notes that "Airborne concentrations below AEGL–1 represent exposure levels that can produce mild and progressively increasing but transient and nondisabling odor, taste, and sensory irritation or certain asymptomatic, nonsensory effects."[59] AEGL–2 are defined as "the airborne concentration (expressed as parts per million or milligrams per cubic meter) 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."[60]

ERPGs are developed by the American Industrial Hygiene Association (AIHA) for emergency planning and are intended to be health-based guideline concentrations for single exposures to chemicals. The ERPG–1 is the maximum airborne concentration established by AIHA below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing other than mild transient adverse health effects or without perceiving a clearly defined, objectionable odor. Similarly, the ERPG–2 is the maximum airborne concentration established by AIHA below which it is believed

[58] *Id.* at 21.
[59] *Id.*
[60] *Id.*

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that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action.

An acute REL for 1-hour exposure durations is typically lower than its corresponding AEGL–1 and ERPG–1. Even though their definitions are slightly different, AEGL–1s are often the same as the corresponding ERPG–1s, and AEGL–2s are often equal to ERPG–2s. The maximum HQs from our acute inhalation screening risk assessment typically result when we use the acute REL for a HAP. In cases where the maximum acute HQ exceeds 1, we also report the HQ based on the next highest acute dose-response value (usually the AEGL–1 and/or the ERPG–1). In our acute inhalation screening risk assessment, acute impacts are deemed negligible for HAP for which acute HQs are less than or equal to 1, and no further analysis is performed for these HAP. In cases where an acute HQ from the screening step is greater than 1, we assess the site-specific data to ensure that the acute HQ is at an off-site location. For this source category, the data refinements employed consisted of reviewing satellite imagery of the locations of the maximum acute HQ values to determine if the maximum was off facility property. For any maximum value that was determined to be on facility property, the next highest value that was off facility property was used. These refinements are discussed more fully in the *Residual Risk Assessment for the Hazardous Waste Combustor Source Category in Support of the 2025 Risk and Technology Review Proposed Rule*, which is available in the docket for this proposed rule.

4. How do we conduct the multipathway exposure and risk screening assessment?

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The EPA conducts a tiered screening assessment examining the potential for significant human health risks due to exposures via routes other than inhalation (*i.e.*, ingestion). We first determine whether any sources in the source category emit any HAP known to be persistent and bioaccumulative in the environment, as identified in the EPA's Air Toxics Risk Assessment Library.[61]

For the HWC source category, we identified PB-HAP emissions of As compounds, Cd compounds, PCDD/PCDF, Pb, polycyclic organic matter (POM), and Hg, so we proceeded to the next step of the evaluation. Except for Pb, the human health risk screening assessment for PB-HAP consists of three progressive tiers. In a Tier 1 screening assessment, we determine whether the magnitude of the facility-specific emissions of PB-HAP warrants further evaluation to characterize human health risk through ingestion exposure. To facilitate this step, we evaluate emissions against previously developed screening threshold emission rates for several PB-HAP that are based on a hypothetical upper-end screening exposure scenario developed for use in conjunction with the EPA's Total Risk Integrated Methodology.Fate, Transport, and Ecological Exposure (TRIM.FaTE) model. The PB-HAP with screening threshold emission rates are As compounds, Cd compounds, PCDD/PCDF, Hg compounds, and POM. Based on the EPA estimates of toxicity and bioaccumulation potential, these pollutants represent a conservative list for inclusion in multipathway risk assessments for RTR rules.[62] In this assessment, we compare the facility-specific emission rates of these

[61] *See* volume 1, appendix D, at *https://www.epa.gov/fera/risk-assessment-and-modeling-air-toxics-risk-assessment-reference-library*.
[62] *Id.*

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PB-HAP to the screening threshold emission rates for each PB-HAP to assess the potential for significant human health risks via the ingestion pathway. We call this application of the TRIM.FaTE model the Tier 1 screening assessment. The ratio of a facility's actual emission rate to the Tier 1 screening threshold emission rate is a "screening value."

We derive the Tier 1 screening threshold emission rates for these PB-HAP (other than Pb compounds) to correspond to a maximum excess lifetime cancer risk of 1-in-1 million (*i.e.*, for As compounds, PCDD/PCDF, and POM) or, for HAP that cause noncancer health effects (*i.e.*, Cd compounds and Hg compounds), a maximum HQ of one. If the emission rate of any one PB-HAP or combination of carcinogenic PB-HAP in the Tier 1 screening assessment exceeds the Tier 1 screening threshold emission rate for any facility (*i.e.*, the screening value is greater than 1), we conduct a second screening assessment, which we call the Tier 2 screening assessment. The Tier 2 screening assessment separates the Tier 1 combined fisher and farmer exposure scenario into fisher, farmer, and gardener scenarios that retain upper-bound ingestion rates.

In the Tier 2 screening assessment, the location of each facility that exceeds a Tier 1 screening threshold emission rate is used to refine the assumptions associated with the Tier 1 fisher and farmer exposure scenarios at that facility. A key assumption in the Tier 1 screening assessment is that a lake and/or farm is located near the facility. As part of the Tier 2 screening assessment, we use a U.S. Geological Survey (USGS) database to identify actual waterbodies within 50 km of each facility and assume the fisher only consumes fish from lakes within that 50 km zone. We also examine the differences

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between local meteorology near the facility and the meteorology used in the Tier 1 screening assessment. We then adjust the previously developed Tier 1 screening threshold emission rates for each PB-HAP for each facility based on an understanding of how exposure concentrations estimated for the screening scenario change with the use of local meteorology and the USGS lakes database.

In the Tier 2 farmer scenario, we maintain an assumption that the farm is located within 0.5 km of the facility and that the farmer consumes meat, eggs, dairy, vegetables, and fruit produced near the facility. We may further refine the Tier 2 screening analysis by assessing a gardener scenario to characterize a range of exposures, with the gardener scenario being more plausible in RTR evaluations. Under the gardener scenario, we assume the gardener consumes home-produced eggs, vegetables, and fruit products at the same ingestion rate as the farmer. The Tier 2 screen continues to rely on the high-end food intake assumptions that were applied in Tier 1 for local fish (adult female angler at 99th percentile fish consumption)[63] and locally grown or raised foods (90th percentile consumption of locally grown or raised foods for the farmer and gardener scenarios).[64] If PB-HAP emission rates do not result in a Tier 2 screening value greater than 1, we consider those PB-HAP emissions to pose risks below a level of concern. If the PB-HAP emission rates for a facility exceed the Tier 2 screening threshold emission rates, we may conduct a Tier 3 screening assessment.

[63] Burger, J. (2002). Daily consumption of wild fish and game: Exposures of high end recreationists. *International Journal of Environmental Health Research*, 12, 343–354: https://doi.org/10.1080/0960312021000056393.

[64] U.S. Environmental Protection Agency. (Last updated Mar. 21, 2022). Exposure Factors Handbook 2011 Edition (Final Report): https://iris.epa.gov/document/&deid=236252.

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There are several analyses that can be included in a Tier 3 screening assessment, depending upon the extent of refinement warranted, including validating that the lakes are fishable, locating residential/garden locations for urban and/or rural settings, considering plume-rise to estimate emissions lost above the mixing layer, and considering hourly effects of meteorology and plume-rise on chemical fate and transport (a time-series analysis). If necessary, the EPA may further refine the screening assessment through a site-specific assessment.

In evaluating the potential multipathway risk from emissions of Pb compounds, rather than developing a screening threshold emission rate, it is our longstanding practice to compare maximum estimated chronic inhalation exposure concentrations to the level of the current National Ambient Air Quality Standard (NAAQS) for Pb.[65] Values below the level of the primary (health-based) Pb NAAQS are considered to have a low potential for multipathway risk.

For further information on the multipathway assessment approach, see the *Residual Risk Assessment for the Hazardous Waste Combustor Source Category in Support of the Risk and Technology Review 2025 Proposed Rule*, which is available in the docket for this proposed rule.

5. How do we assess risks considering emissions control options?

[65] In doing so, the EPA notes that the legal standard for a primary NAAQS—that a standard is requisite to protect public health and provide an adequate margin of safety (CAA section 109(b)) —differs from the CAA section 112(f) standard (requiring, among other things, that the standard provide an "ample margin of safety to protect public health"). However, the primary lead NAAQS is a reasonable measure of determining risk acceptability (i.e., the first step of the Benzene NESHAP analysis) since it is designed to protect the most susceptible group in the human population—children, including children living near major lead emitting sources. 73 FR 67002, (Oct. 18, 2006); 73 FR 67000; 73 FR 67005. In addition, applying the level of the primary lead NAAQS at the risk acceptability step is conservative, since that primary lead NAAQS reflects an adequate margin of safety.

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In addition to assessing baseline inhalation risks and screening for potential multipathway risks, we also estimate risks considering the potential emission reductions that would be achieved by the control options under consideration. In these cases, the expected emission reductions are applied to the specific HAP and emission points in the RTR emissions dataset to develop corresponding estimates of risk and incremental risk reductions.

6. How do we conduct the environmental risk screening assessment?

a. Adverse Environmental Effect, Environmental HAP, and Ecological Benchmarks

The EPA conducts a screening assessment to examine the potential for an adverse environmental effect as required under CAA section 112(f)(2)(A). This section authorizes the Agency to adopt more stringent standards than MACT standards, if necessary, "to prevent, taking into consideration costs, energy, safety, and other relevant factors, an adverse environmental effect." CAA section 112(a)(7) defines "adverse environmental effect" as "any significant and widespread adverse effect, which may reasonably be anticipated, to wildlife, aquatic life, or other natural resources, including adverse impacts on populations of endangered or threatened species or significant degradation of environmental quality over broad areas."

In conducting the screening assessment during the risk review, under CAA section 112(f)(2)(A), it is the EPA's long-standing practice to focus on eight HAP, which are referred to as "environmental HAP": six PB-HAP and two acid gases. The PB-HAP included in the screening assessment are As compounds, Cd compounds, PCDD/PCDF,

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POM, Hg (both inorganic and methylmercury), and Pb compounds. The acid gases included in the screening assessment are HCl and HF.

HAP that persist and bioaccumulate are of particular environmental concern because they accumulate in the soil, sediment, and water. The acid gases, HCl and HF, are included due to their well-documented potential to cause direct damage to terrestrial plants. In the environmental risk screening assessment, we evaluate the following four exposure media: terrestrial soils, surface water bodies (includes water-column and benthic sediments), fish consumed by wildlife, and air. Within these four exposure media, we evaluate nine ecological assessment endpoints, which are defined by the ecological entity and its attributes. For PB-HAP other than Pb, both community-level and population-level endpoints are included. For acid gases, the ecological assessment evaluated is terrestrial plant communities.

An ecological benchmark represents a concentration of HAP that has been linked to a particular environmental effect level. For each environmental HAP, we identified the available ecological benchmarks for each assessment endpoint. We identified, where possible, ecological benchmarks at the following effect levels: probable effect levels, lowest-observed-adverse-effect level (LOAEL), and no-observed-adverse-effect level (NOAEL). In cases where multiple effect levels were available for a particular PB-HAP and assessment endpoint, we use all of the available effect levels to help us determine whether ecological risks exist and, if so, whether the risks could be considered significant and widespread.

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For further information on how the environmental risk screening assessment was conducted, including a discussion of the risk metrics used, how the environmental HAP were identified, and how the ecological benchmarks were selected, see appendix 9 of the *Residual Risk Assessment for the Hazardous Waste Combustor Source Category in Support of the Risk and Technology Review 2025 Proposed Rule*, which is available in the docket for this proposed rule.

b. Environmental Risk Screening Methodology

For the environmental risk screening assessment, the EPA first determined whether any facilities in the HWC source category emitted any of the environmental HAP. For the HWC source category, we identified emissions of As compounds, Cd compounds, PCDD/PCDF, Pb, POM, Hg, HCl, and HF. Because one or more of the environmental HAP evaluated—As compounds, Cd compounds, PCDD/PCDF, Pb, POM, Hg, HCl, and HF—are emitted by at least one facility in the source category, we proceeded to the second step of the evaluation.

c. PB-HAP Methodology

The environmental screening assessment includes six PB-HAP—As compounds, Cd compounds, PCDD/PCDF, POM, Hg (both inorganic and methylmercury), and Pb compounds. With the exception of Pb, the environmental risk screening assessment for PB-HAP consists of three tiers. The first tier of the environmental risk screening assessment uses the same health-protective conceptual model that is used for the Tier 1 human health screening assessment. TRIM.FaTE model simulations were used to calculate Tier 1 screening threshold emission rates. The screening threshold emission

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rates represent the emission rate in tpy that results in media concentrations at the facility that equal the relevant ecological benchmark. To assess emissions from each facility in the category, the reported emission rate for each PB-HAP was compared to the Tier 1 screening threshold emission rate for that PB-HAP for each assessment endpoint and effect level. If emissions from a facility do not exceed the Tier 1 screening threshold emission rate, the facility "passes" the screening assessment and therefore is not evaluated further under the screening approach. If emissions from a facility exceed the Tier 1 screening threshold emission rate, we evaluate the facility further in Tier 2.

In Tier 2 of the environmental screening assessment, the screening threshold emission rates are adjusted to account for local meteorology and the actual location of lakes in the vicinity of facilities that did not pass the Tier 1 screening assessment. For soils, we evaluate the average soil concentration for all soil parcels within a 7.5-km radius for each facility and for each PB-HAP. For the water, sediment, and fish tissue concentrations, the highest value for each facility for each pollutant is used. If emission concentrations from a facility do not exceed the Tier 2 screening threshold emission rate, the facility "passes" the screening assessment and typically is not evaluated further. If emissions from a facility exceed the Tier 2 screening threshold emission rate, we evaluate the facility further in Tier 3.

As in the multipathway human health risk assessment, in Tier 3 of the environmental screening assessment, we examine the suitability of the lakes around the facilities to support life and remove those that are not suitable (*e.g.*, lakes that have been filled in or are industrial ponds), adjust emissions for plume-rise, and conduct hour-by-

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hour time-series assessments. If these Tier 3 adjustments to the screening threshold emission rates still indicate the potential for an adverse environmental effect (*i.e.*, the facility emission rate exceeds the screening threshold emission rate), we may elect to conduct a more refined assessment using more site-specific information. If, after additional refinement, the facility emission rate still exceeds the screening threshold emission rate, the facility may have the potential to cause an adverse environmental effect.

To evaluate the potential for an adverse environmental effect from Pb, we compared the average modeled air concentrations (from HEM) of Pb around each facility in the source category to the level of the secondary Pb NAAQS. The secondary Pb NAAQS is a reasonable means of evaluating environmental risk because it is set to provide substantial protection against adverse welfare effects, which can include "effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being."[66]

d. Acid Gas Environmental Risk Methodology

The environmental screening assessment for acid gases evaluates the potential phytotoxicity and reduced productivity of plants due to chronic exposure to HF and HCl. The environmental risk screening methodology for acid gases is a single-tier screening assessment that compares modeled ambient air concentrations (from AERMOD) to the

[66] CAA section 302(h) describes effects on welfare. 42 U.S.C. 7602(h).

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ecological benchmarks for each acid gas. To identify a potential adverse environmental effect (as defined in CAA section 112(a)(7)) from emissions of HF and HCl, we evaluate the following metrics: the size of the modeled area around each facility that exceeds the ecological benchmark for each acid gas, in acres and square kilometers; the percentage of the modeled area around each facility that exceeds the ecological benchmark for each acid gas; and the area-weighted average screening value around each facility (calculated by dividing the area-weighted average concentration over the 50-km modeling domain by the ecological benchmark for each acid gas). For further information on the environmental screening assessment approach, see appendix 9 of the *Residual Risk Assessment for the Hazardous Waste Combustor Source Category in Support of the Risk and Technology Review 2025 Proposed Rule*, which is available in the docket for this proposed rule.

7. How do we conduct facility-wide assessments?

To put the source category risks in context, we typically examine the risks from the entire facility, where the facility includes all HAP-emitting operations within a contiguous area and under common control. In other words, we examine not only the HAP emissions from the source category emission points of interest, but also emissions of HAP from all other emission sources at the facility for which we have data. For the HWC source category, we conducted the facility-wide assessment using a dataset compiled from the NEI based on emissions year 2022. The source category records of that NEI dataset were removed, evaluated, and updated as described in section II.C. of this preamble. Once we completed the quality assurance review, the dataset was placed

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back with the remaining records from the NEI for that facility. The facility-wide file was then used to analyze risks due to the inhalation of HAP that are emitted facility-wide for the populations residing within 50 km of each facility, consistent with the methods used for the source category analysis described above. For these facility-wide risk analyses, the modeled source category risks were compared to the facility-wide risks to determine the portion of the facility-wide risks that could be attributed to the source category addressed in this proposal. We also specifically examined the facility that was associated with the highest estimate of risk and determined the percentage of that risk attributable to the source category of interest. The *Residual Risk Assessment for the Hazardous Waste Combustor Source Category in Support of the Risk and Technology Review 2025 Proposed Rule*, available through the docket for this proposed rule, provides the methodology and results of the facility-wide analyses, including all facility-wide risks and the percentage of source category contribution to facility-wide risks.

8. How do we consider uncertainties in risk assessment?

Uncertainty and the potential for bias are inherent in all risk assessments, including those performed for this proposal. Although uncertainty exists, we believe that our approach, which used health protective tools and assumptions, ensures that our decisions are health and environmentally protective. A brief discussion of the uncertainties in the RTR emissions dataset, dispersion modeling, inhalation exposure estimates, and dose-response relationships follows. Also included are those uncertainties specific to our acute screening assessments, multipathway screening assessments, and environmental risk screening assessments. A more thorough discussion of these

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uncertainties is included in the *Residual Risk Assessment for the Hazardous Waste Combustor Source Category in Support of the Risk and Technology Review 2025 Proposed Rule*, which is available in the docket for this proposed rule. If a multipathway site-specific assessment was performed for this source category, a full discussion of the uncertainties associated with that assessment can be found in appendix 11 of that document, *Site-Specific Human Health Multipathway Residual Risk Assessment Report*.

a. Uncertainties in the RTR Emissions Dataset

Although the development of the RTR emissions dataset involved quality assurance/quality control processes, the accuracy of emissions values will vary depending on the source of the data, the degree to which data are incomplete or missing, the degree to which assumptions made to complete the datasets are accurate, errors in emission estimates, and other factors. The emission estimates considered in this analysis generally are emissions during worst-case scenario performance tests corrected based on a stack gas flow rate or hazardous waste thermal concentration feed rate more typical of normal operations. Results were averaged across multiple years, where available, and emissions averages across HWC unit subcategories were used when specific emissions data was not available. The estimates of peak hourly emission rates for the acute effects screening assessment were based on an emission adjustment factor applied to the average annual hourly emission rates, which are intended to account for emission fluctuations due to normal facility operations.

b. Uncertainties in Dispersion Modeling

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We recognize that there is uncertainty in ambient concentration estimates associated with any model, including AERMOD. In using a model to estimate ambient pollutant concentrations, the user chooses certain options to apply. For RTR assessments, we select some model options that have the potential to overestimate ambient air concentrations (*e.g.*, not including plume depletion or pollutant transformation). We select other model options that have the potential to underestimate ambient impacts (*e.g.*, not including building downwash). Other options that we select have the potential to either underestimate or overestimate ambient levels (*e.g.*, meteorology and receptor locations). On average, considering the directional nature of the uncertainties commonly present in ambient concentrations estimated by dispersion models, the approach we apply in the RTR assessments should yield unbiased estimates of ambient HAP concentrations. We also note that the selection of meteorology dataset locations could have an impact on the risk estimates. As we continue to update and expand our library of meteorological station data used in our risk assessments, we expect to reduce this variability.

c. Uncertainties in Inhalation Exposure Assessment

Although we make every effort to identify all of the relevant facilities and emission points, as well as to develop accurate estimates of the annual emission rates for all relevant HAP, the uncertainties in our emission inventory are likely the highest-contributing factors of the uncertainties in the exposure assessment. Some uncertainties in our exposure assessment include human mobility, using the centroid of each census block, assuming lifetime exposure, and assuming only outdoor exposures. For most of these factors, there is neither an underestimate nor overestimate when looking at the MIR

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or the incidence, but the shape of the distribution of risks may be affected. With respect to outdoor exposures, actual exposures may not be as high if people spend time indoors, especially for very reactive pollutants or larger particles. For all factors, we reduce uncertainty when possible. For example, with respect to census block centroids, we analyze large blocks using aerial imagery and adjust locations of the block centroids to better represent the population in the blocks. We also add additional receptor locations where the population of a block is not well-represented by a single location.

d. Uncertainties in Dose-Response Relationships

There are uncertainties inherent in the development of the dose-response values used in our risk assessments for cancer effects from chronic exposures and noncancer effects from both chronic and acute exposures. Some uncertainties are generally expressed quantitatively, and others are generally expressed qualitatively. We note, as a preface to this discussion, a point on dose-response uncertainty that is stated in the EPA's *2005 Guidelines for Carcinogen Risk Assessment*; namely that "the primary goal of EPA actions is protection of human health; accordingly, as an Agency policy, risk assessment procedures, including default options that are used in the absence of scientific data to the contrary, should be health protective" (the EPA's *2005 Guidelines for Carcinogen Risk Assessment*, at 1-7). This is the approach followed here as summarized in the next paragraphs.

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Cancer UREs used in our risk assessments are those that have been developed to generally provide an upper-bound estimate of risk.[67] That is, they represent a "plausible upper limit to the true value of a quantity" (although this is usually not a true statistical confidence limit). In some circumstances, the true risk could be as low as zero; however, in other circumstances the risk could be greater.[68] Chronic noncancer RfC and reference dose (RfD) values represent chronic exposure levels that are intended to be health-protective levels. To derive dose-response values that are intended to be "without appreciable risk," the methodology relies upon an uncertainty factor (UF) approach,[69] which considers uncertainty, variability, and gaps in the available data. The UFs are applied to derive dose-response values that are intended to protect against appreciable risk of deleterious effects.

Many of the UFs used to account for variability and uncertainty in the development of acute dose-response values are quite similar to those developed for chronic durations. Additional adjustments are often applied to account for uncertainty in extrapolation from observations at one exposure duration (*e.g.*, four hours) to derive an acute dose-response value at another exposure duration (*e.g.*, one hour). Not all acute dose-response values are developed for the same purpose, and care must be taken when

[67] U.S. Environmental Protection Agency. (Last updated Jun. 22, 2022). Integrated Risk Information System (IRIS) Glossary: https://sor.epa.gov/sor_internet/registry/termreg/searchandretrieve/glossariesandkeywordlists/search.do?details=&vocabName=IRIS%20Glossary&filterTerm=unit%20risk&checkedAcronym=false&checkedTerm=false&hasDefinitions=false&filterTerm=unit%20risk&filterMatchCriteria=Contains.

[68] An exception to this is the URE for benzene, which is considered to cover a range of values, each end of which is considered to be equally plausible, and which is based on maximum likelihood estimates.

[69] See *A Review of the Reference Dose and Reference Concentration Processes*, U.S. EPA, December 2002, and *Methods for Derivation of Inhalation Reference Concentrations and Application of Inhalation Dosimetry*, U.S. EPA, 1994.

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interpreting the results of an acute assessment of human health effects relative to the dose-response value or values being exceeded. Where relevant to the estimated exposures, the lack of acute dose-response values at different levels of severity should be factored into the risk characterization as potential uncertainties.

Uncertainty also exists in the selection of ecological benchmarks for the environmental risk screening assessment. We established a hierarchy of preferred benchmark sources to allow selection of benchmarks for each environmental HAP at each ecological assessment endpoint. We searched for benchmarks for three effect levels (*i.e.*, no-effects level, threshold-effect level, and probable-effect level), but not all combinations of ecological assessment/environmental HAP had benchmarks for all three effect levels. Where multiple effect levels were available for a particular HAP and assessment endpoint, we used all of the available effect levels to help us determine whether risk exists and whether the risk could be considered significant and widespread.

Although we make every effort to identify appropriate human health effect dose-response values for all pollutants emitted by the sources in this risk assessment, some HAP emitted by this source category lack dose-response assessments. Accordingly, these pollutants cannot be included in the quantitative risk assessment, which could result in quantitative estimates understating HAP risk. To help to alleviate this potential underestimate, where we conclude similarity with a HAP for which a dose-response value is available, we use that value as a surrogate for the assessment of the HAP for which no value is available. To the extent use of surrogates indicates appreciable risk, we may identify a need to increase priority for an IRIS assessment for that substance. We

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additionally note that, generally speaking, HAP of greatest concern due to environmental exposures and hazard are those for which dose-response assessments have been performed, reducing the likelihood of understating risk. Further, HAP not included in the quantitative assessment are assessed qualitatively and considered in the risk characterization that informs the risk management decisions, including consideration of HAP reductions achieved by various control options.

For a group of compounds that are unspeciated (*e.g.*, glycol ethers), we conservatively use the most protective dose-response value of an individual compound in that group to estimate risk. Similarly, for an individual compound in a group (*e.g.*, ethylene glycol diethyl ether) that does not have a specified dose-response value, we also apply the most protective dose-response value from the other compounds in the group to estimate risk.

e. Uncertainties in Acute Inhalation Screening Assessments

In addition to the uncertainties highlighted in section III.C.8. of this preamble, there are several factors specific to the acute exposure assessment that the EPA conducts as part of the risk review under CAA section 112(f). The accuracy of an acute inhalation exposure assessment depends on the simultaneous occurrence of independent factors that may vary greatly, such as hourly emission rates, meteorology, and the presence of a person. In the acute screening assessment that we conduct under the RTR program, we assume that peak emissions from the source category and reasonable worst-case air dispersion conditions (*i.e.*, 99th percentile) co-occur. We then include the additional assumption that a person is located at this point at the same time. Together, these

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assumptions represent a reasonable worst-case actual exposure scenario. In most cases, it is unlikely that a person would be located at the point of maximum exposure during the time when peak emissions and reasonable worst-case air dispersion conditions occur simultaneously.

f. Uncertainties in the Multipathway and Environmental Risk Screening Assessments

For each source category, we generally rely on site-specific levels of PB-HAP or environmental HAP emissions to determine whether a refined assessment of the impacts from multipathway exposures is necessary or whether it is necessary to perform an environmental screening assessment. This determination is based on the results of a three-tiered screening assessment that relies on the outputs from models—TRIM.FaTE and AERMOD—that estimate environmental pollutant concentrations and human exposures for five PB-HAP (PCDD/PCDF, POM, Hg, Cd compounds, and As compounds) and two acid gases (HF and HCl). For Pb, we use AERMOD to determine ambient air concentrations, which are then compared to the secondary Pb NAAQS. Two important types of uncertainty associated with the use of these models in RTR risk assessments and inherent to any assessment that relies on environmental modeling are model uncertainty and input uncertainty.[70]

Model uncertainty concerns whether the model adequately represents the actual processes (*e.g.*, movement and accumulation) that might occur in the environment. For example, if the model adequately describes the movement of a pollutant through the soil.

[70] In the context of this discussion, the term "uncertainty" as it pertains to exposure and risk encompasses both *variability* in the range of expected inputs and screening results due to existing spatial, temporal, and other factors, as well as *uncertainty* in being able to accurately estimate the true result.

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This type of uncertainty is difficult to quantify. However, based on feedback received from previous EPA SAB reviews and other reviews, we are confident that the models used in the screening assessments are appropriate and state-of-the-art for the multipathway and environmental screening risk assessments conducted in support of RTRs.

Input uncertainty is concerned with how accurately the models have been configured and parameterized for the assessment at hand. For Tier 1 of the multipathway and environmental screening assessments, we configured the models to avoid underestimating exposure and risk. This was accomplished by selecting upper-end values from nationally representative datasets for the more influential parameters in the environmental model, including selection and spatial configuration of the area of interest, lake location and size, meteorology, surface water, soil characteristics, and structure of the aquatic food web. We also assume an ingestion exposure scenario and values for human exposure factors that represent reasonable maximum exposures.

In Tier 2 of the multipathway and environmental screening assessments, we refine the model inputs to account for meteorological patterns in the vicinity of the facility versus using upper-end national values, and we identify the actual location of lakes near the facility rather than the default lake location that we apply in Tier 1. By refining the screening approach in Tier 2 to account for local geographical and meteorological data, we decrease the likelihood that concentrations in environmental media are overestimated, thereby increasing the usefulness of the screening assessment. In Tier 3 of the screening assessments, we refine the model inputs again to account for hour-by-hour plume-rise

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and the height of the mixing layer. We can also use those hour-by-hour meteorological data in a TRIM.FaTE run using the screening configuration corresponding to the lake location. These refinements produce a more accurate estimate of chemical concentrations in the media of interest, thereby reducing the uncertainty with those estimates. The assumptions and the associated uncertainties regarding the selected ingestion exposure scenario are the same for all three tiers.

For the environmental screening assessment for acid gases, we employ a single-tiered approach. We use the modeled air concentrations and compare those with ecological benchmarks.

For all tiers of the multipathway and environmental screening assessments, our approach to addressing model input uncertainty is generally cautious. We choose model inputs from the upper-end of the range of possible values for the influential parameters used in the models, and we assume that the exposed individual exhibits ingestion behavior that would lead to a high total exposure. This approach reduces the likelihood of not identifying high risks for adverse impacts.

Despite the uncertainties, when individual pollutants or facilities do not exceed screening threshold emission rates (*i.e.*, "passes"), we are confident that the potential for adverse multipathway impacts on human health is very low. On the other hand, when individual pollutants or facilities do exceed screening threshold emission rates, it does not mean that impacts are significant, only that we cannot rule out that possibility and that a refined assessment for the site might be necessary to obtain a more accurate risk characterization for the source category.

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The EPA evaluates the following HAP in the multipathway and/or environmental risk screening assessments, where applicable: As compounds, Cd compounds, PCDD/PCDF, Pb, Hg (both inorganic and methylmercury), POM, HCl, and HF. These HAP represent pollutants that can cause adverse impacts either through direct exposure to HAP in the air or through exposure to HAP that are deposited from the air onto soils and surface waters and then through the environment into the food web. These HAP represent those for which we can conduct a meaningful multipathway or environmental screening risk assessment. For other HAP not included in our screening assessments, the model has not been parameterized such that it can be used for that purpose. In some cases, depending on the HAP, we may not have appropriate multipathway models that allow us to predict the concentration of that pollutant. The EPA acknowledges that other HAP beyond these that we are evaluating may have the potential to cause adverse effects and, therefore, the EPA may evaluate other relevant HAP in the future, as modeling science and resources allow.

IV. Analytical Results and Proposed Decisions

A. What actions are we proposing pursuant to CAA sections 112(d)(2) and 112(d)(3)?

In this proposal, we are proposing actions to address unregulated HAP pursuant to the D.C. Circuit's decision in *LEAN*. The D.C. Circuit has held that the EPA is required to address any previously unregulated HAP emissions as part of its periodic review of MACT standards under CAA section 112(d)(6). Based on a review of available

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information pursuant to the *LEAN* decision, we are proposing the following pursuant to CAA sections 112(d)(2), (d)(3), and (h)(1):[71]

- Numeric emission limits for HF and HCN for major source HWC solid fuel boilers.
- Work practice standard for HF for major source HWC incinerators.
- Work practice standard for HF and numeric emission limit for HCN for major source HWC cement kilns.
- Work practice standard for HF and numeric emission limits for HCN for major source liquid fuel boilers.

The results and proposed decisions based on the analyses performed pursuant to CAA sections 112(d)(2) and (3) are presented below, with separate discussion for each subcategory and HAP.

Consistent with the EPA's longstanding position, we do not believe that we are required to regulate emissions of HF or HCN from area sources in the HWC NESHAP because the EPA did not identify either HF or HCN as urban HAP pursuant to CAA sections 112(k)(3)(B) and 112(c)(3)[72] and because CAA section 112(c)(6) does not identify either HF or HCN as a pollutant of specific concern. Neither HF nor HCN is an urban HAP or a pollutant of specific concern, therefore, we are not proposing any emission limits for HF or HCN for area sources. All emission standards discussed here are only for HWCs at facilities that are major sources of HAP.

[71] *See LEAN*, 955 F.3d at 1091–99.
[72] 64 FR 38706, 38715, (July 19, 1999); *see, e.g.*, Proposed Gas-Fired Melting Furnaces Located at Wool Fiberglass Manufacturing Area Sources NESHAP, 78 FR 22370, 22375-76, (Apr. 15, 2013); 80 FR 45280, 45319-20, (July 29, 2015) (finalized as proposed).

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As previously noted, the D.C. Circuit has held that the EPA must address any previously unregulated HAP known to be emitted from major sources as part of its periodic review of MACT standards under CAA section 112(d)(6). *LEAN*, 955 F.3d at 1091–99. The order issued by the D.C. District Court addressing our obligations to review and revise the HWC NESHAP also requires the EPA to establish standards for any previously unregulated HAP in this rulemaking. Order, *Blue Ridge Envtl. Def. League v. Regan*, 22-cv-3134 (APM) (D.D.C. Dec. 12, 2024). During the technology review, the EPA identified HF and HCN as unregulated HAP through permit review and emissions testing. We also collected information on PCBs and PAHs in the emission testing request. Although we mistakenly identified PCBs as an unregulated HAP to the D.C. District Court, we more recently conducted a careful analysis of the HWC NESHAP's rule record, which revealed that the EPA already promulgated MACT standards for PCBs and PAHs through the combination of the DRE and CO or THC standards as a surrogate for non-PCDD/PCDF organic HAP.[73] Because PCBs are already regulated through surrogacy, no additional emission standards are required. Therefore, we are not proposing additional standards regulating PCB emissions.

To address the missing HF and HCN standards, we are proposing emission limits for HF and HCN under CAA sections 112(d)(2), (d)(3), and (h)(2) as described in this section. While the proposed emission limits for these HAP were calculated under CAA sections 112(d)(3) and (h)(2), we are soliciting comment on setting the HF and HCN standards pursuant to CAA section 112(d)(6) rather than setting the HF and HCN

[73] 70 FR 59433 (Oct. 12, 2005); 80 FR 31473 (June 3, 2015).

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standards exclusively pursuant to CAA section 112(d)(2), (d)(3), and (h)(2) (C-1). Although the D.C. Circuit held in *LEAN* that the EPA is required to address previously unregulated HAP from major sources during a CAA section 112(d)(6) technology review, it is not entirely clear how that process functions under the statutory text. The difference in the approach would be that we would not be constrained to any minimum stringency level and would, therefore, not conduct a beyond-the-floor analysis. We would not anticipate any cost or impact differences associated with setting the HF and HCN limits pursuant to CAA section 112(d)(6) as compared to CAA sections 112(d)(2) and (3). The estimated costs would be for testing, recordkeeping, and reporting. It bears noting that the standards under review were first promulgated in 2005 and our review found an overall reduction of emissions from this source category that could likely be attributed to concerted efforts of sources since promulgation. We are also soliciting comments, data, and other information regarding the analyses for our proposed MACT floor standards, the beyond-the-floor options, and our determinations (C-2).

1. Solid fuel boilers

a. Hydrogen fluoride

The EPA is proposing MACT standards for HF emissions from solid fuel boilers. As further explained below, the EPA is also soliciting comment on establishing an HBEL under CAA section 112(d)(4) for HF emissions from solid fuel boilers.

Under the D.C. Circuit's decision in *LEAN*, the EPA must set emission limits for major sources with known unregulated HAP emissions as part of its periodic review of MACT standards under CAA section 112(d)(6). These standards can take at least three

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forms: technology-based standards that reflect the maximum reductions of HAP achievable (after considering cost, energy requirements, and non-air health and environmental impacts) and are commonly referred to as MACT standards; an HBEL for HAP with an established health threshold; or a work practice standard when another standard is not feasible to prescribe or enforce. Because the EPA did not have previous HF emissions data, the EPA collected HF emissions data from one HWC solid fuel boiler in the January 2024 emissions testing request, and this boiler had detected emissions of HF in all emissions test runs. Based on that emissions test data, the EPA considers that a numerical emission standard is feasible to prescribe and enforce for emissions of HF from solid fuel boilers.

We are proposing MACT emission limits for HF emissions from solid fuel boilers. CAA section 112(d)(3)(B) provides that MACT shall not be less stringent than "the average emission limitation achieved by the best performing 5 sources (for which the Administrator has or could reasonably obtain emissions information) in the category or subcategory for categories or subcategories with fewer than 30 sources." Because we have HF emissions data for only one of the seven solid fuel boilers, the proposed MACT floor is based on the HF data for this unit. In determining the level of the MACT floor, we used the Upper Prediction Limit (UPL) method to account for variability in solid fuel boiler performance and calculated the MACT floor at 6.2 parts per million by volume (ppmv) HF, dry basis and corrected to seven percent oxygen.[74] Based on available data,

[74] MACT Floor and Beyond-the-Floor Analysis for Hazardous Waste Combustors, which is available in the docket for this proposed rulemaking (Docket ID No. EPA-HQ-OAR-2004-0022); The UPL "reflect[s] a reasonable estimate of the emissions achieved in practice by the best-performing sources." *U.S. Sugar Corp. v. EPA*, 830 F.3d 579, 639 (D.C. Cir. 2016) (alteration in original).

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the EPA estimates that all solid fuel boilers would be able to meet the MACT floor limit with no additional controls.

For new sources, CAA section 112(d)(3) provides that the MACT shall not be less stringent than "the emission control that is achieved in practice by the best controlled similar source, as determined by the Administrator." Because we only have HF emissions data from one solid fuel boiler, the proposed MACT floor limit for new sources is the same as the MACT floor limit for existing sources: 6.2 ppmv HF, dry basis and corrected to seven percent oxygen.

When establishing an emission standard pursuant to CAA section 112, the EPA also determines whether to control emissions "beyond-the-floor" (BTF) after considering the costs, non-air quality health and environmental impacts, and energy requirements of such more stringent control.[75] Further, CAA section 112 does not prescribe a methodology for the Agency's costs analysis. Therefore, where cost is a consideration for standard setting under CAA section 112(d)(2), we have historically used cost-effectiveness (cost/ton-reduced) in supporting analyses.[76] The EPA solicits comment on whether strategies other than cost per ton of pollutant reduced for considering cost when evaluating beyond-the-floor standards would be more appropriate (C-3).

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[75] *Nat'l Lime Ass'n* v. *EPA*, 233 F.3d 625, 634 (D.C. Cir. 2000) ("Once the Agency sets statutory floors, it then determines, considering cost and the other factors listed in section 7412(d)(2), whether stricter standards are 'achievable.' The Agency calls such stricter requirements 'beyond-the-floor' standards.").

[76] *See NRDC v. EPA*, 749 F.3d 1055, 1060 (D.C. Cir. 2014) (upholding the EPA's consideration of cost-effectiveness as a component of the CAA section 112(d)(2) cost analysis); *see also Ass'n of Battery Recyclers*, 716 F.3d at 673-74 (the EPA may rely on cost-effectiveness in CAA section 112(d)(6) decision-making); *Nat'l Ass'n of Clean Water Agencies v. EPA*, 734 F.3d 1115, 1156-57 (D.C. Cir. 2013) (the EPA may rely on cost-effectiveness in setting BTF standards under CAA section 129(a)(2)); *Husqvarna AB v. EPA*, 254 F.3d 195, 200 (D.C. Cir. 2001) ("because section 213 does not mandate a specific method of cost analysis, we find reasonable the EPA's choice to consider costs on the per ton of emissions removed basis").

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The EPA evaluated whether a BTF emission limit would be appropriate for HF emissions from solid fuel boilers. One HWC liquid fuel boiler has a caustic packed bed scrubber (caustic scrubber) with sodium hydroxide (NaOH) added to the scrubbing liquid which can control HF emissions. While no HWC solid fuel boilers have a caustic scrubber, based on substantial similarities in design and operations of both types of boilers, we expect that a caustic scrubber would be a technically feasible option for HWC solid fuel boilers. Therefore, we evaluated whether the incremental emissions reduction achievable with a caustic scrubber would be cost-effective. A caustic scrubber would also offer some co-control of HCl and HCN emissions. We estimate that a caustic scrubber would achieve approximately 95 percent reduction of HF from the solid fuel boiler. A corresponding 95 percent reduction in the HF MACT floor would result in a standard that is below three times the representative detection level (3xRDL) of the method.[77] The EPA uses 3xRDL as its minimum standard to account for variability in the test method measurements and ensure that compliance with a standard can be reliably measured. Therefore, the BTF emission limit would be 0.60 ppmv HF, dry basis and corrected to seven percent oxygen, which reflects the 3xRDL for HF emissions from solid fuel boilers.

The EPA estimates that all solid fuel boilers would need to install caustic scrubbers to meet the BTF level. This would result in an industry-wide 16.35 tpy reduction of HF (*i.e.*, 95 percent reduction of emissions), at approximately a total capital

[77] See the memorandum *Representative Detection Limit (RDL) for Hydrogen Fluoride for Hazardous Waste Combustion Sources*, which is available in the docket for this proposed rulemaking (Docket ID No. EPA-HQ-OAR-2004-0022).

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investment of $14.3 million (2024$) and total annualized costs of $4.46 million (2024$) for a cost-effectiveness of $273,000 (2024$) per ton of HF reduced. The installation of a caustic scrubber at a single new source would achieve a 2.3 tpy reduction of HF, at approximately a total capital investment of $2.04 million (2024$) and total annualized costs of $637,000 (2024$) for a cost effectiveness of $272,000 (2024$) per ton of HF reduced. If other acid gases are present, then the amount of caustic required would increase from the amount we estimated, and there would be corresponding annual cost increases. The EPA has previously considered $68,000 per ton of HF reduced (adjusted to 2024$) to not be cost-effective[78] and, in keeping with that prior consideration, proposes not to consider either $273,000 or $272,000 per ton of HF reduced to be cost-effective. A caustic scrubber would also produce additional wastewater that would need to be treated onsite or removed from the site for treatment or disposal. Additional energy is required both to operate the scrubber and to treat or otherwise dispose of wastewater. After considering both the MACT floor and BTF options for existing and new sources, the EPA proposes to conclude that the installation of a caustic scrubber as a BTF option is not warranted considering the cost, non-air quality health and environmental impacts, and energy requirements for either existing or new solid fuel boilers. Therefore, the EPA is proposing the MACT floor of 6.2 ppmv HF, dry basis and corrected to seven percent oxygen, for both existing and new solid fuel boilers.

The EPA is proposing that compliance with the HF emission limits for solid fuel boilers would be required within three years after the publication of the final rule and that

[78] Brick and Structural Clay Products Manufacturing NESHAP, 67 FR 47894 (July 22, 2002).

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demonstration through an initial compliance test would occur no later than six months after the compliance date. This would be followed by subsequent demonstration of compliance once every five years during the CPT using EPA Methods 26A or 320. For affected facilities that commence construction or reconstruction after **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, owners or operators must comply with all requirements of the subpart, including the HF emission limits, no later than the effective date of the final rule or upon startup, whichever is later, and must demonstrate compliance no later than six months after the compliance date.

The EPA is also soliciting comment on whether an HBEL for HF emissions from solid fuel boilers should be established (C-4). For HAP with an established health threshold, CAA section 112(d)(4) allows the EPA to consider such health thresholds when establishing emission standards under CAA section 112(d). CAA section 112(d)(4) states, "[w]ith respect to pollutants for which a health threshold has been established, the Administrator may consider such threshold level, with an ample margin of safety, when establishing emission standards under this subsection."[79] In other words, for HAP with a health threshold, such as HCl, the EPA may promulgate standards under a different process from that otherwise specified in CAA sections 112(d)(2) and (3). This kind of standard is commonly referred to as an HBEL. It also bears noting that the EPA previously established an alternative HBEL for HCl in the HWC NESHAP that was based on a site-specific risk assessment or, more conservatively, values based on general

[79] 42 U.S.C. 7412(d)(4). *See also U.S. Sugar*, 830 F.3d at 624 ("This provision thus allows, but does not require, the EPA to adopt a standard more lenient than the MACT floor, subject to two critical restrictions: the Agency must determine (1) that there is an established health threshold, and (2) that the established threshold would provide 'an ample margin of safety.'").

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release parameters.[80] More recently, the EPA solicited comment on establishing an HBEL for HCl in the supplemental proposal for the Lime Manufacturing Plants NESHAP.[81] For solid fuel boilers, the EPA is soliciting comment on whether an HBEL for HF should be established (C-4) and, if so, whether that should be a single HBEL, like the one for HCl in the Lime Manufacturing Plants NESHAP, or an alternative HBEL based on the existing framework in the HWC NESHAP for HCl (C-5).

b. Hydrogen cyanide

The EPA is proposing MACT standards for HCN emissions from solid fuel boilers. As further explained below, the EPA is also soliciting comment on establishing an HBEL under CAA section 112(d)(4) for HCN emissions from solid fuel boilers (C-4).

The EPA collected HCN emissions data from one HWC solid fuel boiler in the January 2024 emissions testing request, and this boiler had detected emissions of HCN in all emissions test runs. The EPA is proposing MACT emission limits for HCN emissions from solid fuel boilers. CAA section 112(d)(3)(B) provides that MACT shall not be less stringent than "the average emission limitation achieved by the best performing 5 sources (for which the Administrator has or could reasonably obtain emissions information) in the category or subcategory for categories or subcategories with fewer than 30 sources." Because we have HCN emissions data for only one of the seven HWC solid fuel boilers, the proposed MACT floor is based on the HCN emissions data from this one unit. In determining the level of the MACT floor, the UPL method was used to account for

[80] See the 2005 HWC NESHAP final rule (70 FR 59432, Oct. 12, 2005) and its technical support documents for more discussion on the current alternative health-based emission limit for HCl, which is available in the docket for this proposed rulemaking (Docket ID No. EPA-HQ-OAR-2004-0022).
[81] 89 FR 9088 (Feb. 9, 2024).

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variability in solid fuel boiler performance, and the MACT floor was calculated at 5.0 ppmv HCN, dry basis and corrected to seven percent oxygen.[82] Based on available data, the EPA estimates that all solid fuel boilers would be able to meet the MACT floor limit with no additional controls. For new sources, CAA section 112(d)(3) provides that the MACT shall not be less stringent than "the emission control that is achieved in practice by the best controlled similar source, as determined by the Administrator." Because we only have HCN emissions data from one solid fuel boiler, the proposed MACT floor limit for new sources is the same as the MACT floor limit for existing sources: 5.0 ppmv HCN, dry basis and corrected to seven percent oxygen.

When establishing an emission standard pursuant to CAA section 112, the EPA must also determine whether to control emissions BTF after considering the costs, non-air quality health and environmental impacts, and energy requirements of such more stringent control. The EPA evaluated whether BTF emission limits would be appropriate for HCN emissions from solid fuel boilers. No HWC solid fuel boiler has a control device that the EPA expects to control HCN emissions. Furthermore, no HWC has a control device specifically designated as controlling HCN emissions. Good combustion practices like high combustion temperature, thorough mixing, sufficient residence time, excess oxygen, and control of flue gas temperature can prevent emissions of HCN from HWCs by encouraging the oxidation of HCN in the combustion zone and preventing its formation after the flue gas exits the combustion chamber. Many HWCs have incorporated secondary combustion chambers or afterburners that may serve to promote

[82] MACT Floor and Beyond-the-Floor Analysis for Hazardous Waste Combustors, which is available in the docket for this proposed rulemaking (Docket ID No. EPA-HQ-OAR-2004-0022).

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good combustion and control HCN emissions, especially if they are followed by a quench. One HWC, a liquid fuel boiler, combusts HCN and uses it as the primary organic hazardous constituent (POHC) in its DRE demonstration. This unit demonstrated at least 99.99 percent DRE and had low HCN emissions. The unit does not have any air pollution control devices (APCDs) that control HCN emissions and instead relies on good combustion practices and operational parameters appropriate for limiting HCN emissions.

Several HWCs have control devices for other HAP that we expect to co-control HCN emissions, including caustic scrubbers with NaOH added to the scrubbing liquid. One HWC liquid fuel boiler has a caustic scrubber and based on substantial similarities in design and operations of both types of boilers we expect that a caustic scrubber would be a technically feasible option for HWC solid fuel boilers, so we evaluated whether the incremental emissions reduction achievable with a caustic scrubber would be cost-effective. We estimate that a caustic scrubber would achieve approximately 95 percent reduction of HCN from one solid fuel boiler. A corresponding 95 percent reduction in the MACT floor would result in a standard below the 3xRDL value for HCN for solid fuel boilers (1.1 ppmv).[83] Therefore, the BTF emission limit would be 1.1 ppmv HCN, dry basis and corrected to seven percent oxygen, which reflects the 3xRDL for HCN emissions from solid fuel boilers.

The EPA estimates that all solid fuel boilers would need to install caustic scrubbers to mee the BTF limit. This would result in an industry-wide 27.4 tpy reduction

[83] See the memorandum *Representative Detection Level for Hydrogen Cyanide for Cement Kilns and Hazardous Waste Combustors*, which is available in the docket for this proposed rulemaking (Docket ID No. EPA-HQ-OAR-2004-0022).

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of HCN (*i.e.*, 95 percent reduction of emissions), at a total capital investment of $14.3 million (2024$) and total annualized costs of $4.46 (2024$) for a cost-effectiveness of $163,000 (2024$) per ton of HCN reduced. The installation of a caustic scrubber at a single new source would achieve a 3.9 tpy reduction of HF, at approximately a total capital investment of $2.04 million (2024$) and total annualized costs of $637,000 (2024$) for a cost effectiveness of $162,000 (2024$) per ton of HCN reduced. A caustic scrubber would also offer some co-control of HCl and HF. If other acid gases are present, then the amount of caustic required would increase from the amount estimated, and there will be corresponding annual cost increases. The EPA has previously considered $15,900 per ton of HCN reduced (adjusted to 2024$) to not be cost-effective[84] and, in keeping with that prior consideration, proposed not to consider either $163,000 or $162,000 per ton of HCN reduced to be cost-effective. A caustic scrubber would also produce additional wastewater that would need to be treated onsite or removed from the site for treatment or disposal. Additional energy is required both to operate the scrubber and to treat or otherwise dispose of wastewater. After considering both the MACT floor and BTF options for existing and new sources, the EPA proposes to conclude that the installation of a caustic scrubber as a BTF option is not warranted considering the cost, non-air quality health and environmental impacts, and energy requirements for either existing or new solid fuel boilers. Therefore, the EPA is proposing the MACT floor of 5.0 ppmv HCN, dry basis and corrected to seven percent oxygen for both existing and new solid fuel boilers.

[84] Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards, 79 FR 36880 (June 30, 2014).

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The EPA is proposing that compliance with the HCN emission limits for solid fuel boilers would be required within three years after the publication of the final rule and that demonstration through an initial compliance test would occur no later than six months after the compliance date. This would be followed by subsequent demonstration of compliance once every five years during the CPT using EPA Method 320 or, if there are entrained water droplets in the flue gas, an alternative test method submitted and approved by the Administrator according to 40 CFR 63.7(f). For affected facilities that commence construction or reconstruction after **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, owners or operators must comply with all requirements of the subpart, including the HCN emission limits, no later than the effective date of the final rule or upon startup, whichever is later, and must demonstrate compliance no later than six months after the compliance date.

The EPA solicits comment on establishing an HBEL under CAA section 112(d)(4) for HCN (C-4). The EPA also solicits comment on whether a single HBEL under CAA section 112(d)(4) for HCN should be established, like that discussed in the supplemental proposal for HCl in the Lime Manufacturing Plants NESHAP (89 FR 9088; Feb. 9, 2024), or whether an alternative HBEL for HCN based on the framework already in the HWC NESHAP for HCl (40 CFR 63.1215) would be more appropriate (C-5).

2. Incinerators

a. Hydrogen fluoride

The EPA is proposing a work practice standard with multiple proposed compliance options for HF emissions from HWC incinerators. The EPA collected HF

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emissions data from seven HWC incinerators in the January 2024 emissions testing request. We did not require an eighth incinerator to test for HF emissions because it had reported in the August 2023 questionnaire that it did not burn fluorinated waste. CAA section 112(h)(1) authorizes the Administrator to promulgate "a design, equipment, work practice, or operational standard, or combination thereof" if, in his judgment, "it is not feasible to prescribe or enforce a standard of performance." CAA section 112(h)(2) provides the circumstances under which prescribing or enforcing a standard of performance is "not feasible," such as when the pollutant cannot be emitted through a conveyance designed to emit or capture the pollutant, or when there is no practicable measurement methodology for the particular class of sources. Further, "application of measurement methodology" is more than just taking a measurement. The measurement must also have some reasonable relation to what the source is emitting (*i.e.*, the measurement must yield a meaningful value). The EPA generally considers a work practice standard to be justified if a significant majority (*e.g.*, more than 55 percent of test runs) of emissions data available indicate that emissions are so low that they cannot be reliably measured (*i.e.*, emissions are below detection limit).[85] In the case of HWC incinerators, we found that 94 percent of the HF data was below the detection limit, and so we find it appropriate to propose a work practice standard.

[85] See the memorandum titled *Determination of "non detect" from EPA Method 29 (multi-metals) and EPA Method 23 (dioxin/furan) test data when evaluating the setting of MACT floors versus establishing work practice standards* (Johnson, 2014), which is available in the docket for this proposed rulemaking (Docket ID No. EPA-HQ-OAR-2004-0022). (The EPA may "adopt[] a method to account for measurement imprecision that has a rational basis in the correlation between increased emission values and increased testing precision." *Nat'l Ass'n of Clean Water Agencies,* 734 F.3d at 1155).

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The EPA is proposing a work practice standard for HF emissions from HWC incinerators with multiple compliance options. We are proposing that a source would only comply with one of the three options. The options of the proposed work practice standard are as follows:

- Option 1: If a source actively controls HCl emissions and the source has at least two AWFCO-interlocked operating parameter limits other than chlorine feed rate to control HCl, then comply with the HCl and chlorine gas operating parameter limits and indicate in the CPT report and notice of compliance that compliance is demonstrated by complying with the HCl and chlorine gas operating parameter limits.
- Option 2: If a facility does not feed any material with detectable levels of fluorine to the source, then certify in the CPT report that no fluorine is fed and indicate in the CPT report and notice of compliance that compliance is demonstrated through the certification.
- Option 3: If a facility feeds fluorine to a source and the source has no active HCl control with at least two AWFCO-interlocked operating parameter limits other than chlorine feed rate to control HCl emissions, then the facility must monitor and record the total fluorine fed to the unit as a 12-hour rolling average. If at any point the feed rate suggests that HF emissions may exceed the solid fuel boiler existing source emission limit for HF (as calculated according to the HWC NESHAP's maximum theoretical emissions concentration (MTEC) procedure), then complete a one-time HF emissions test during the next CPT at the maximum

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recorded fluorine feed rate and include the test results in the CPT report. The demonstration that HF MTEC does not exceed the solid fuel boiler existing source emission limit for HF would be included in the CPT plan.

Compliance with this work practice standard will minimize emissions of HF from HWC incinerators. For the Option 1 work practice, all utilized controls of HCl emissions except chlorine feed rate control also control HF, as both are acid gases with similar chemistry in APCDs; these APCDs are equally or more effective at controlling HF than HCl. Because HCl, and by extension HF, is already controlled, no further control requirements are necessary. For the Option 2 work practice, if no fluorine is fed to an HWC, then HF will not be emitted from the HWC. While most commercial HWCs accept some hazardous waste containing fluorine, the results of the August 2023 questionnaire indicate that some captive HWCs do not feed fluorine, and there is no reason to expect HF emissions. The EPA anticipates that most HWC incinerators will fall into the Option 1 or Option 2 work practices. By our estimate, approximately 70 percent of HWC incinerators have an APCD that controls HCl, and approximately 33 percent of captive incinerators do not feed fluorine.

Any HWC incinerators that cannot meet the Option 1 or Option 2 work practices would be required to comply with Option 3 by monitoring the fluorine fed to the unit and completing an HF emissions test if significant amounts of fluorine are ever fed. The feed monitoring requirement is similar to the monitoring requirements of other HAP precursors (like metals or chlorine). The Option 3 work practice is designed to operate as a backstop and to provide the EPA with emissions data to use in a future CAA section

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112(d)(6) technology review if HF emissions are more significant than our current data indicate.

The EPA is soliciting comment on whether this proposed work practice standard is appropriate for the control of HF emissions and whether additional work practice options should be added (C-6).

The EPA is proposing that compliance with the HF work practice standard for incinerators would be required within three years after the publication of the final rule and that demonstration through a certification, test plan, or initial compliance test would occur no later than six months after the compliance date. This would be followed by subsequent demonstration of compliance once every five years during the CPT. Emission testing for HF must use EPA Methods 26A or 320. For affected facilities that commence construction or reconstruction after **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, owners or operators would be required to comply with all requirements of the subpart, including the HF work practice standard, no later than the effective date of the final rule or upon startup, whichever is later, and must demonstrate compliance no later than six months after the compliance date.

b. Hydrogen cyanide

The EPA is not proposing MACT standards for HCN emissions from HWC incinerators. The EPA collected HCN emissions data from eight HWC incinerators in the January 2024 emissions testing request. HCN was not measured in any test run. Because the EPA emissions data indicates that HCN is not measurably emitted from HWC

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incinerators, the EPA is not proposing any emission standard for HCN from HWC incinerators.

3. Cement kilns

a. Hydrogen fluoride

For HF emissions from cement kilns, the EPA is proposing work practice standards with the same multiple compliance options proposed for HF emissions from HWC incinerators. The EPA collected HF emissions data from four HWC cement kilns in the January 2024 emissions testing request. We found that 71 percent of the HF data was below the detection limit, and so the Administrator finds it appropriate to propose a work practice standard for emissions of HF from major source cement kilns under CAA section 112(h)(1).

The EPA is proposing the same multi-option work practice standard for cement kilns as described in section IV.A. of this preamble for incinerators. Approximately 15 percent of HWC cement kilns have integrated APCDs with AWFCO-interlocked operating parameter limits that control HCl emissions, and these kilns would fall into the Option 1 work practice. To our knowledge, all cement kilns burn at least some fluorine-containing material, and so we do not expect that any would fall into the Option 2 work practice. Any cement kilns that cannot meet the Option 1 or Option 2 work practices would follow the Option 3 monitoring work practice.

While only 15 percent of cement kilns have APCDs that control HCl emissions, the EPA views the cement production process as offering some degree of inherent control of HCl (and thus HF). When hot effluent gas flows out of a cement kiln, it is not

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immediately directed to the air pollution control train like it may be for other types of HWC. Instead, the effluent gas is used to preheat raw materials before they enter the kiln, which serves as a form of energy recovery. Raw materials that are fed to a cement kiln contain large amounts of alkaline materials including calcium carbonate, which is used in dry scrubbing APCDs for control of acid gases because it reacts readily with HCl and HF. The effluent gas continues to contact alkaline cement kiln dust throughout the process until the dust collection APCD, which is often the final control device for an HWC cement kiln. For "inherent" control of HCl from cement kilns to qualify as an Option 1 work practice, there must be operating parameter limits related to the inherent control interlocked with the AWFCO system. The EPA is soliciting comment on which operating parameter limits (*e.g.*, maximum stack gas flow rate) may be appropriate parameterization for cement kiln's inherent control of HCl and thus HF (C-7).

The EPA is proposing that compliance with the HF work practice standard for HWC cement kilns would be required within three years after the publication of the final rule and that demonstration through a certification, test plan, or initial compliance test would occur no later than six months after the compliance date. This would be followed by subsequent demonstration of compliance once every five years during the CPT. Emission testing for HF must use EPA Methods 26A or 320. For affected facilities that commence construction or reconstruction after **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, owners or operators would be required to comply with all requirements of the subpart, including the HF work practice standard, no later

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than the effective date of the final rule or upon startup, whichever is later, and must demonstrate compliance no later than six months after the compliance date.

b. Hydrogen cyanide

The EPA is proposing MACT standards for HCN emissions from HWC cement kilns. As further explained below, the EPA is also soliciting comment on whether the HCN standards for cement kilns should be subcategorized by kiln type and, if so, how (C-8).

The EPA collected HCN emissions data from four HWC cement kilns in the CAA section 114 emissions testing request, and HCN was detected in all emissions test runs. The EPA is proposing MACT emission limits for HCN emissions from cement kilns. CAA section 112(d)(3)(B) provides that MACT shall not be less stringent than "the average emission limitation achieved by the best performing 5 sources (for which the Administrator has or could reasonably obtain emissions information) in the category or subcategory for categories or subcategories with fewer than 30 sources." Because we have HCN emissions data from only four HWC cement kilns, the proposed MACT floor is based on the HCN emissions data from those four units. Many HWC cement kilns have in-line raw mills that operate approximately 85 percent of the time when the kiln is in operation. Whether the raw mill is in operation can affect the HAP emissions profile of the cement kiln. In the January 2024 emissions testing request, the EPA requested that data be collected both while the raw mill was on and off if the kiln had an in-line raw mill. When the raw mill is running, a portion of the kiln exhaust is recycled back to the raw mill to heat raw materials fed to the kiln, resulting in a different emission profile at

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the stack. When the raw mill is not running, typically for maintenance, the kiln's exhaust is routed directly to the APCDs and stack. The raw mill off data were used to develop a correction factor for HCN emissions. Specifically, the average HCN emission concentration when the raw mill was off was calculated for each HWC cement kiln with a raw mill. Then, the raw mill off average was used with the raw mill on data for each test run to calculate a raw mill-corrected HCN emission concentration as a weighted mean assuming that the raw mill is on 85 percent of the time and off 15 percent of the time. This allows us to correct for any differences in emission profile depending on the operational status of the raw mill while maintaining the variability displayed in the raw mill on test runs. In determining the level of the MACT floor, the UPL method was used to account for variability in cement kiln performance, and the MACT floor was calculated at 56 ppmv HCN, dry basis and corrected to seven percent oxygen.[86] Based on available data, the EPA estimates that all existing cement kilns would be able to meet the MACT floor limit with no additional controls.

For new sources, CAA section 112(d)(3) provides that the MACT shall not be less stringent than "the emission control that is achieved in practice by the best controlled similar source, as determined by the Administrator." The cement kiln with the best controlled emissions is a wet process kiln. The EPA calculated a proposed new source limit from the unit with the best controlled emissions using the UPL method, and this

[86] MACT Floor and Beyond-the-Floor Analysis for Hazardous Waste Combustors, which is available in the docket for this proposed rulemaking (Docket ID No. EPA-HQ-OAR-2004-0022).

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limit was calculated at 1.8 ppmv HCN, dry basis and corrected to seven percent oxygen.[87]

When establishing an emission standard pursuant to CAA section 112, the EPA must also determine whether to control emissions BTF after considering the costs, non-air quality health and environmental impacts, and energy requirements of such more stringent control. The EPA evaluated whether BTF emission limits would be appropriate for HCN emissions from cement kilns. No HWC cement kilns have APCDs that the EPA expects to control HCN emissions. The HWC cement kiln industry submitted information to the EPA explaining why APCDs that may control HCN emissions from other sources are inappropriate for cement kilns.[88] While a caustic scrubber may be a potential control option for other subcategories of HWC, it is not a demonstrated control strategy for HWC cement kilns. Caustic scrubbers remove HCN by reacting it with NaOH to produce sodium cyanide (NaCN) and water. In some applications, sodium hypochlorite (NaClO) is also added to the scrubbing solution to form sodium bicarbonate ($NaHCO_3$), sodium chloride (NaCl), and nitrogen (N_2), which are often more favored reaction products. As implied by their name, caustic scrubbers operate at a basic pH. However, wet scrubbers employed by the cement kiln industry for acid gas control by necessity operate at an acidic pH to avoid precipitation and fouling of scrubber components and pumps. The product of these wet scrubbers is synthetic gypsum, which can be used in the cement production process. Caustic scrubbers could not replace wet scrubbers for multiple

[87] *Id.*
[88] See the email from the Cement Kiln Recycling Coalition in the docket for this proposed rulemaking (Docket ID No. EPA-HQ-OAR-2004-0022).
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reasons, including that elevated levels of sodium would interfere with the cement production process. Instead, caustic scrubbers would have to be added after the final component of the cement kiln's current air pollution control system, likely followed by a demister to prevent interference with stack CEMS. The EPA has no evidence that this APCD configuration has been demonstrated on any cement kiln.

The EPA considers regenerative thermal oxidizers (RTO) to be a technically feasible option for control of HCN emissions, but RTO have an additional energy requirement due to use of natural gas. While no HWC cement kilns have RTO installed, two Portland cement kilns do. The EPA has considered, and continues to consider, combustion as a viable control technology for HCN. HWCs are, by nature, combustors. However, the data show that HCN is emitted from cement kilns. This is because gas that exits cement kilns can stay in the post-combustion system at elevated temperatures for relatively long times. These conditions create an environment for the potential formation of certain HAP (*e.g.*, PCDD/PCDF) after the gas leaves the combustion zone of the kiln but before it exits to the atmosphere Therefore, the EPA evaluated whether the incremental emissions reduction achievable with RTO would be cost-effective. We estimated that RTO would achieve approximately 95 percent reduction of HCN. This may be an overestimation of effectiveness given the relatively high HCN emissions from one Portland cement kiln with RTO installed.[89] Assuming a 95 percent reduction from the UPL MACT floor due to RTO, the BTF emission limit for existing sources would be

[89] See "Section 114 Facility Responses" for the Portland Cement NESHAP (*https://www.epa.gov/stationary-sources-air-pollution/portland-cement-manufacturing-industry-information-collection*). Accessed May 19, 2025.

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2.8 ppmv HCN, dry basis and corrected to seven percent oxygen. A corresponding 95 percent reduction in the new source MACT floor would result in a standard below the 3xRDL value for HCN for cement kilns (1.1 ppmv).[90] Therefore the evaluated beyond-the-floor levels are 2.8 ppmv HCN for existing sources and 1.1 ppmv HCN for new sources, both on a dry basis and corrected to seven percent oxygen.

The EPA estimates that 13 of 14 existing HWC cement kilns and all new cement kilns would need to install RTO to meet the beyond-the-floor limits. For existing sources, this would result in a 311 tpy reduction of HCN, at approximately a total capital investment of $122 million (2024$) and total annualized costs of $36.3 million (2024$) for a cost-effectiveness of $130,000 (2024$) per ton of HCN reduced. For a new source, this would result in a 22.3 tpy reduction of HCN at approximately a total capital investment of $9.40 million (2024$) and total annualized costs of $2.80 million (2024$) for a cost effectiveness of $125,000 (2024$) per ton of HCN reduced. The EPA has previously considered $15,900 per ton of HCN reduced (adjusted to 2024$) to not be cost-effective[91] and, in keeping with that prior consideration, proposes not to consider either $130,000 or $125,000 per ton of HCN reduced to be cost-effective. We also note that the costs used in this analysis underestimate the true cost of installing RTO because there are additional facility-specific costs that we could not estimate. For example, the cost estimates do not include the cost of securing a natural gas supply and installing a

[90] See the memorandum *Representative Detection Level for Hydrogen Cyanide for Cement Kilns and Hazardous Waste Combustors*, which is available in the docket for this proposed rulemaking (Docket ID No. EPA-HQ-OAR-2004-0022).

[91] Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards, 79 FR 36880 (June 30, 2014).

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new natural gas connection to the RTO. Based on this analysis, and even with underestimated costs, the EPA proposes to conclude that the installation and operation of RTO for the BTF control of HCN emissions are not cost-effective for either existing or new HWC cement kilns.

Additional non-air quality health and environmental impacts and energy requirements of RTO must also be considered. Installation of RTO would increase emissions of criteria air pollutants, such as NOx and CO because RTO requires the combustion of additional natural gas for fuel. It would consume an estimated 15,000–16,000 standard cubic feet of natural gas per hour. Based on the foregoing discussions, the EPA is proposing the MACT floor of 56 ppmv HCN, dry basis and corrected to seven percent oxygen, for existing cement kilns and the MACT floor of 1.8 ppmv HCN, dry basis and corrected to seven percent oxygen, for new cement kilns.

The EPA is proposing that compliance with the HCN emission limits for cement kilns would be required within three years after the publication of the final rule and that demonstration through an initial compliance test would occur no later than six months after the compliance date. This would be followed by subsequent demonstration of compliance once every five years during the CPT using EPA Method 320 or, if there are entrained water droplets in the flue gas, an alternative test method submitted and approved by the Administrator according to 40 CFR 63.7(f). For affected facilities that commence construction or reconstruction after **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, owners or operators would be required to comply with all requirements of the subpart, including the HCN emission limits, no later than the

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effective date of the final rule or upon startup, whichever is later, and must demonstrate compliance no later than six months after the compliance date.

The EPA solicits comment on whether the HCN emission limit cement kilns should be subcategorized by kiln type and, if so, how (C-8). The EPA has HCN emission data for two types of HWC cement kilns: a wet process kiln and three preheater/precalciner kilns. There are other types of HWC cement kilns for which EPA does not have HCN emission data, including modified wet process with a preheater/precalciner and dry process without a preheater/precalciner. Without additional data, if we were to subcategorize in response to this proposal, the EPA could set HCN emission limits for wet process kilns separately from preheater/precalciner and other dry process kilns. Using the UPL method to account for variability when determining the level of the MACT floors, the existing and new source MACT floors for wet process HWC cement kilns would be 1.8 ppmv HCN, dry basis and corrected to seven percent oxygen.[92] Using the UPL method to account for variability when determining the level of the MACT floors, the existing source MACT floor for preheater/precalciner and dry process HWC cement kilns would be 27 ppmv HCN, dry basis and corrected to seven percent oxygen, and the new source MACT floor for preheater/precalciner and dry process HWC cement kilns would be 5.5 ppmv HCN, dry basis and corrected to seven percent oxygen. [93]

4. Liquid fuel boilers

[92] MACT Floor and Beyond-the-Floor Analysis for Hazardous Waste Combustors, which is available in the docket for this proposed rulemaking (Docket ID No. EPA-HQ-OAR-2004-0022).
[93] *Id.*

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a. Hydrogen fluoride

For HF emissions from liquid fuel boilers, the EPA is proposing work practice standards with the same multiple compliance options proposed for HF emissions from HWC incinerators. The EPA collected HF emissions data from four HWC liquid fuel boilers in the January 2024 emissions testing request. We did not require three liquid fuel boilers to test for HF because they reported in the August 2023 questionnaire that they did not burn fluorinated waste. We found that 75 percent of the HF data was below the detection limit, and so the Administrator finds it appropriate to propose a work practice standard for emissions of HF from major source liquid fuel boilers under CAA section 112(h)(1).

The EPA is proposing the same multi-option work practice standard for liquid fuel boilers as was described in section IV.A. of this preamble for incinerators. Approximately five percent of liquid fuel boilers have integrated APCDs with AWFCO-interlocked operating parameter limits that control HCl emissions, and these would fall into the Option 1 work practice. The results of the August 2023 questionnaire suggest that approximately 45 percent of liquid fuel boilers do not feed fluorine-containing materials and so would fall into the Option 2 work practice. Any major source liquid fuel boiler that cannot meet the Option 1 or Option 2 work practices would follow the Option 3 monitoring work practice. Based on the fluorine feed rates in the January 2024 emissions testing request, we do not anticipate that any liquid fuel boilers would be required to complete a one-time HF emissions test; however, the one-time test, if triggered, would provide the EPA with emissions data to use in a future CAA section

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112(d)(6) technology review if HF is found to be consistently emitted in measurable quantities.

The EPA is proposing that compliance with the HF work practice standard for liquid fuel boilers would be required within three years after the publication of the final rule and that demonstration through a certification, test plan, or initial compliance test would occur no later than six months after the compliance date. This would be followed by subsequent demonstration of compliance once every five years during the CPT. Emission testing for HF must use EPA Methods 26A or 320. For affected facilities that commence construction or reconstruction after **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, owners or operators would be required to comply with all requirements of the subpart, including the HF work practice standard, no later than the effective date of the final rule or upon startup, whichever is later, and must demonstrate compliance no later than six months after the compliance date.

b. Hydrogen cyanide

The EPA is proposing to subcategorize liquid fuel boilers by size, under CAA section 112(d)(1), for the purposes of the proposed HCN emission standard.

The EPA collected HCN emissions data from six major source HWC liquid fuel boilers in the January 2024 emissions testing request, and HCN was detected in 76 percent of emissions test runs. The smallest boiler, which is also equipped with a wet scrubber that uses NaOH in the scrubbing liquid, did not have any detectable HCN emissions. According to CAA section 112(d)(1), the Administrator may "distinguish among classes, types, and sizes of sources within a category or subcategory" in

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establishing emission standards.[94] In general, the design and operation of a liquid fuel boiler varies according to size and type. For example, many major source HWC liquid fuel boilers with capacity of 50 MMBTU/hr and less are firetube boilers or process heaters, while almost all larger HWC liquid fuel boilers are watertube boilers. Very large boilers, of sizes comparable to electric utility steam generating units (*i.e.*, greater than 250 MMBTU/hr) may also be designed differently to handle larger thermal loads. For example, they may have more burners, may have different methods of introducing pumpable hazardous waste to the combustion chamber (*e.g.*, liquid injection instead of liquid fired), or may have different methods of atomization than smaller boilers. This size cutoff aligns with the size used as part of the definition of electric utility steam generating units.[95] For these reasons, the EPA is proposing to subcategorize liquid fuel boilers by size for the purposes of the proposed HCN emission standard. The proposed size categories are as follows: capacity less than or equal to 50 MMBTU/hr, capacity greater than 50 MMBTU/hr but less than or equal to 250 MMBTU/hr, and capacity greater than 250 MMBTU/hr.

For units with a capacity that is less than or equal to 50 MMBTU/hr, the EPA has no data indicating that HCN is emitted because the boiler in this size category had no measurable emissions of HCN. Therefore, we are not proposing HCN emission limits for liquid fuel boilers with capacity less than or equal to 50 MMBTU/hr.

[94] 42 U.S.C. 7412(d)(1). *See also U.S. Sugar* 830 F.3d at 593–94 ("[T]he EPA has discretion to differentiate among classes, types, and sizes of sources within a category or subcategory." (internal citations omitted)).
[95] *See* 40 CFR part 60, subpart Da, Standards of Performance for Electric Utility Steam Generating Units.
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When separate subcategories are established under CAA 112(d)(1), a MACT floor is determined separately for each subcategory.[96] The MACT floor calculation was carried out separately for existing and new liquid fuel boilers in the other two size categories. To the EPA's knowledge, there are fewer than 30 major source liquid fuel boilers with capacity greater than 50 MMBTU/hr but less than or equal to 250 MMBTU/hr. The EPA had HCN emissions data from two of them. Our MACT floor analysis is based on the two sources for which we have data. In determining the level of the MACT floor, we used the UPL method to account for variability in performance, and we calculated the MACT floor at 2.7 ppmv HCN, dry basis and corrected to seven percent oxygen.[97] Based on available data, the EPA estimates that all existing liquid fuel boilers with capacity greater than 50 MMBTU/hr but less than or equal to 250 MMBTU/hr would be able to meet the MACT floor limit with no additional controls. The EPA also calculated a proposed new source limit from the best performing unit using the UPL method at 1.2 ppmv HCN, dry basis and corrected to seven percent oxygen.

To the EPA's knowledge, there are also fewer than 30 major source liquid fuel boilers with capacity greater than 250 MMBTU/hr. The EPA had HCN emissions data from three of them. Our MACT floor analysis is based on the three sources for which we have data. In determining the level of the MACT floor, we used the UPL method to account for variability in performance, and we calculated the MACT floor at 3.4 ppmv

[96] *U.S. Sugar*, 830 F.3d at 657 ("[T]he grant of this authority implicitly acknowledges that the EPA may need to set different emission standards within a category of major sources based on what is achievable for a subset of those sources.").
[97] MACT Floor and Beyond-the-Floor Analysis for Hazardous Waste Combustors, which is available in the docket for this proposed rulemaking (Docket ID No. EPA-HQ-OAR-2004-0022).
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HCN, dry basis and corrected to seven percent oxygen.[98] Based on available data, the EPA estimates that all existing liquid fuel boilers with capacity greater than 250 MMBTU/hr would be able to meet the MACT floor limit with no additional controls. The EPA also calculated a proposed new source limit from the best performing unit using the UPL method at 0.57 ppmv HCN, dry basis and corrected to seven percent oxygen. However, the limit calculated by the UPL method is below the 3xRDL value for HCN for liquid fuel boilers (1.1 ppmv), and so the proposed new source limit based on the 3xRDL value is 1.1 ppmv HCN, dry basis and corrected to seven percent oxygen.[99]

The EPA evaluated whether BTF emission limits would be appropriate for HCN emissions from all the liquid fuel boiler subcategories except the new source limit for liquid fuel boilers with capacity greater than 250 MMBTU/hr, which is based on the 3xRDL and is already at the EPA's minimum level of the standard. One HWC liquid fuel boiler has a caustic scrubber that we expect to control HCN emissions, so we evaluated whether the incremental emissions reduction achievable with a caustic scrubber would be cost-effective for existing and new liquid fuel boilers with capacity greater than 50 MMBTU/hr. We estimate that a caustic scrubber would achieve approximately 95 percent reduction of HCN from a liquid fuel boiler. A corresponding 95 percent decrease in each UPL MACT floor value would be below the 3xRDL level for HCN emissions from a liquid fuel boiler (1.1 ppmv). Therefore, the BTF emission limits, reflecting the 3xRDL value, would be:

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[98] *Id.*

[99] See the memorandum *Representative Detection Level for Hydrogen Cyanide for Cement Kilns and Hazardous Waste Combustors*, which is available in the docket for this proposed rule (Docket ID No. EPA-HQ-OAR-2004-0022).

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- For existing sources with capacity greater than 50 MMBTU/hr but less than or equal to 250 MMBTU/hr, 1.1 ppmv HCN, dry basis and corrected to seven percent oxygen.
- For new sources with capacity greater than 50 MMBTU/hr but less than or equal to 250 MMBTU/hr, 1.1 ppmv HCN, dry basis and corrected to seven percent oxygen.
- For existing sources with capacity greater than 250 MMBTU/hr, 1.1 ppmv HCN, dry basis and corrected to seven percent oxygen.

For liquid fuel boilers with a capacity greater than 50 MMBTU/hr but less than or equal to 250 MMBTU/hr, the EPA estimates that 20 of 21 existing sources and all new sources would need to install a caustic scrubber to meet the BTF limit. For existing sources, this would result in an industry-wide 13.0 tpy reduction of HCN, at approximately a total capital investment of $30.9 million (2024$) and total annualized costs of $7.57 (2024$) for a cost-effectiveness of $588,000 (2024$) per ton of HCN reduced. For a new source, this would result in a 0.63 tpy reduction of HCN at approximately a total capital investment of $1.55 million (2024$) and total annualized costs of $378,000 (2024$) for a cost effectiveness of $601,000 (2024$) per ton of HCN reduced.

For liquid fuel boilers with capacity greater than 250 MMBTU/hr, the EPA estimates that 17 of 19 existing sources would need to install a caustic scrubber to meet the BTF limit. For existing sources, this would result in an industry-wide 9.34 tpy reduction of HCN, at approximately a total capital investment of $45.9 million (2024$)

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and total annualized costs of $10.2 million (2024$) for a cost-effectiveness of $1.14 million (2024$) per ton of HCN reduced. Because the MACT floor new source limit is based on the 3xRDL for HCN emissions from liquid fuel boilers, no emissions reductions or cost effectiveness were calculated for these units.

A caustic scrubber would also offer some co-control of HCl and HCN. If other acid gases are present, then the amount of caustic required would increase from the amount we estimated, and there would be corresponding annual cost increases. The EPA has previously considered $15,900 per ton of HCN reduced (converted to 2024$) to not be cost-effective[100] and, in keeping with that prior determination, proposes not to consider $588,000, $601,000, or $1.14 million per ton of HCN reduced to be cost-effective. A caustic scrubber would also produce additional wastewater that would need to be treated onsite or removed from the site for treatment or disposal. Additional energy is required both to operate the scrubber and to treat or otherwise dispose of wastewater. After considering both the MACT floor and BTF options for existing and new sources, the EPA is proposing to conclude that the installation of a caustic scrubber as a BTF option is not warranted considering the cost, non-air quality health and environmental impacts, and energy requirements for either existing or new liquid fuel boilers. Therefore, the EPA is proposing the following HCN emission limits for liquid fuel boilers:

- For existing sources with capacity greater than 50 MMBTU/hr but less than or equal to 250 MMBTU/hr, 2.7 ppmv HCN, dry basis and corrected to seven percent oxygen.

[100] Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards, 79 FR 36880 (June 30, 2014).

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- For new sources with capacity greater than 50 MMBTU/hr but less than or equal to 250 MMBTU/hr, 1.2 ppmv HCN, dry basis and corrected to seven percent oxygen.
- For existing sources with capacity greater than 250 MMBTU/hr, 3.4 ppmv HCN, dry basis and corrected to seven percent oxygen.
- For new sources with capacity greater than 250 MMBTU/hr, 1.1 ppmv HCN, dry basis and corrected to seven percent oxygen.

The EPA is proposing that compliance with the HCN emission limits for all liquid fuel boilers would be required within three years after the publication of the final rule and that demonstration through an initial compliance test would occur no later than six months after the compliance date. This would be followed by demonstration of compliance once every five years during the CPT using EPA Method 320 or, if there are entrained water droplets in the flue gas, an alternative test method submitted and approved by the Administrator according to 40 CFR 63.7(f). For affected facilities that commence construction or reconstruction after **[INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, owners or operators would be required to comply with all requirements of the subpart, including the HCN emission limits, no later than the effective date of the final rule or upon startup, whichever is later, and must demonstrate compliance no later than six months after the compliance date.

5. HCl production furnaces

a. Hydrogen fluoride

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The EPA is not proposing MACT standards for HF emissions from HCl production furnaces. The EPA surveyed the owners or operators of two HCl production furnaces in the August 2023 questionnaire. Both indicated that they do not burn fluorine-containing materials in their HCl production furnaces. Follow-up conversations between the EPA and these owners indicated that no fluorine-containing materials would be fed into HCl production furnaces because such materials contaminate their HCl product. The EPA has no reason to expect that HF is emitted from HWC HCl production furnaces, and, therefore, we are not proposing any emission standard for HF from HWC HCl production furnaces.

b. Hydrogen cyanide

The EPA is not proposing MACT standards for HCN emissions from HCl production furnaces. The EPA collected HCN emissions data from two HWC HCl production furnaces in the January 2024 emissions testing request. HCN was not measured in any test run. Because the EPA emissions data indicates that HCN is not measurably emitted from HWC HCl production furnaces, the EPA is not proposing any emission standard for HCN from HWC HCl production furnaces.

6. Lightweight aggregate kilns

The EPA is not proposing any MACT standards for emissions from lightweight aggregate kilns. Although a January 2024 emissions testing request was issued to a company that owns and operates lightweight aggregate kilns, both kilns went out of service during the response period and, to the EPA's knowledge, have neither begun

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operating again nor initiated RCRA closure.[101] These are the only lightweight aggregate kilns in the source category. Because the EPA has no emissions data on which to base decisions about whether or how to regulate HF or HCN emissions from lightweight aggregate kilns, we are not proposing emission standards for HF or HCN emissions from lightweight aggregate kilns at this time. If the existing or new HWC lightweight aggregate kilns begin operating, we expect that we would collect emissions testing data from them and address potential emissions in a subsequent action.

B. What are the results of the risk assessment and analyses?

As described in section III.C., the EPA conducts a risk assessment to estimate the human health and environmental risks posed by HAP emissions from the source category. The following five subsections provide a summary of the results of that risk assessment. Detailed information about the assessment is provided in the document titled *Residual Risk Assessment for the Hazardous Waste Combustors Source Category in Support of the 2025 Risk and Technology Review Proposed Rule*, which is available in the docket for this proposed rule.

1. Chronic Inhalation Risk Assessment Results

The results of the chronic inhalation cancer risk assessment indicate that, based on estimates of current actual emissions, the MIR posed by emissions from the source category is 9-in-1 million, driven by Ni, Cr(VI) compounds, and As compounds emissions from liquid fueled boilers. The total estimated cancer incidence based on actual emissions is 0.07. Within 50 km of HWC facilities, the population exposed to cancer risk

[101] *See* 40 CFR 63.1200(b), 265.351, 266.102(e)(11).

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greater than or equal to 1-in-1 million is approximately 540,000 people. The maximum modeled chronic noncancer TOSHI for the source category based on actual emissions is estimated to be 0.3 (for respiratory effects) due to emissions of Ni, HCl, and Co compounds from liquid fuel boilers. No people are estimated to be exposed to a TOSHI greater than one. Table 2 of this preamble provides a summary of the HWC source category inhalation risk assessment results.

Based on allowable emissions from the source category, the MIR is estimated to be 100-in-1 million, driven by As compounds, Cr(VI) compounds, Be compounds, and Ni compounds emitted from liquid fueled boilers. The total estimated cancer incidence based on allowable emissions is 0.9. Within 50 km of HWC facilities, no one is exposed to cancer risks greater than 100-in-1 million due to allowable emissions and the population exposed to cancer risk greater than or equal to 1-in-1 million due to allowable emissions is approximately 12.1 million people. The maximum modeled chronic noncancer TOSHI for the source category based on allowable emissions is estimated to be 1 (for respiratory effects) at two facilities. The TOSHI is driven by HCl emissions from lightweight aggregate kiln sources at one facility (which is not currently operating) and driven by Be compounds, Ni compounds, Co compounds, and Cr(VI) compounds emitted from liquid fuel boiler sources at the other facility. No people are estimated to be exposed to a TOSHI greater than one. Again, table 2 of this preamble provides a summary of the HWC source category inhalation risk assessment results.

Table 2—HWC Source Category Inhalation Risk Assessment Results Based on Actual and Allowable Emissions

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Risk Assessment	Number of Facilities[2]	Maximum Individual Cancer Risk (-in-1 million)[1]	Estimated Population at Increased Risk of Cancer ≥ 1-in-1 million	Estimated Annual Cancer Incidence (cases per year)	Maximum Chronic Noncancer TOSHI	Refined Maximum Screening Acute Noncancer HQ	Multipathway Screening Assessment
HWC Source Category – Actual Emissions	92	9	540,000	0.07	0.3 (respiratory)	2 (REL, As compounds)	
HWC Source Category – Allowable Emissions	92	100	12,100,000	0.9	1 (respiratory)	---	---
Facility-wide[2]	92	200	6,400,000	0.4	3 (respiratory)	---	---

[1] Maximum individual excess lifetime cancer risk due to HAP emissions.
[2] See "Facility-Wide Risk Results" in section IV.B.5. of this preamble for more details on this risk assessment.

2. Screening-Level Acute Risk Assessment Results

As presented in table 2 of this preamble, the estimated reasonable worst-case off-site (*i.e.*, refined) acute exposures to emissions from the HWC source category result in a maximum modeled acute noncancer HQ of 2 based on the REL for As compounds. Detailed information about the assessment, including evaluation of the screening-level acute risk assessment results and refinement of the value, is provided in the main body and appendix 10 of the document titled *Residual Risk Assessment for the Hazardous Waste Combustor Source Category in Support of the 2025 Risk and Technology Review Proposed Rule*, which is available in the docket for this proposed rule.

3. Multipathway Risk Screening Results

For the HWC source category, 92 facilities emitted at least one PB-HAP, including As compounds, Cd compounds, PCDD/PCDF, Hg compounds, and POM.

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Emissions of these PB-HAP from each facility were compared to the respective pollutant-specific Tier 1 screening emission thresholds. The Tier 1 screening analysis indicated that 92 facilities exceeded the Tier 1 emission threshold for As compounds, 19 facilities for Cd compounds, 84 facilities for PCDD/PCDF, and 75 facilities for Hg compounds. No facilities exceeded the Tier 1 emission threshold for POM.

For facilities that exceeded the Tier 1 multipathway screening threshold emission rate for one or more PB-HAP, we used additional facility site-specific information to perform a Tier 2 multipathway risk screening assessment. The Tier 2 assessment resulted in a maximum Tier 2 noncancer screening value of 80 for methylmercury and 2 for Cd compounds based on the fisher scenario, a cancer screening value of 300 for PCDD/PCDF and 90 for As compounds based on the fisher scenario, and a cancer screening value of 600 for As compounds based on the gardener scenario. For these pollutants and scenarios, additional screening was performed as detailed here. The Tier 2 assessment indicated that the maximum cancer screening value for the gardener scenario for As compounds was four and the maximum noncancer screening value for the gardener scenario for Hg and Cd compounds were < 1; therefore, no further screening was performed for these pollutants and scenarios.

For Hg compounds, Cd compounds, As compounds, and PCDD/PCDF, a Tier 3 screening assessment was conducted for the fisher scenario and for As compounds for the gardener scenario. In the Tier 3 screening, lakes near the facilities were reviewed on aerial photographs to ensure they were accessible for fishing. Any lakes not accessible were removed from the assessment. After conducting the Tier 3 assessment, the screening

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values for Hg compounds and Cd compounds remained at 80 and 2, respectively. For PCDD/PCDF, the Tier 3 screening value was reduced to 200 and for As compounds the Tier 3 screening value was reduced to 80 in the fisher scenario and 300 in the gardener scenario.

An exceedance of a screening threshold emission rate in any of the tiers cannot be equated with a risk value or an HQ (or HI). Rather, it represents a high-end estimate of what the risk or hazard may be. For example, a screening value of two for a noncarcinogen can be interpreted to mean that the Agency is confident that the HQ would be lower than two. Similarly, a Tier 2 cancer screening value of seven means that we are confident that the cancer risk is lower than 7-in-1 million. Our confidence comes from the many conservative, or health-protective, assumptions encompassed in the screening tiers: the Agency chooses inputs from the upper-end of the range of possible values for the influential parameters used in the screening tiers, and the Agency assumes that the exposed individual exhibits atypical ingestion behavior that would lead to a high total exposure.

The EPA determined that it is not necessary to go beyond the Tier 3 analysis or conduct a site-specific assessment for Cd compounds, Hg compounds, PCDD/PCDF, or As compounds. The EPA compared the Tier 2 screening results to site-specific risk estimates for five previously assessed source categories which had characteristics that make them most useful for interpreting the HWC screening results. For these source categories, the EPA assessed fisher risks for Cd compounds, Hg compounds, PCDD/PCDF, and/or As compounds as well as gardener risks for As compounds by

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conducting site-specific assessments. The EPA used AERMOD for modeling air dispersion and Tier 2 screens that used multi-facility aggregation of chemical loading to lakes where appropriate. These assessments indicated that the site-specific hazard/risk values for Hg compounds, Cd compounds, and As compounds were at least 50 times lower than the respective Tier 2 screening values and the cancer site-specific risk value for PCDD/PCDF was at least 10 times lower (refer to EPA Docket IDs EPA-HQ-OAR-2017-0015 and EPA-HQ-OAR-2019-0373 for a copy of these reports).[102]

Based on our review of these analyses, if the EPA was to perform a site-specific assessment for the HWC source category, we would expect similar magnitudes of decreases from the Tier 2 screening values. For Cd compounds, the maximum noncancer HQ for the fisher scenario would be less than one. For PCDD/PCDF, the maximum cancer risk under the fisher scenario would likely decrease to at or below 30-in-1 million. For As compounds, the maximum cancer risk under the fisher and gardener scenarios would likely decrease to at or below 10-in-1 million. Finally, for Hg, the screening value after applying the site-specific adjustment factor would be reduced to two. However, given that the average site-specific screening value for Hg in the fisher scenario was over 300 times lower than the Tier 2 value and, in general, given the conservative nature of the screen, we are confident that the HQ for ingestion exposure from Hg is at or below one.

[102] EPA Docket records (EPA-HQ-OAR-2017-0015): *Appendix 11 of the Residual Risk Assessment for the Taconite Manufacturing Source Category in Support of the Risk and Technology Review 2019 Proposed Rule; Appendix 11 of the Residual Risk Assessment for the Integrated Iron and Steel Source Category in Support of the Risk and Technology Review 2019 Proposed Rule; Appendix 11 of the Residual Risk Assessment for the Portland Cement Manufacturing Source Category in Support of the 2018 Risk and Technology Review Final Rule; Appendix 11 of the Residual Risk Assessment for the Coal and Oil-Fired EGU Source Category in Support of the 2018 Risk and Technology Review Proposed Rule;* and EPA Docket records (EPA-HQ-OAR-2019-0373): *Appendix 11* of the *Residual Risk Assessment for Iron and Steel Foundries Source Category in Support of the 2019 Risk and Technology Review Proposed Rule.*

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Further details on the Tier 3 screening assessment can be found in appendices 10 and 11 of *Residual Risk Assessment for the Hazardous Waste Combustor Source Category in Support of the 2025 Risk and Technology Review Proposed Rule.*

In evaluating the potential for multipathway risk from emissions of Pb compounds, we compared modeled annual Pb concentrations to the primary Pb NAAQS (0.15 $\mu g/m^3$). The highest annual Pb concentration of 0.004 $\mu g/m^3$ (or 0.012 $\mu g/m^3$ when multiplied by four to assume a health-protective three-month average) is well below the Pb NAAQS, indicating low potential for multipathway risk of concern due to Pb emissions.

Detailed information about the assessment is provided in the document titled *Residual Risk Assessment for the Hazardous Waste Combustor Source Category in Support of the 2025 Risk and Technology Review Proposed Rule*, which is available in the docket for this proposed rule.

4. Environmental Risk Screening Results

As described in section III.A. of this preamble, we conducted a screening assessment for adverse environmental effects for the HWC source category. The environmental screening assessment included the following PB-HAP: As compounds, Cd compounds, PCDD/PCDF, Pb compounds, methylmercury, divalent Hg, and POM. In addition, we conducted an environmental screening assessment for the acid gases HCl and HF.

In the Tier 1 screening analysis for PB-HAP (other than Pb compounds, which were evaluated differently), As compounds and POM emissions had no exceedances for

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any ecological benchmark. Cd compounds, PCDD/PCDF, divalent Hg, and methylmercury had Tier 1 screening values above various benchmarks. The maximum Tier 1 screening value was 200 for methylmercury emissions for the surface soil NOAEL avian ground insectivores' benchmark (woodcock). Because there were Tier 1 exceedances, a Tier 2 environmental screening assessment was performed for Cd compounds, PCDD/PCDF, divalent Hg, and methylmercury emissions.

In the Tier 2 screen, Cd compounds and PCDD/PCDF emissions did not exceed any ecological benchmark. The following Tier 2 screening values were exceeded for methylmercury emissions: a screening value of six for the fish-eating birds NOAEL benchmark (specifically for the merganser), a screening value of two for the maximum allowable toxicant level for the merganser, and a maximum screening value of three (a total of eight facilities had screening values from two to three) for avian ground insectivores (woodcock).

The following Tier 2 screening values were exceeded for divalent Hg emissions: a maximum screening value of five for a sediment threshold level (emissions from 10 facilities contributed to this screening value) and a maximum screening value of two for an invertebrate threshold level (a total of five facilities had a screening value of two).

Since there were Tier 2 exceedances, we conducted a Tier 3 environmental risk screen. In the Tier 3 environmental risk screen, we looked at aerial photos of the lakes potentially being impacted by Hg emissions. Unnamed "lake" number 139670 is the lake at which the maximum methylmercury screening value of six was modeled for the fish-eating birds NOAEL benchmark (specifically for the merganser). It is also the lake where

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the maximum divalent Hg screening value of five was modeled for the sediment threshold level. The aerial photos reveal that this "lake" is an open bay off the Gulf of America. As such, it is not a "closed" waterbody, and therefore we do not expect accumulation of Hg concentrations. Therefore, the screening results for "lake" 139670 were removed from the analysis.

Once the screening results for "lake" 139670 were removed, the highest Tier 2 screening values for methylmercury were a screening value of three for a water-column NOAEL benchmark for fish-eating birds (merganser) and a screening value of three for a surface soils NOAEL benchmark for avian ground insectivores (woodcock). The water-column NOAEL benchmark for fish-eating mammals (mink) and the soils NOAEL benchmark for mammalian insectivores (shrew) were not exceeded for methylmercury in Tier 2. In addition, the water-column LOAEL level benchmarks for fish eating birds (merganser) and fish-eating mammals (mink) were not exceeded in Tier 2 for methylmercury.

Once the screening results for "lake" 139670 were removed, the highest Tier 2 screening value for divalent Hg is a screening value of three for a sediment threshold level benchmark. This screening value is the result of emissions from three facilities near one lake (lake 431155), with one facility being the primary contributor (facility 450755720711). The water-column community threshold level benchmark and the surface soil threshold level benchmark for plant communities were not exceeded for divalent Hg in Tier 2.

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In summary, Hg emissions from this category resulted in ecological screening values above one (maximum screening value of three) for only some of the most sensitive ecological benchmarks for Hg, while other sensitive benchmarks for Hg were not exceeded. Therefore, we conclude that the ecological impacts of Hg emissions from this category are not widespread and significant.

We did not estimate any exceedances of the secondary Pb NAAQS. The highest annual Pb concentration of 0.004 $\mu g/m^3$ is well below the Pb NAAQS (0.15 $\mu g/m^3$ in total suspended particles as a three-month average), indicating low potential for environmental risk of concern due to Pb emissions.[103]

We also conducted an environmental risk screening assessment specifically for acid gases (*i.e.,* HCl and HF) for the HWC source category. For HCl and HF, the average modeled concentration around each facility (*i.e.,* the average concentration of all off-site data points in the modeling domain) did not exceed any ecological benchmark. In addition, each individual modeled concentration of HCl and HF (*i.e.,* each off-site data point in the modeling domain) was below the ecological benchmarks for all facilities.

Based on the results of the environmental risk screening analysis, we do not expect an adverse environmental effect resulting from HAP emissions from this source category and we are proposing that it is not necessary to set any additional standards, beyond those described above, to prevent, taking into consideration costs, energy, safety, and other relevant factors, an adverse environmental effect. Detailed information about the assessment is provided in the document titled *Residual Risk Assessment for the*

[103] 81 FR 71906 (Oct. 18, 2016).

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Hazardous Waste Combustors Source Category in Support of the 2025 Risk and Technology Review Proposed Rule, which is available in the docket for this proposed rule.

5. Facility-Wide Risk Results

We conducted an assessment of facility-wide risk as described in section III.C. of this preamble to characterize the source category risk in the context of whole facility risk. We estimated facility-wide risks using the NEI-based data described in section III.C. of this preamble. The maximum lifetime individual cancer risk posed by the 92 facilities modeled based on facility-wide emissions is 200-in-1 million, driven by emissions of ethylene oxide from a different source category (commonly referred to as the Hazardous Organic NESHAP), and the risk review for that source category has already been completed.[104] The total estimated cancer incidence based on facility-wide emission levels is 0.4 excess cancer cases per year. Within 50 km of HWC facilities, the population exposed to cancer risk greater than 100-in-1 million due to facility-wide emissions is approximately 250 people, and the population exposed to cancer risk greater than or equal to 1-in-1 million is approximately 6.4 million people. The maximum chronic noncancer TOSHI posed by facility-wide emissions is estimated to be three (for respiratory effects) at two different facilities, driven by non-category emissions of chlorine at both. Approximately 170 people are estimated to be exposed to a TOSHI greater than one due to facility-wide emissions.

[104] For more information about the Hazardous Organic NESHAP, see *https://www.epa.gov/stationary-sources-air-pollution/synthetic-organic-chemical-manufacturing-industry-national*.

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C. What are our proposed decisions regarding risk acceptability, ample margin of safety, and adverse environmental effect?

1. Risk Acceptability

As noted in section III.A. of this preamble, the EPA weighs a wide range of health risk measures and factors in our risk acceptability determination, including the cancer MIR, the number of persons in various cancer and noncancer risk ranges, cancer incidence, the maximum noncancer TOSHI, the maximum acute noncancer HQ, and risk estimation uncertainties (54 FR 38044, September 14, 1989).

The results of the risk assessment indicate that, based on actual emissions, the MIR is 9-in-1 million, driven by emissions of Ni compounds, Cr(VI) compounds, and As compounds. The estimated incidence of cancer due to inhalation exposures is 0.07 excess cancer case per year. No people are estimated to have inhalation cancer risks greater than 100-in-1 million, and the population estimated to be exposed to cancer risks greater than or equal to 1-in-1 million is approximately 540,000. The estimated maximum chronic noncancer TOSHI from inhalation exposure for this source category is 0.07 for respiratory effects. The acute risk screening assessment of reasonable worst-case inhalation impacts indicates a maximum acute HQ of two for the REL for As compounds. In addition, the risk assessment indicates no significant potential for multipathway health effects.

For allowable emissions, the MIR is 100-in-1 million, driven by emissions of Ni compounds, Cr(VI) compounds, and As compounds. The estimated incidence of cancer due to inhalation exposures is 0.8 excess cancer case per year. No people are estimated to

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have inhalation cancer risks greater than 100-in-1 million, and the population estimated to be exposed to cancer risks greater than or equal to 1-in-1 million is approximately 12.1 million. The estimated maximum chronic noncancer TOSHI from inhalation exposure for this source category is one for respiratory effects. We note that HWC source category actual emissions are much lower than allowable emissions. The allowable emissions are based on the value of the standard and the maximum allowable stack gas flow rate, and they assume that an HWC operates at this maximum capacity for 8,760 hours per year. This is an upper-bound assumption because HWCs cannot operate at their maximum capacity every hour of the year, so the maximum allowable emissions would not be possible. In addition, RCRA omnibus authority provides a site-specific backstop for emission rates. Many facilities have additional HAP emission limits established under RCRA. For those reasons, we do not expect actual emissions to approach MACT-allowable emissions.

To summarize our upper-bound, health-protective analysis, the residual risk assessment found that the MIR posed by emissions from the source category is 9-in-1 million, and the total estimated cancer incidence is 0.07. The population exposed to cancer risk greater than or equal to 1-in-1 million is approximately 540,000 people. The maximum chronic noncancer TOSHI is estimated to be 0.3 (for respiratory effects). Considering all of the health risk information and factors discussed above, including the uncertainties discussed in section III. of this preamble, the EPA proposes that the risks for this source category under the current NESHAP provisions are acceptable.

2. Ample Margin of Safety Analysis

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The second step in the residual risk decision framework is a determination of whether more stringent emission standards are required to provide an ample margin of safety to protect public health. In making this determination, we considered the health risk and other health information considered in our acceptability determination, along with additional factors not considered in the risk acceptability step, including costs and economic impacts of controls, technological feasibility, uncertainties, and other relevant factors, consistent with the approach of the Benzene NESHAP.

In conducting the ample margin of safety analysis for the HWC NESHAP, we also considered control technologies for PCDD/PCDF emissions that were identified in section IV.D. of this preamble, specifically a Shell Dioxin Destruction System (SDDS) and a Gore Mercury Control System (GMCS). As detailed in section IV.D. of this preamble, estimated emission reductions of PCDD/PCDF were 0.211 grams of PCDD/PCDF toxic equivalency quotient (TEQ) per year per unit. Emission reductions of PCDD/PCDF would have no impact on the cancer MIR or the maximum noncancer TOSHI. It would have a minimal impact on the cancer incidence, of which greater than 99 percent of is attributable to emissions of Ni compounds, Cr(VI) compounds, As compounds, Cd compounds, and Be compounds, as well as the number of people exposed to cancer risks greater than or equal to one. The SDDS emission reductions could potentially lower the cancer risks estimated in the Multipathway Risk Screening discussed in section IV.B.3. of this preamble. However, in conducting the technology review described in sections III.C. and IV.D. of this preamble, we found that the potential emission reductions were relatively small (0.211 grams of PCDD/PCDF TEQ per year

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per unit) and we are proposing that the potential control options that we evaluated are not cost-effective (cost-effectiveness of $1.42 million per gram of PCDD/PCDF TEQ reduction).

For the GMCS, emission reductions were estimated to be 13 pounds of Hg per unit per year. The emission reductions would have no impact on the cancer MIR, maximum TOSHI, cancer incidence, or number of people exposed to cancer risk levels of greater than or equal to 1-in-1 million. Similar to the SDDS emission reductions, the GMCS emission reductions could potentially lower the cancer risks estimated in the Multipathway Risk Screening discussed in section IV.B.3. of this preamble. However, also like the SDDS, we are proposing to conclude that the GMCS is not cost-effective, with an estimated annualized cost-effectiveness of $62,000 per pound of Hg reduction (see section IV.D. of this preamble).

Considering the high overall costs of the control options that we evaluated and relatively small emissions reductions, we are proposing to determine that the control technologies are not necessary to provide an ample margin of safety to protect public health. Therefore, based on our weighing of all the relevant factors as presented in the risks analyses for this source category and all of the other information discussed earlier in this section, we propose to conclude that the current standards provide an ample margin of safety to protect public health. We are also requesting comment on whether there are additional control measures for emission sources subject to the HWC standards that are necessary to provide an ample margin of safety to protect public health (C-9).

3. Adverse Environmental Effect

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Based on our screening assessment of environmental risk presented in section III.A.4. of this preamble, we did not identify any areas of concern with respect to environmental risk. Therefore, we have determined that HAP emissions from the source categories do not result in an adverse environmental effect. Taking into consideration costs, energy, safety, and other relevant factors, we are proposing that it is not necessary to set a more stringent standard to prevent an adverse environmental effect.

D. What are the results and proposed decisions based on our technology review?

As described in section III.B. of this preamble, the EPA's technology review under CAA section 112(d)(6) focused on the identification and evaluation of potential developments in practices, processes, and control technologies that have occurred since the promulgation of the HWC NESHAP in 2005. We reviewed various sources of information to identify any such developments and found that two new control technologies have been employed in the HWC NESHAP source category on one incinerator since 2005: the SDDS for control of PCDD/PCDF and the GMCS for control of Hg. Detailed information about the technology review can be found in the memorandum titled *Clean Air Act Section 112(d)(6) Technology Review for the Hazardous Waste Combustor Source Category*, which is available in the docket for this proposed rule (Docket ID No. EPA-HQ-OAR-2004-0022). The EPA is also specifically requesting comment on whether we should consider additional developments not addressed here or in the technical memorandum for emission sources subject to the HWC NESHAP (C-10).

1. Shell Dioxin Destruction System

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The SDDS uses a catalyst to promote the decomposition of PCDD/PCDF and its precursors in the gas phase, similar to selective catalytic reduction (SCR). The system is a lateral flow reactor design and can be used in solid and liquid waste incinerators. A study on the SDDS indicates that it removes approximately 98 percent of PCDD/PCDF compounds at a temperature of 150℃ with low gas space velocity through catalytic destruction.[105] Destruction at higher gas space velocities was temperature dependent. A control efficiency of 95 percent was used to estimate emission reductions attributable to the SDDS, and this was based on the results of a CfPT prior to the installation of the SDDS and a CPT after its installation on the HWC incinerator.

The EPA is not aware of any publicly available cost information for SDDS installation and operation for HWC units in the U.S. Because the SDDS is similar in principle and design to SCR, we estimated the costs of the SDDS using information from the EPA Control Cost Manual's section on SCR. The EPA estimates a total capital investment cost of $1,776,000 and a total annualized cost of $299,000 per year (2024$) for each unit that installs the SDDS. Using the 95 percent control efficiency demonstrated by the HWC that installed the SDDS and its PCDD/PCDF emissions, we estimate emission reductions of 0.211 grams of PCDD/PCDF TEQ per year for each unit that installs the SDDS. This results in an annualized cost-effectiveness of $1,419,000 per gram of PCDD/PCDF TEQ reduction. Lower control efficiency and lower pre-SDDS PCDD/PCDF emissions (as we expect for HWCs other than the unit that installed the

[105] Liljelind, P., et al. (2001). Removal of dioxins and related aromatic hydrocarbons from flue gas streams by adsorption and catalytic destruction. *Chemosphere*, 42, 615–623: https://doi.org/10.1016/S0045-6535(00)00235-6.

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SDDS) would substantially decrease the emission reductions of the SDDS, making it less cost-effective. The EPA has previously considered $300,000 per gram of PCDD/PCDF TEQ reduced (adjusted to 2024$) to not be cost-effective[106] and, in keeping with that prior determination, proposes not to consider $1,419,000 per gram of PCDD/PCDF TEQ reduced to be cost-effective. Due to the high cost and low potential emission reductions of PCDD/PCDF, the EPA proposes not to consider the SDDS a cost-effective technology to further reduce emissions of PCDD/PCDF from sources subject to the HWC NESHAP.

2. Gore Mercury Control System

The GMCS uses a series of modules containing catalysts and sorbents to capture elemental and oxidized Hg and co-control sulfur dioxide emissions. The GMCS has been considered in other EPA rulemakings, including the Phosphoric Acid Manufacturing NESHAP. Specifically, the control efficiency, module capacity, initial costs, and costs of modules from the Phosphoric Acid Manufacturing NESHAP GMCS analysis were used as the basis for the HWC NESHAP estimate.[107]

The EPA used the average Hg emission rates and stack gas flow rates for HWC incinerators that we developed in the residual risk review to also develop a cost estimate for installing, operating, and maintaining a GMCS at an "average" HWC. The EPA estimates a total capital investment cost of $4,143,000 and a total annualized cost of $804,000 per year (2024$) for each unit that installs a GMCS. Assuming 90 percent control efficiency, we estimate emission reductions of 13 pounds of Hg per unit per year.

[106] See the 2003 proposed and final rules for the National Emission Standards for Hazardous Air Pollutants for Primary Magnesium Refining, 68 FR 2970 (Jan. 22, 2003) and 68 FR 58615 (Oct. 10, 2003).
[107] 85 FR 19412 (Apr. 7, 2020).

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This results in an annualized cost-effectiveness of $62,000 per pound of Hg reduction. The EPA has previously considered $55,400 per pound of Hg reduced (adjusted to 2024$) to not be cost-effective[108] and, in keeping with that prior determination, proposes not to consider $62,000 per pound of Hg reduced to be cost-effective. Due to the high cost and low potential emission reductions of Hg, the EPA proposes not to consider the GMCS a cost-effective technology to further reduce emissions of Hg from sources subject to the HWC NESHAP.

In summary, we have not identified any additional relevant cost-effective developments in technologies, practices, or processes since promulgation of the HWC NESHAP in 2005 to further reduce HAP emissions. We also considered whether fenceline monitoring would be appropriate for the HWC NESHAP source category; however, the emissions from the source category are not fugitive emissions and come from stacks with an average height of approximately 125 feet and stack parameters that would cause the emissions to be much higher than where the fenceline monitors would be located. Therefore, we are not proposing any changes to the MACT standards in this action as a result of our technology review under CAA section 112(d)(6).

E. What other actions are we proposing?

In addition to the proposed actions described earlier in this document, we are proposing revisions to the NESHAP in response to intervening developments. Specifically, we are proposing revisions to the SSM provisions of the MACT rule in order to ensure that those provisions are consistent with *Sierra Club v. EPA*, 551 F.3d

[108] *See* the 2011 final rule for the National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category, 76 FR 9450 (Feb. 17, 2011).

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1019 (D.C. Cir. 2008), in which the D.C. Circuit vacated two provisions that the court interpreted as exempting sources from the requirement to comply with otherwise applicable CAA section 112(d) emission standards during periods of SSM.

The EPA is also proposing the following additional changes to the HWC NESHAP:

- Requiring electronic reporting of performance test results, notification of compliance reports, and certain other submissions;
- Allowing states to choose to exempt area sources from the requirement to obtain a title V permit;
- Removing the requirement that CO is kept between the average and maximum reported values during the CfPT;
- Explicitly allowing incorporation by reference of operating parameter limits determined during the CPT into title V permits;
- Clarifying that a relative accuracy test audit (RATA) must be performed within 60 days of every CPT;
- Removing the never-implemented requirement that sources install and operate PM CEMS;
- Removing references that were incorrectly incorporated by reference and have since expired;
- Clarifying the demonstration of compliance timeframe for new standards and removing an outdated demonstration of compliance timeline for the 2005 HWC NESHAP; and

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- Other minor editorial corrections.

Our analyses and proposed changes related to these issues are discussed as follows.

1. Emission Standards During Periods of SSM

In *Sierra Club v. EPA*, the D.C. Circuit vacated the SSM exemption contained in 40 CFR 63.6(f)(1) and 40 CFR 63.6(h)(1), holding that under CAA section 302(k), emission standards or limitations must be continuous in nature and that the SSM exemption violates the CAA's requirement that some section 112 standards apply continuously. In July 2024, the EPA proposed the removal of the malfunction exemption from the HWC NEHSAP, which, if finalized, would have required the standards for periods of normal operation to apply at all times.[109] We also indicated that we would address standards for periods of startup and shutdown in a future planned rulemaking action.[110] After considering comments received on the proposed removal of the malfunction exemption, the EPA is withdrawing that proposal and instead proposing a different standard for periods of malfunction, as described in this section. The EPA is also proposing standards for periods of startup and shutdown.

We are proposing to remove the SSM provision in the HWC NESHAP that appears at 40 CFR 63.1206(b). Consistent with *Sierra Club* v. *EPA*, we are proposing standards in this rule that apply at all times, specifically work practice standards that apply for periods of SSM. Although under the current HWC NESHAP emission standards and operating requirements do not apply during periods of SSM, there are other requirements that apply during these periods. Two specific requirements are notable: an

[109] 89 FR 59870.
[110] *Id.*

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approved SSM plan (40 CFR 63.1206(c)(2)) and the AWFCO requirement (40 CFR 63.1206(c)(3)).

Most sources demonstrate compliance with the RCRA requirement to minimize emissions from SSM events by complying with an approved SSM plan during those periods. Under the general provisions of 40 CFR part 63, the SSM plan must describe in detail procedures for operating and maintaining the source during periods of SSM and a program of corrective action for malfunction scenarios that would cause the source to exceed an applicable emission limit. If sources use the SSM plan to comply with RCRA requirements, the SSM plan must include a description of potential causes of malfunctions that may result in significant HAP releases and of actions the source is taking to minimize the frequency and severity of these malfunctions. In addition, when used to demonstrate RCRA compliance, SSM plans must be submitted to the Administrator (or an identified delegate) for approval, and any changes that may significantly increase emissions must also be submitted for approval.

All HWCs are required to have an AWFCO system. Hazardous waste feed to the HWC cannot restart until the event that triggered the AWFCO is resolved, which typically takes no less than one hour. HWCs must comply with the AWFCO system requirements during periods of SSM if they are burning hazardous waste during those periods.

While the D.C. Circuit established that, reading CAA sections 112 and 302(k) together, Congress has required that there must be continuous CAA section 112 standards, the court recognized that in some instances, it may not be feasible to prescribe

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or enforce an emission standard.[111] For example, the EPA may set different standards for periods of SSM, where feasible.[112] Additionally, the EPA may set work practice standards for periods of SSM under CAA section 112(h) where it is not feasible to accurately measure emissions.[113] Here, specifically, we are proposing work practice standards for periods of SSM because it is often not feasible to accurately measure emissions of HWCs during periods of SSM. Periods of SSM are transitory and often unstable for HWCs. The isokinetic sampling required in the primary means of compliance demonstration during stack testing cannot be met during unstable periods of operation. In addition, many OPLs required under the HWC NESHAP cannot be met during startup and shutdown, including minimum combustion temperature, and some APCDs cannot operate during the full duration of startup and shutdown. One example is that stack gas cannot be directed to a baghouse until the temperature surpasses the dew point.

For these reasons, the EPA is proposing work practice standards for periods of SSM. These work practice standards would be enforceable requirements that minimize emissions of HAP, primarily by preventing emissions. The work practice standards would include the following: (1) a clean fuel requirement for periods of startup and shutdown; (2) a requirement to follow an approved SSM plan during periods of SSM; and (3) the AWFCO system requirement.

[111] *Sierra Club*, 551 F.3d at 1027.
[112] *See* for example, 85 FR 40386, 40390, July 6, 2020 (Ethylene Production NESHAP); 80 FR 45280, 45285-87, 45292, July 29, 2015 (Mineral Wool and Wool Fiberglass NESHAP).
[113] *Id*.

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The clean fuel requirement for periods of startup and shutdown would limit which supplemental fuels could be burned during those periods to minimize emissions of HAP. For the HWC NESHAP, we are proposing that clean fuels would include one or a combination of natural gas, synthetic natural gas, propane, other Gas 1 fuels, distillate oil, syngas, ultra-low sulfur diesel, kerosene, hydrogen, refinery gas, liquified petroleum gas, and any other fuel authorized in the SSM plan. We are including the option to use any other authorized fuel to allow for cases where another fuel is required due to either combustor design or availability of a facility-produced fuel that is not listed and that has expected combustion emissions similar to those of the listed fuels. An example may include a hazardous waste that is hazardous only because it is flammable and is currently allowed to be burned during startup in accordance with 40 CFR 63.1206(c)(2)(v)(B).

The EPA is proposing that all sources must follow an approved SSM plan during periods of SSM. This is a change from the July 2024 proposal as it relates to malfunctions. This proposal has two differences from the current provisions of the rule. First, all sources, not just sources using the SSM plan for RCRA compliance, would be required to have an approved SSM plan. The EPA expects that most, if not all, sources are already using this option for compliance, so this provision, if finalized, would have minimal impact on most sources. Second, the EPA is proposing to add an explicit requirement that sources must operate according to their SSM plan during periods of SSM. Based on discussions with regulated parties, the EPA expects that sources are already doing this. This proposal is therefore intended to codify this requirement and, if

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finalized, would make compliance with the SSM plan an enforceable provision during periods of SSM.

For malfunctions, the EPA is proposing no changes to the current AWFCO requirements as part of the proposed work practice.[114] The AWFCO requirements minimize emissions during malfunctions that could cause exceedances by requiring swift hazardous waste feed shut off.[115] Because hazardous waste is a primary source of HAP emissions for most HWCs, shutting off hazardous waste feed immediately minimizes emissions while the owner or operator can diagnose and resolve the issue that triggered the AWFCO.

Additionally, on September 5, 2025, the D.C. Circuit held in *SSM Litigation Group v. EPA*, Case No. 23-1267, that although the EPA lacks authority under the CAA to "create a regulatory 'defense' that limits the remedial authority granted by Congress to the federal courts," a "complete affirmative defense, like the one at issue [in that case], is permissible because it relates to the antecedent question of liability and therefore does not impinge on the judiciary's authority to award 'appropriate civil penalties.'"[116] While this proposal does not involve affirmative defenses, the EPA requests comment on whether and how we should establish regulations within this and other New Source Performance Standards or NESHAPs in response to the D.C. Circuit's *SSM Litigation Group* decision (C-11). Due to the timing of the D.C. Circuit decision and the Agency's court-ordered

[114] 80 FR 75178, 75211-14 (Dec. 1, 2015); *see also* 85 FR 49434, 49441-46 (Aug. 13, 2020).
[115] "At the very least, the language [of CAA section 112(d)(3)] permits the EPA to ignore malfunctions in its standard-setting and account for them instead through its regulatory discretion." *U.S. Sugar*, 830 F.3d at 608.
[116] Slip Op. at 10-11 (quoting CAA 304(a), 42 U.S.C. 7604(a)).
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deadline, the EPA will address the impacts of the *SSM Litigation Group* decision in an appropriate future action.

2. Electronic Reporting

The EPA proposed some provisions for electronic reporting for the HWC NESHAP in July 2024. After considering the comments received on that proposal, the EPA is reproposing the same provisions for electronic reporting in addition to proposing requirements for the use of templates for certain reports. The templates are available in the docket for this proposed rule. The EPA will respond to comments on the July 2024 proposal in the final action for this proposal. There is no need to resubmit any comments that duplicate comments on the July 2024 proposal. Specifically, the EPA is reproposing the requirement that owners and operators of HWC facilities submit electronic copies of required performance test reports, performance evaluation reports, eligibility demonstrations, periodic SSM reports, notifications of intent to comply, notifications of compliance (NOC), compliance progress reports, and excess emissions and CMS performance reports and summary reports through the EPA's Central Data Exchange (CDX) using the Compliance and Emissions Data Reporting Interface (CEDRI). A description of the electronic data submission process is provided in the memorandum *Electronic Reporting Requirements for New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) Rules*, available in the docket for this proposed rule.[117] The proposed rule would require that performance test results be submitted in the format generated through the use of the EPA's Electronic

[117] See Document ID No. EPA-HQ-OAR-2004-0022-0646 in Docket ID No. EPA-HQ-OAR-2004-0022. This document is a prepublication version, signed by EPA Administrator, Lee Zeldin on 10/28/2025. We have taken steps to ensure the accuracy of this version, but it is not the official version.

Reporting Tool (ERT) or an electronic file consistent with the XML schema on the ERT website.[118] Similarly, performance evaluation results of CEMS that include a RATA would be submitted in the format generated through the use of the ERT or an electronic file consistent with the XML schema on the ERT website. The proposed rule would require that the notification of intent to comply, eligibility demonstrations, periodic SSM reports, and compliance progress reports be submitted as PDF uploads in CEDRI.

For the NOC and the excess emissions and CMS performance reports and summary reports, the proposed rule would require that owners and operators use the appropriate spreadsheet template to submit information to CEDRI. A draft version of the proposed template**s** for these reports is included in the docket for this proposed rule.[119] The EPA specifically requests comment on the content, layout, and overall design of the templates (C-12).

The electronic submittal of the reports addressed in this proposed rule would increase the usefulness of the data contained in those reports, is in keeping with current trends in data availability and transparency, would further assist in the protection of public health and the environment, would improve compliance by facilitating the ability of regulated facilities to demonstrate compliance with requirements and by facilitating the ability of delegated state, local, Tribal, and territorial air agencies and the EPA to assess and determine compliance, and would ultimately reduce burden on regulated facilities, delegated air agencies, and the EPA. Electronic reporting also eliminates paper-

[118] *https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert*.
[119] See *Proposed Electronic Reporting Templates for 40 CFR Part 63, Subpart EEE*, available at Docket ID. No. EPA-HQ-OAR-2004-0022.
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based, manual processes, thereby saving time and resources, simplifying data entry, eliminating redundancies, minimizing data reporting errors, and providing data quickly and accurately to the affected facilities, air agencies, the EPA, and the public. For more information on the benefits of electronic reporting, see the memorandum *Electronic Reporting Requirements for New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) Rules*, referenced earlier in this section.

3. Title V Permits for Area Sources

Under the CAA, sources subject to standards or regulations under sections 111 or 112 generally must obtain a title V operating permit. However, the Administrator has the discretion under CAA section 502(a) to exempt area sources from the requirements of title V if the Administrator finds that "compliance with such requirements is impracticable, infeasible, or unnecessarily burdensome on such categories…." Currently, the HWC NESHAP requires that all sources subject to the rule, both major sources and area sources, obtain and maintain a title V air permit. Title V permits did not replace RCRA permits for HWCs. HWCs are required to obtain and maintain both RCRA and title V permits.

In the 2004 HWC NESHAP proposal, the EPA stated that title V permitting for area sources was not impracticable, infeasible, or unnecessarily burdensome because HWCs were already complying with RCRA permitting requirements, which make no distinction between major and area sources.[120] The EPA did not fully explain why

[120] 69 FR 21198, 21325 (Apr. 20, 2004).

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complying with RCRA permitting requirements meant that title V permitting was not impracticable, infeasible, or unnecessarily burdensome. For the reasons provided below, the EPA now proposes to find that the requirement to obtain a title V permit is "unnecessarily burdensome" for HWC area sources and, accordingly, proposes to allow states to exempt HWC area sources from title V permitting requirements.[121] The EPA seeks comment on this proposal, including any specific reliance interests relevant to the existing requirements for HWC area sources to obtain title V permits (C-13).

The EPA has previously exempted many area sources from title V requirements based on a conclusion that the requirements are "unnecessarily burdensome" under CAA section 502(a). Historically, the EPA has considered four factors in determining whether the "unnecessarily burdensome" criterion is satisfied: (1) whether title V would add any significant compliance requirements to those already required by the NESHAP; (2) whether the area sources subject to a NESHAP possess characteristics that would contribute to title V permitting imposing a significant burden on them and whether this burden could be aggravated by difficulty in obtaining assistance from permitting agencies; (3) whether the costs of title V permitting for the area sources would be justified, taking into consideration any potential gains in compliance; and (4) whether adequate oversight, outreach, and compliance assistance programs by the EPA or a delegated authority could achieve high compliance without relying on title V

[121] Unless provided otherwise by statute, an agency may revise or rescind prior actions so long as it acknowledges the change in position, provides a reasonable explanation for the new position, and considers legitimate reliance interests in the prior position. *See FDA v. Wages & White Lion Investments, LLC,* 145 S. Ct. 898 (2025); *FCC* v. *Fox Television Stations, Inc.,* 556 U.S. 502 (2009); *Motor Vehicle Mfrs. Ass'n* v. *State Farm Mut. Auto. Ins. Co.,* 463 U.S. 29 (1983); *Clean Air Council* v. *Pruitt*, 862 F.3d 1, 8 (D.C. Cir. 2017) ("Agencies obviously have broad discretion to reconsider a regulation at any time.").

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permitting.[122] The EPA has considered on a case-by-case basis the extent to which one or more of these four factors is present for a given source category and then considered whether, taken together, those factors that are present demonstrate that compliance with title V requirements would be unnecessarily burdensome.[123]

With respect to the first factor (*i.e.*, whether title V would add any significant compliance requirements to those already required by the NESHAP), the EPA compared the compliance requirements of the HWC NESHAP and the applicable general provisions with the monitoring, recordkeeping, and reporting requirements of 40 CFR 70.6 and 71.6 that may be important for assuring compliance with the NESHAP. The purpose of this was to determine whether title V is "unnecessary" to improve compliance for these NESHAP requirements at these area sources.[124] A finding that title V would not result in significant improvements to compliance requirements, compared to the compliance requirements contained in the NESHAP, would support a conclusion that title V permitting is "unnecessary" for area sources in that category. Based on this comparison, we find that the compliance requirements in the HWC NESHAP and part 63 general provisions are substantially equivalent to the monitoring, recordkeeping, and reporting requirements of 40 CFR 70.6 and 71.6, supporting a conclusion that title V permitting is unnecessary for HWC NESHAP area sources because no additional benefits would be achieved.

[122] For further discussion, see the EPA's proposal (70 FR 15250, Mar. 25, 2005) and final rule (70 FR 75320, Dec. 19, 2005) exempting multiple area sources from title V permitting requirements.
[123] *Id.*
[124] The EPA did not conduct such a comparison as part of the 2004 HWC NESHAP proposal. 69 FR at 21325 (Apr. 20, 2004).
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The second factor is whether the area sources subject to a NESHAP possess characteristics that would contribute to title V permitting imposing a significant burden on them, and whether this burden could be aggravated by difficulty in obtaining assistance from permitting agencies. The third factor, which is closely related to the second factor, is whether the costs of title V permitting for area sources subject to a NESHAP would be justified, taking into consideration any potential gains in compliance likely to occur for such sources. The EPA did not discuss either factor as part of the 2004 HWC NESHAP proposal.[125] We estimate that the cost of renewing a title V permit is between $15,000 and $30,000, with costs varying by state and by complexity of the permit, often with additional associated emission fees (the presumptive minimum fee rate was $63.69/ton for both HAP and non-HAP emissions for September 1, 2024, through August 31, 2025).[126] We estimate that the cost of a non-title V state operating permit is approximately half that of a title V permit. Some area sources are small businesses, and the title V permitting cost can represent substantial cost to a small business, making the requirement that area sources have title V permits potentially burdensome on some sources. We propose to find that HWC area sources have characteristics that would contribute to title V permitting imposing a significant burden, and that the costs of title V permitting for these area sources is not justified given the minimal gains in compliance likely to occur for such sources.

[125] 69 FR at 21325 (Apr. 20, 2004).
[126] See *https://www.epa.gov/title-v-operating-permits/permit-fees* for information about part 70 permit fees and presumptive fee rates.
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The fourth factor is whether adequate oversight by state and local permitting authorities could achieve high compliance with the particular NESHAP requirements without relying on title V permitting.[127] A conclusion that high compliance can be achieved without relying on title V permitting would support a conclusion that title V permitting is "unnecessary" for those sources. The EPA believes that even if area sources are not required to have title V permits, the area sources would be issued non-title V state operating permits governing their air emissions which would incorporate the requirements of the HWC NESHAP. States would be able to enforce the contents of these permits in the same manner in which they can enforce the contents of a title V permit. Furthermore, the EPA has general authority for enforcement of NESHAP under CAA section 113 and has the authority to determine if violations have occurred through inspection, auditing, monitoring, recordkeeping, reporting, and entry onto premises under CAA section 114 and to pursue enforcement action; the EPA uses title V as a compliance tool but does not solely rely on it to enforce requirements of NESHAP. Most HWC NESHAP area sources have good compliance history, showing that a title V permit may not be necessary to incentivize compliance for some area sources.

For these reasons, the EPA is proposing to allow states to choose to exempt HWC area sources from the requirement to obtain a title V permit based on the Administrator's determination under CAA section 502(a) that compliance with title V requirements is "unnecessarily burdensome." If this proposal is finalized, state, local, and Tribal permitting authorities will have the option under 40 CFR 63.1(c)(2)(i) to exclude HWC

[127] The EPA did not discuss this factor as part of the 2004 HWC NESHAP proposal. 69 FR at 21325 (Apr. 20, 2004).

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area sources from the requirement to obtain a title V permit on a source-by-source basis unless the area source is otherwise required by law to obtain a title V permit (*e.g.*, is an area source of HAP but a major source of criteria pollutants). State, Tribal, and local title V permitting authorities are highly involved in the day-to-day issuance of title V permits and determinations of compliance with the HWC NESHAP. States are well positioned to determine whether the requirement to have a title V permit is burdensome on a small business with a strong record of compliance, or if a title V permit is a necessary compliance tool for a specific area source. Providing a state with title V permitting authority the option of issuing a title V permit or other non-title V permit decreases unnecessary burden on small entities while ensuring that states have the flexibility to maintain compliance tools.

There are, however, implications of this proposal that are unique to the HWC NESHAP. Because the HWC NESHAP was originally promulgated under joint CAA and RCRA authority, the EPA issued a final rule in 1999 giving sources in authorized states the option to migrate air emissions and related operating requirements established under RCRA regulations from RCRA permits to title V permits in order to consolidate all air requirements for one unit in the same permitting location.[128] All other RCRA related requirements (*e.g.*, corrective action, general facility standards, material handling, and risk-based emission limits and operating requirements) remain in the RCRA permit.[129] This option was provided pursuant to RCRA section 1006(b), which requires the EPA to demonstrate that the RCRA and CAA provisions are equivalent and that RCRA air

[128] *See* 64 FR 52828, 52833–34 (Sept. 30, 1999); *see also* 70 FR 59516–26 (Oct. 12, 2005).
[129] *Id.*

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emissions requirements could be removed because they were duplicative with HWC NESHAP requirements.[130]

The EPA undertook this demonstration most robustly in the 1999 final rule, in which we relied heavily on the federal enforceability of title V permits and concluded that the title V permitting process would provide equivalent opportunities for public participation.[131] The EPA explained that the HWC NESHAP emission limits were generally as protective as the RCRA limits, and in cases where RCRA emission limits were more stringent than the HWC NESHAP limits and were established as site-specific risk-based limits, the RCRA limits would be maintained in the RCRA permit. The title V permit would take the place of the RCRA permit as a federally enforceable operating permit for air emission limits, except in limited cases. The most significant difference between the RCRA and HWC NESHAP requirements was in the public participation requirements. RCRA has requirements for a preapplication public meeting and notice (40 CFR 124.31), public notice at application submittal, public notice of the draft permit, opportunity for public comments on the draft permit, and opportunity for public hearings. The requirement for a preapplication public meeting was incorporated into the HWC NESHAP (40 CFR 63.1212(b)). The other public participation requirements were not incorporated into the HWC NESHAP directly because they were included in the title V permit process and all HWCs were required to have a title V permit. The EPA determined

[130] *See Chem. Waste Mgmt. v. EPA*, 976 F.2d 2, 23, 25 (D.C. Cir. 1992).
[131] *See* 64 FR 52973–91 (Sept. 30, 1999).

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that the title V application process was equivalent for the remainder of the RCRA public participation requirements.[132]

If a state chooses to exempt an area source HWC from the title V permit requirements, the HWC NESHAP would no longer be equivalent to the RCRA requirements. As a result, any area source HWC without a title V permit would need to have air emissions requirements, likely the HWC NESHAP requirements, included in their RCRA permit while also maintaining a non-title V state operating permit with the same HWC NESHAP requirements. This would create the opportunity for enforcement of the HWC NESHAP requirements under RCRA by the EPA enforcing the HWC NESHAP directly and by the state enforcing the state operating permit.
Under this proposal, if a state exempts an area source from the requirement to have a title V permit, the RCRA permit would need to be modified to include air emissions requirements before the title V permit for the area source is cancelled or allowed to expire. We seek comment on this proposal, including on any reliance interests relevant to the existing requirements for HWC area sources to obtain title V permits.

In addition to proposing that states with title V permitting authority may exempt area source HWCs from title V permitting requirements, the EPA is soliciting comment on whether we should completely exempt area sources from title V permitting requirements (C-13); as with the more flexible proposal described above, such comments may include any reliance interests associated with existing requirements for HWC area sources to obtain title V permits. If we completely exempt area sources from the

[132] *See* 64 FR 52828, 52833–34 (Sept. 30, 1999); 70 FR 59516–26 (Oct. 12, 2005).
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requirement, then states may not choose to issue a title V permit to such area sources solely because they are subject to the HWC NESHAP; they would only be allowed to issue a non-title V state air permit unless the area source is otherwise required by law to obtain a title V permit. This option would also require area sources to modify their RCRA permit to include air emissions requirements, which would have similar potential enforcement implications to those previously described.

4. CO Requirement during CfPTs

Currently, 40 CFR 63.1207(g)(2)(i) requires that CO or THC CEMS emission levels must be within the range of the average value to the maximum value allowed during the CfPT, unless the requirement is waived in the CfPT plan approval. The EPA routinely waives this requirement because CO and THC emissions are not tunable parameters. As the HWC NESHAP has established, emissions of CO and THC are representative of good combustion practices below levels of 100 ppmv and 10 ppmv, respectively. HWC operators are not able to set and maintain a specific concentration of CO or THC below those levels, which are the maximum allowable by rule. In addition, the only way that HWC operators can try to ensure that CO or THC emissions are higher than the average value is to not operate according to best combustion practices. However, the EPA generally encourages the use of best practices for combustors. Because this requirement is counter to the use of best combustion practices and is routinely waived, the EPA is proposing its removal.

5. Incorporation of Operating Parameter Limits by Reference

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Currently, the HWC NESHAP requires that operating parameter limits set during the CPT be specified in the notification of compliance and incorporated into the HWC's title V permit (40 CFR 63.1206(c)(1)(v)). The HWC NESHAP does not specify whether the requirements must be directly incorporated or if they can be incorporated by reference. This lack of specificity has led to some disparities in requirements across different HWCs. In general, modifications to title V or other air permits expend the time of both HWC owners and operators and the permitting agency, and have fees associated with them. Because requiring a permit modification is costly in time and money, the EPA is proposing to make notifications of compliance, including the operating parameter limits, publicly available through the EPA's WebFIRE interface. Additionally, because operating parameter limits will be available to the public through other means, the EPA is proposing to clarify that operating parameter requirements may be incorporated in the title V permit or other air permit either directly or by reference.

6. RATA Timeframe Clarification

Currently, appendix A to subpart EEE of part 63, section 5, requires that when a performance test is required under 40 CFR 63.1207 to document compliance with emission standards, a RATA must coincide with the performance test. However, the requirement in appendix A is vague and there is no definition of "coincide," which has led to some degree of confusion. The EPA is proposing to clarify that a RATA is only required during a CPT and that it must occur within 60 days of the CPT. According to appendix A, the RATA requirement applies only to O_2, CO, and hydrocarbon (HC) CEMS. According to 40 CFR 63.1207(b)(2)(ii), a performance evaluation of CMS (*e.g.*, a

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RATA for a CEMS) is required only for systems used for compliance with the PCDD/PCDF emission standard under 40 CFR 63.1209(k). According to 40 CFR 63.1209(k), the compliance assurance parameters for PCDD/PCDF are gas temperature at the inlet to a dry PM control device, minimum combustion chamber temperature, maximum flue gas flow rate or production rate, maximum hazardous waste feedrate, PM operating limits, activated carbon injection parameter limits, carbon bed parameter limits, catalytic oxidizer parameter limits, and inhibitor feedrate parameter limits. None of those compliance assurance parameters depend on O_2, CO, or HC CEMS, and so a RATA is not required in conjunction with a CfPT.

To clarify the RATA timeframe, the EPA is proposing to amend the language in of appendix A to subpart EEE of part 63, section 5, to read: "When a comprehensive performance test is also required under § 63.1207 to document compliance with emission standards, the RATA must occur within 60 days of the comprehensive performance test."

7. Removing the PM CEMS Requirement

Currently, the HWC NESHAP has a never-implemented requirement that HWC owners and operators install, calibrate, maintain, and operate a PM CEMS to demonstrate continuous compliance with the PM standard (40 CFR 63.1209(a)(1)(iii)). The EPA is proposing to remove this requirement and the related standards regarding applicability during PM CEMS correlation tests (40 CFR 63.1206(b)(8)). The EPA is proposing this removal because PM CEMS are technically infeasible for the HWC source category.

The EPA considers the use of PM CEMS to be technically infeasible for the HWC source category due to the impacts of the dynamic waste profile on the correlation curve

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for the CEMS. Specifically, PM CEMS measurement is greatly influenced by the PM particle size and make-up, and the dynamic waste profile in HWCs creates a highly variable particle size distribution and make-up. This makes the correlation curve developed under one waste profile inapplicable to another. In those sectors where PM CEMS are applied successfully, the fuel type and emission controls are static, allowing for higher confidence in the correlation curve. Without a valid correlation curve, the PM CEMS will not reliably measure PM emissions, which renders the PM CEMS technically infeasible. Additionally, for those HWCs demonstrating compliance with the PM standards, the use of parametric monitoring (*e.g.*, baghouse pressure drop) is sufficient for monitoring continuous compliance.

Furthermore, since the inclusion of PM CEMS in this standard,[133] the EPA is unaware of any successful demonstration of continual use of PM CEMS at an HWC, and at the time of the publication of this proposed rule, the EPA is unaware of a PM CEMS currently installed at an HWC, meaning that PM CEMS is not a demonstrated technology for HWCs. The use of PM CEMS could be technically feasible at certain HWCs if the particle size and make-up is less variable, which is why we are retaining the option that sources may petition to use PM CEMS for compliance monitoring in lieu of compliance with other OPLs (40 CFR 63.1209(a)(5)). The petition would include a demonstration that the PM CEMS is technically feasible for that unit.

Because no units are operating PM CEMS, the cost for installing and operating PM CEMS is not included in the baseline cost for this rulemaking despite the requirement

[133] 64 FR 52828 (Sept. 30, 1999).

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for PM CEMS in the standard. If the EPA chose to implement the PM CEMS requirement, the approximate cost would conservatively be $192,000 (2023$) per unit or $31.3 million (2023$) if every unit across the industry were to install and operate a PM CEMS.[134] Removing this requirement would acknowledge that the EPA will not require sources to incur that cost without further rulemaking action. Since units are not currently operating PM CEMS, removing the requirement would not represent a cost savings for existing units. Hence, the estimated cost of this proposal does not include such cost savings. However, the current information collection request (ICR) for the HWC NESHAP (OMB Control Number 2060-0743) includes the cost to install, validate, and perform correlation tests for PM CEMS for all new units and to perform PM CEMS correlation test costs for some existing units. We are proposing revisions to the ICR to remove the costs associated with installation and operation of PM CEMS, including installation, validation, and correlation test costs. These revisions are reflected in the cost analysis memorandum for this proposal.

8. Removing Expired Methods

While reviewing the HWC NESHAP for the RTR, the EPA found several listed methods that were not correctly incorporated by reference and have since expired. Additionally, when we examined these methods, we found other available methods for meeting the same requirements in the HWC NESHAP and found that these other methods seemed to be preferred options by sources. For these reasons, the EPA is proposing to remove references to the following methods in the HWC NESHAP: ASME QHO-1-1994,

[134] This is based on the cost for installing PM CEMS on new units in the current HWC NESHAP ICR, OMB Control Number 2060-0743.

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QHO-1a-1996, QHO-1-2004 for operator training; ASTM D 6735-01 for measurement of HCl and chlorine gas; and ASTM E-29-90 for rounding and significant figures.

9. Demonstration of Compliance Timeframe

The EPA is proposing that the initial demonstration of compliance timeframe for the new HF and HCN standards would be six months after the relevant compliance date, in accordance with 40 CFR 63.1207(c)(1) and as discussed in section IV.A. of this preamble. However, to prevent two sets of compliance dates for new incinerators, cement kilns, and lightweight aggregate kilns—six months for HF and HCN and 12 months for all other standards—the EPA is proposing that the initial demonstration of compliance would be six months for all standards for all sources.

The EPA clearly laid out the reason that incinerators, cement kilns, and lightweight aggregate kilns were given 12 months for the initial demonstration of compliance with the final replacement standards in the 2005 HWC NESHAP while boilers and HCl production furnaces were given six months—to give sources longer to amortize the cost of the CPT demonstrating compliance with the 2002 HWC NESHAP interim standards before having to retest to demonstrate compliance with the 2005 HWC NESHAP.[135] This goal has been accomplished, and so we believe it is appropriate to remove this outdated timeframe from the rule.

With the removal of the outdated 12-month demonstration of compliance provision for incinerators, cement kilns, and lightweight aggregate kilns in 40 CFR 63.1207(c)(3), all sources would be subject to the current requirement of 40 CFR

[135] 69 FR 21338 (Apr. 20, 2004).

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63.1207(c)(1) to commence the initial CPT not later than six months after the compliance date. Compliance dates in the rule have been updated to reflect that initial compliance with the HF and HCN standards is proposed to be three years after promulgation of the final RTR for existing sources and that the initial compliance date for other emission standards remains unchanged.

10. Other Editorial Corrections

The EPA is proposing various editorial corrections to the HWC NEHSAP for correctness and clarity:

- Updating definitions in 40 CFR 63.1201(a) as indicated in the full text of proposed revisions to the HWC NESHAP, which can be found in the docket for this proposed rule;
- Removing reference to the general provisions to performance test operating conditions (40 CFR 63.7(e)(1)) and replacing it with a reference to 40 CFR 63.1207(g) in 40 CFR 1206(b)(2);
- Changing “effect” to “affect” in 40 CFR 63.1206(b)(7)(i)(B)(*1*);
- Reserving 40 CFR 63.1206(b)(8) in accordance with removing the requirement that HWCs install and operate PM CEMS;
- Changing “µgm” to “µg” to align with standard convention where it appears in the rule;
- Clarifying that the “workplan” referenced in 40 CFR 63.1206(c)(5)(ii) is the performance test plan;
- Changing “or” to “and” in 40 CFR 63.1206(c)(6)(v)(A)(*7*);

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- Correcting a cross-referencing error in 40 CFR 63.1206(c)(9)(ii)(C)(2)(iv) to reference paragraph (C)(2) instead of paragraph (B)(2);
- Removing the applicability of 40 CFR 63.7(e)(1) in 40 CFR 63.1207(a);
- Clarifying in 40 CFR 63.1207(e)(1)(i) that the CMS performance evaluation plan in a CfPT must only include CMS performance evaluation for parameters required in 40 CFR 63.1207(b)(2)(ii);
- Revising 40 CFR 63.1207(f)(1)(xv), which was inadvertently left in the subpart when the EPA revised EPA Method 23 in March 2023[136] and replacing it with the CPT plan submission requirements associated with the HF work practice standard;
- Clarifying that records must be kept of operating conditions during performance testing in 40 CFR 63.1207(g);
- Removing the option to use Method 0023A to demonstrate compliance with the PCDD/PCDF standards in 40 CFR 63.1208(b)(1)(i) effective three years after the publication date of the final rule;
- Clarifying methods for measuring HCl and chlorine gas in 40 CFR 63.1208(b)(5);
- Removing the cross-reference to a reserved section in 40 CFR 63.1208(b)(7);
- Adjusting the numbering to account for the described changes in 40 CFR 63.1208(b);
- Adding the work practice standard and OPLs for HF in 40 CFR 1209(s);

[136] 88 FR 16732 (Mar. 20, 2023).

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- Revising the notification tables to reflect the proposed notification changes in 40 CFR 63.1210(a);
- Revising the recordkeeping and reporting tables to reflect the proposed recordkeeping and reporting changes in 40 CFR 63.1211;
- Adding a requirement that sources report if they fail to meet an applicable standard in the excess emissions and CMS performance report and summary report in 40 CFR 63.1211(a);
- Clarifying recordkeeping requirements for periods of SSM and records to be kept for failures to meet an applicable standard in 40 CFR 63.1211(e);
- Correcting the web addresses for HCl and chlorine gas reference concentrations and acute reference exposure levels in 40 CFR 63.1215(b);
- Correcting the web address of the EPA's *Air Toxics Risk Assessment Reference Library, Volume 2: Facility-Specific Assessment* in 40 CFR 63.1215(c)(4)(i);
- Revising instructions on significant figures and intermediate use in calculations to align with existing EPA policy[137] in 40 CFR 63.1216(d), 63.1217(d), 63.1218(d), 63.1219(d), 63.1220(f), and 63.1221(d);
- Revising the general provisions applicability table (table 1 to subpart EEE of part 63) to reflect proposed changes to general provisions applicability;
- Revising "NIST traceable calibration standards" to "EPA traceability protocol calibration gases" in section 2 of the appendix to subpart EEE of part 63 to

[137] Memorandum *Performance Test Calculation Guidelines* (John Seitz, 1990) available in the docket for this action (Docket ID No. EPA-HQ-OAR-2004-0022).

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improve consistency across NESHAP and to better match the intent of the requirement;

- Revising "yearly" to "annually" in section 5 of the appendix to subpart EEE of part 63 for consistent terminology;
- Clarifying who must approve a request to use alternative spans and ranges in section 6.3.5 of the appendix to subpart EEE of part 63;
- Clarifying and adding options for the moisture correction procedure in section 6.4.1 of the appendix to subpart EEE of part 63; and
- Removing the extra word "expressed" in section 6.6 of the appendix to subpart EEE of part 63.

The full text of proposed revisions to the HWC NESHAP can be found in the docket for this proposed rule. We seek comment on these technical revisions (C-14). The EPA is also soliciting comments on what, if any, other clarifications we should make, including but not limited to which emission limits and OPLs apply when hazardous waste is not in the combustion chamber and the combustor is not complying with an otherwise applicable requirement under 40 CFR 63.1206(b)(1)(ii) (C-15).

F. What compliance dates are we proposing?

The EPA is proposing that existing facilities must be in compliance with the HF and HCN limits within three years after promulgation of the final rule, under CAA section 112(i)(3)(A).[138] We propose that existing sources must demonstrate compliance

[138] *U.S. Sugar*, 113 F.4th at 995 (section 112(i)(3)(A) "permits EPA to establish a delayed 'compliance date' for any *existing*-source emission standard, which may fall up to 3 years after the effective date of such standard") (alteration in original).

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with the HF and HCN limits no later than six months after the compliance date. We propose this timeline for compliance and demonstration of compliance with these limits because we recognize that most facilities may currently be unaware of their HF and HCN emissions. These facilities may conduct pre-testing to determine their current HF and HCN emissions, determine if modifications must be made to their processes or control devices, implement any changes, submit a performance test plan, get the performance test plan approved, and schedule and complete a performance test to demonstrate compliance. We expect that facilities demonstrating compliance with new emission limits may choose to conduct a CPT in conjunction with their demonstration of initial compliance if operational changes must be made to comply with the new limits. We also recognize that some sources may be required to submit an alternative test method for approval to the EPA to demonstrate compliance with new HCN standards. Additionally, a CPT plan must be submitted for approval at least a year before the test commences, and we expect that approximately the same amount of time will be required for the demonstration of initial compliance with the HF and HCN standards, leaving two years for sources to determine their current emissions and determine any process changes needed to comply with the new emission limits. Taken together, the EPA anticipates that three years for compliance and an additional six months for the demonstration of compliance is a reasonable timeframe for existing sources and is as expeditious as practicable given our experience with similar industries.

The EPA is proposing that new sources, as determined by the date of this proposal, must be in compliance with the HF and HCN emission limits upon initial

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startup and must demonstrate compliance with the HF and HCN emission limits no later than six months after initial startup. New sources would also require time for unit pre-testing, tuning operational parameters, submitting a CPT plan and getting it approved, and scheduling and performing an initial CPT. Some sources may also need to submit an alternative test method request to the EPA for approval to demonstrate compliance with the HCN standard. Based on our experience with this and similar industries, the EPA believes that this is a reasonable timeframe for new sources and is as expeditious as practicable.

For electronic reporting for all sources, the EPA is proposing that for performance test and performance evaluations including RATA, which utilize the ERT, electronic reporting begins 90 days after the publication date of the final rule. In the EPA's experience, since the ERT has been available for use for over a decade, and stack testing firms are well acquainted with its use, 90 days is sufficient time to begin electronic reporting using the ERT. For notifications of intent to comply, eligibility demonstrations, periodic SSM reports, and compliance progress reports, which are uploads in PDF, the EPA is proposing to allow 60 days from the date of the final rule to begin electronic reporting. As these reports are not being changed, but only the manner of submission, we believe 60 days would be sufficient time for facilities to enroll in CEDRI if not already enrolled and to submit these reports electronically. For the NOC and the excess emissions and CMS performance reports and summary reports, which would use a spreadsheet template, the EPA is proposing to allow one year from the date of the final rule or one year from the date the template becomes available on the CEDRI homepage to begin

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electronic reporting. We believe that one year is necessary to ensure that facilities can become acquainted with the spreadsheet template and begin entering data into the new format.

The EPA is proposing that all facilities must comply with the SSM work practice standard within 180 days after promulgation of the final rule or upon initial startup, whichever is later. The EPA anticipates that most facilities are already operating according to this work practice standard; however, the EPA acknowledges that some facilities may not have an approved SSM plan, though all should have an SSM plan. The EPA anticipates that 180 days is a reasonable timeframe for any facilities without an approved SSM plan to review their SSM plan, submit it for approval, and receive approval. Furthermore, the EPA anticipates that 180 days is a reasonable timeframe for facilities with an approved SSM plan who may choose to revise their plans and resubmit them for approval, if required, based on the contents of this action. The AWFCO part of the SSM work practice standards is already implemented at all facilities and does not require additional time for compliance.

The EPA is proposing that all other revisions to the HWC NESHAP would become applicable on the effective date of the final rule. These revisions are technical corrections, clarifications, and deregulatory actions that do not require demonstrations of compliance or immediate action on the part of regulated entities.

V. Summary of Cost, Environmental, and Economic Impacts

A. What are the affected sources?

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The HWC source category includes incinerators, cement kilns, lightweight aggregate kilns, solid fuel boilers, liquid fuel boilers, and HCl production furnaces that combust hazardous waste. Currently, the EPA has identified 163 HWCs at 92 facilities owned by 57 parent corporate entities and the Federal government. Of these 163 HWCs, 62 are incinerators, 61 are liquid fuel boilers, 17 are HCl production furnaces, 14 are cement kilns, seven are solid fuel boilers, and two are lightweight aggregate kilns. We estimate that four new HWCs may begin operations in the next five years.

B. What are the air quality impacts?

The EPA does not anticipate that the proposed amendments to this subpart will materially impact air quality. Analysis of the collected data indicates that the proposed emission limits for HF and HCN are currently being achieved by all subject sources, and so the proposed amendments would not result in any changes to air quality. In addition, the work practice standards for SSM are based on practices already utilized by industry and thereby do not affect the stringency of standards. The addition of electronic reporting, changes to title V permit requirements, and other ministerial actions also do not impact the stringency of the standards. However, the proposed amendments would prevent backsliding in HAP emissions for current sources and would prevent the future release of HAP from new sources by establishing new source standards for HF and HCN.

C. What are the cost impacts?

The proposed revisions to the HWC NESHAP are expected to have minimal cost impacts. The costs are associated with initial and periodic emissions performance testing, electronic reporting, and reviewing the revised provisions. The EPA expects 92 facilities

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to be affected by the rule. The EPA anticipates that all facilities can comply with the proposed rule without the installation of any new APCDs. Furthermore, the EPA expects that compliance testing for new emission limits will coincide with currently required emissions testing, requiring minimal extra costs. The EPA also estimates cost savings associated with proposed changes to title V requirements. The EPA estimates that the total cost per facility in year one (2026) is $3,600 (2024$), and the subsequent annual costs per facility are estimated to be $2,400 (2024$).

For these 92 affected existing facilities, the total cost of the action over years one through three is estimated to be $770,000 (2024$). The analysis for this rule also assumes that three new facilities will begin operation with estimated cost savings of $190,000 (2024$) per facility in the first year of operation, primarily associated with the proposed removal of the PM CEMS requirement, reducing the three-year incremental cost of this rulemaking to $225,000 (2024$), or an average annual cost of $75,000 (2024$). These costs do not account for the incremental burden for the EPA. After accounting for EPA burden, the estimated total annual cost of this action, averaged over years one through three, is estimated at $70,000 (2024$). For more information on these estimates, please refer to the cost memorandum[139] prepared for this action as well as the economic impact analysis[140] for this proposed rule.

D. What are the economic impacts?

[139] See the memorandum *Hazardous Waste Combustors (HWC) NESHAP – Cost Impacts of Proposed Amendments*, which is available in the docket for this proposed rule (Docket ID No. EPA-HQ-OAR-2004-0022).

[140] See the memorandum *Economic and Small Entity Impact Analysis for the Proposed National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors Risk and Technology Review*, which is available in the docket for this proposed rulemaking (Docket ID No. EPA-HQ-OAR-2004-0022). This document is a prepublication version, signed by EPA Administrator, Lee Zeldin on 10/28/2025. We have taken steps to ensure the accuracy of this version, but it is not the official version.

The economic impact of this action is calculated as the annual cost as a percent of revenues for affected entities. Using the total annual costs for this action averaged over years one through three from the proposal, no affected entity is expected to incur an annual cost of more than 0.16 percent of their revenues. Based on our analyses, nine affected parent entities are expected to have cost savings associated with this proposal. Given these results, we expect that the economic impact of this action should be small.

E. What are the benefits?

As explained earlier in this preamble, we do not estimate that this action would lead to material changes in HAP emissions from the HWC source category. Given this outcome, we do not believe that there would be monetized benefits, positive or negative, based on emissions changes expected from this proposal. However, the proposed amendments would prevent backsliding in HAP emissions for current sources and would prevent the future release of HAP from new sources by establishing new source standards for HF and HCN.

F. What analysis of children's environmental health did we conduct?

This action is subject to the EPA's Policy on Children's Health (*https://www.epa.gov/children/childrens-health-policy-and-plan*) because the rule has considerations for human health. Accordingly, we have evaluated the environmental health effects of the HWC source category to early life exposure (the lifestages from conception, infancy, early childhood, and through adolescence until 21 years of age) and lifelong health.

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In summary, the residual risk assessment found that the MIR posed by emissions from the source category is 9-in-1 million. The total estimated cancer incidence is 0.07. The population exposed to cancer risk greater than or equal to 1-in-1 million is approximately 540,000 people. The maximum chronic noncancer TOSHI is estimated to be 0.3 (for respiratory effects).

The results of this evaluation are contained in sections IV.B. and C. of this preamble and further documented in the risk report, *Residual Risk Assessment for the Hazardous Waste Combustors Source Category in Support of the 2025 Risk and Technology Review Proposed Rule*, which is available in the docket for this proposed rule.

This action is consistent with the EPA's Policy on Children Health because the risk assessment accounts for early life exposures. For example, for carcinogens that act via a mutagenic mode of action (*i.e.*, chemicals that cause cancer by damaging genes), we estimate risks to reflect the increased carcinogenicity of such chemicals during childhood.

VI. Request for Comments

We solicit comments on this proposed action. In addition to general comments on this proposed action, we are also interested in additional data that may improve the risk assessments and other analyses. We are specifically interested in receiving any improvements to the data used in the site-specific emissions profiles used for risk modeling. Such data should include supporting documentation in sufficient detail to allow characterization of the quality and representativeness of the data or information. Section VII. of this preamble provides more information on submitting data corrections.

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Additionally, we are soliciting comment on the following topics:

- Setting the HF and HCN standards pursuant to CAA section 112(d)(6) rather than setting the HF and HCN standards exclusively pursuant to CAA sections 112(d)(2), (d)(3), and (h)(2), as discussed in section IV.A of this preamble. (C-1)
- Any comments, data, and other information regarding the analyses for our proposed MACT floor standards and the beyond-the-floor options and our determinations, as discussed in section IV.A of this preamble. (C-2)
- Whether strategies other than cost per ton of pollutant reduced would be more appropriate when considering cost in evaluating beyond-the-floor standards, as discussed in section IV.A.1. of this preamble. (C-3)
- The establishment of an HBEL for HAP, including HF and HCN, as discussed in section IV.A.1. of this preamble. (C-4)
- If the EPA were to establish an HBEL, what would be the most appropriate format for such a limit (*i.e.*, a single numeric limit or an alternative standard like 40 CFR 63.1215), as discussed in section IV.A.1. of this preamble. (C-5)
- The appropriateness of the proposed work practice standard for the control of HF emissions, and whether additional work practice standards should be included, as discussed in section IV.A.2.a. of this preamble. (C-6)
- Which operating parameter limits (*e.g.*, maximum stack gas flow rate) may be appropriate for inclusion of the cement kiln's inherent control of HCl and

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thereby HF in the proposed work practice standard, as discussed in section IV.A.3.a. of this preamble. (C-7)

- Whether HWC cement kilns should be subcategorized for purposes of setting emission limit(s) for HCN, and, if so, how, as discussed in section IV.A.3.b. of this preamble. (C-8)
- Whether there are additional control measures for emission sources subject to the HWC standards that are necessary to provide an ample margin of safety to protect public health, as discussed in section IV.C.2. of this preamble. (C-9)
- Whether we should consider additional developments not addressed in this preamble or in the technical memorandum for emission sources subject to the HWC NESHAP, as discussed in section IV.D. of this preamble. (C-10)
- Whether and how we should establish regulations within this and other New Source Performance Standards or NESHAPs in response to the D.C. Circuit's *SSM Litigation Group* decision, as described in section IV.E.1. of this preamble. (C-11)
- The content, layout, and overall design of the electronic reporting templates as discussed in section IV.E.2. of this preamble. (C-12)
- The removal of the requirement for area sources to obtain a title V permit including any specific reliance interests relevant to the existing requirements for HWC area sources to obtain title V permits as discussed in section IV.E.3. of this preamble. (C-13)
- The technical revisions discussed in section IV.E.10. of this preamble. (C-14)

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- What, if any, other clarifications we should make, including but not limited to which emission limits and OPLs apply when hazardous waste is not in the combustion chamber and the combustor is not complying with an otherwise applicable requirement under 40 CFR 63.1206(b)(1)(ii) as discussed in section IV.E.10 of this preamble. (C-15)
- An approach to set standards for HAP without current regulation only "as necessary" based on current emissions levels. (C-16)

VII. Submitting Data Corrections

The site-specific emissions profiles used in the source category risk analysis are available for download on the RTR website at *https://www.epa.gov/stationary-sources-air-pollution/hazardous-waste-combustors-national-emission-standards-hazardous*. The data files include detailed information for each HAP emissions release point for the facilities in the source category.

If you believe that the data are not representative or are inaccurate, please identify the data in question, provide your reason for concern, and provide any "improved" data that you have, if available. When you submit data, we request that you provide documentation of the basis for the revised values to support your suggested changes. To submit comments on the data downloaded from the RTR website, complete the following steps:

1. Within this downloaded file, enter suggested revisions to the data fields appropriate for that information.

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2. Gather documentation for any suggested emissions revisions (*e.g.*, performance test reports, material balance calculations).

3. Send the entire downloaded file with suggested revisions and all accompanying documentation to Docket ID No. EPA-HQ-OAR-2004-0022 (through the method described in the **ADDRESSES** section of this preamble).

4. If you are providing comments on a single facility or multiple facilities, you need only submit one file for all facilities. The file should contain all suggested changes for all sources at that facility (or facilities).

VIII. Statutory and Executive Order Reviews

Additional information about these statutes and Executive Orders can be found at *https://www.epa.gov/laws-regulations/laws-and-executive-orders*.

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a significant regulatory action and therefore was not submitted to the Office of Management and Budget (OMB) for review. The EPA has prepared an economic analysis of the potential costs and benefits associated with this action. The economic analysis is described in section V. of this preamble. This analysis, *Economic and Small Entity Impact Analysis for the Proposed National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors Risk and Technology Review*, is available in the docket for this proposed rule.

B. Executive Order 14192: Unleashing Prosperity Through Deregulation

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This action is not expected to be an Executive Order 14192 regulatory action because this action is not significant under Executive Order 12866.

C. Paperwork Reduction Act (PRA)

The information collection activities in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the PRA. The ICR document that the EPA prepared has been assigned EPA ICR number 1773.14, OMB Control Number 2060-0743. You can find a copy of the ICR in the docket for this proposed rule, and it is briefly summarized here.

This action proposes revisions to the current ICR for the HWC NESHAP. The goal of this revision is to incorporate new monitoring, reporting, and recordkeeping requirements associated with revisions to the HWC NESHAP. The key revisions to this subpart are the addition of new emission limits and work practice standards, removal of exemptions for emissions during periods of SSM, removal of the requirement to install and operate PM CEMS, and addition of e-reporting using CEDRI to replace physically mailing many of the reports and notifications required under this subpart. These revisions require modifications to the monitoring, reporting, and recordkeeping requirements of the rule. The information collected in this ICR will be used to ensure compliance with this subpart. All information submitted to the Agency in response to the ICR will be managed in accordance with applicable laws and the EPA's regulations governing treatment of confidential business information at 40 CFR part 2, subpart B. Any information determined to constitute a trade secret will be protected under 18 U.S.C. 1905.

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Respondents/affected entities: The respondents to the recordkeeping and reporting requirements are owners or operators of hazardous waste combustors subject to emission standards under 40 CFR part 63, subpart EEE.

Respondent's obligation to respond: Mandatory under the National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors (40 CFR part 63, subpart EEE).

Estimated number of respondents: On average, approximately 165 respondents per year (assuming one new source per year).

Frequency of response: The frequency of response varies by notification or report, as required in 40 CFR part 63, subpart EEE. Generally, respondents will have one-time responses, semiannual responses, and responses every five years.

Total estimated burden: The average annual recordkeeping and reporting burden for all facilities to comply with the requirements of this proposal is estimated to be 2,420 hours. Burden is defined at 5 CFR 1320.3(b).

Total estimated cost: The average annual labor cost for all facilities to comply with the requirements of this proposal is estimated to be $267,000 per year, and this proposal is estimated to provide an average annual capital, operation, and maintenance cost savings of $180,000 per year.

An agency may not conduct or sponsor, and a person is not required to respond to, an ICR unless it displays a currently valid OMB control number. The OMB control numbers for the EPA's regulations in 40 CFR are listed in 40 CFR part 9.

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Submit your comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to the EPA using the docket identified at the beginning of this proposed rule. The EPA will respond to any ICR-related comments in the final rule. You may also send your ICR-related comments to OMB's Office of Information and Regulatory Affairs using the interface at *https://www.reginfo.gov/public/do/PRAMain*. Find this particular ICR by selecting "Currently under Review - Open for Public Comments" or by using the search function. OMB must receive comments no later than **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

D. Regulatory Flexibility Act (RFA)

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. The small entities subject to the requirements of this action are eight small businesses out of the 57 affected entities (or 14 percent of the total). These small businesses are estimated to experience an impact ranging from a cost savings of 0.01 percent to an adverse impact of 0.16 percent, measured as a percentage of their revenues. Two of these eight small businesses are estimated to experience cost savings under this action. Details of this analysis are presented in the memorandum *Economic and Small Entity Impact Analysis for the Proposed National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors Risk and Technology Review*, available in the docket for this proposed rule.

E. Unfunded Mandate Reform Act (UMRA)

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This action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531-1538, and does not significantly or uniquely affect small governments. While this action creates an enforceable duty on the private sector, the cost does not exceed $100 million or more.

F. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the Federal government and the states, or on the distribution of power and responsibilities among the various levels of government.

G. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

This action does not have Tribal implications as specified in Executive Order 13175. The EPA is not aware of any hazardous waste combustor unit owned or operated by Tribal governments. This action will not have substantial direct costs or impacts on the relationship between the Federal government and Indian Tribes or on the distribution of power and responsibilities between the Federal government and Indian Tribes, as specified in Executive Order 13175. Thus, Executive Order 13175 does not apply to the proposed amendments.

H. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

Executive Order 13045 directs Federal agencies to include an evaluation of the health and safety effects of the planned regulation on children in Federal health and

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safety standards and explain why the regulation is preferable to potentially effective and reasonably feasible alternatives. This action is not subject to Executive Order 13045 because it is not a significant regulatory action under section 3(f)(1) of Executive Order 12866, and because the EPA does not believe the environmental health or safety risks addressed by this action present a disproportionate risk to children. Furthermore, this action provides additional emission limits and work practices that will benefit all ages, including children.

However, the EPA's Policy on Children's Health applies to this action. Information on how the Policy was applied is available under section V.F. of this preamble.

I. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not a "significant energy action" because it is not a significant regulatory action under Executive Order 12866.

J. National Technology Transfer and Advancement Act (NTTAA)

This rulemaking does not involve technical standards.

List of Subjects in 40 CFR Part 63

Environmental protection, Air pollution control, Hazardous substances, Reporting and recordkeeping requirements.

Lee Zeldin,
Administrator.

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